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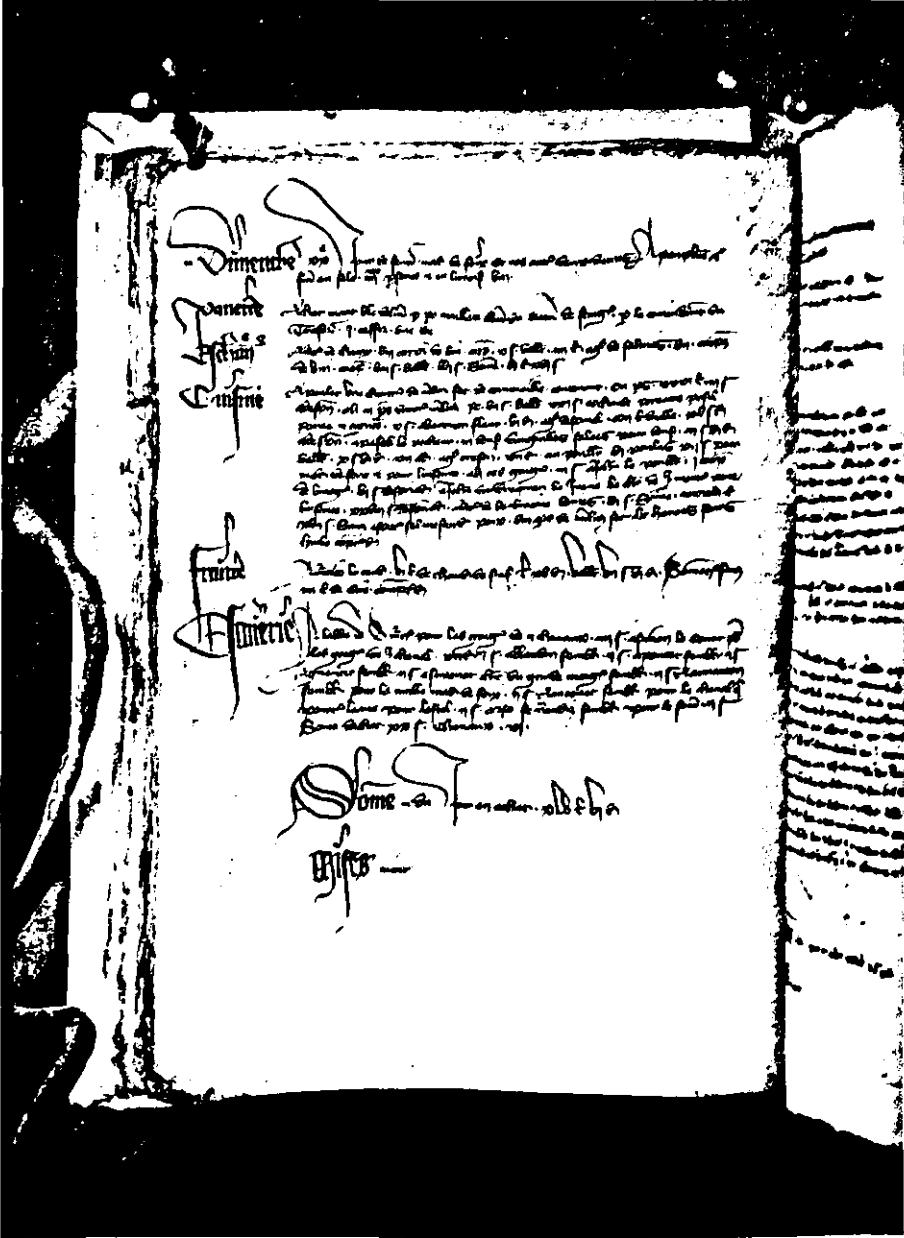
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VOLUME LI

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**MONEY, PRICES, AND WAGES
IN VALENCIA, ARAGON,
AND NAVARRE, 1351-1500**

BY

EARL J. HAMILTON, PH.D.

PROFESSOR OF ECONOMICS IN DUKE UNIVERSITY



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To
GLADYS

PREFACE

Most economists and practically all laymen are painfully aware of the inadequacy of our monetary knowledge for the solution of many acute problems that have recently arisen. While the ancillary character of the information likely to be disclosed is patent, the mere possibility that minute investigations of monetary policy and price behavior under widely diverse circumstances of time and place may help to provide a basis for the rational control of currency and credit (now being essayed in various countries) seems to justify the lavish expenditure of time and effort that such research entails. Moreover, it does not seem illogical to hope that inductive studies of money, prices, and wages over long periods may supply political, social, and economic historians with useful raw material.

This is the second of three studies of money, prices, and wages in Spain covering four and a half centuries. The first, *American Treasure and the Price Revolution in Spain, 1501-1650*, appeared in 1934, as Volume 43 of the Harvard Economic Studies; and the concluding volume, treating the period 1651-1800, will probably go to press next year. In the final study attention will be devoted to secular price and wage movements over the entire period 1351-1800; and a consideration of cyclical fluctuations has been reserved for that volume, when all of the material will be available.

As in the previous book, all the quantitative data relating to money, prices, and wages have been taken from contemporaneous documents in the private, ecclesiastic, and public archives of Spain. The following establishments supplied most of the statistics: Archivo de la Corona de Aragón at Barcelona; Archivo Municipal, Archivo Regional, Archivo del Hospital dels Inocents, and Archivo de la Catedral at Valencia; Archivo de Nuestra Señora del Pilar, Archivo Municipal, and Archivo de la Diputación Provincial at Saragossa; Archivo de la Catedral at Huesca;

and Archivo de la Cámara de Comptos and Archivo de la Catedral at Pamplona. Fruitless efforts were made to find medieval price and wage statistics at Burgos, Valladolid, Palencia, León, Medina del Campo, Salamanca, Madrid, Alcalá de Henares, Cuenca, Córdoba, Seville, Guadalupe, Toledo, Segovia, Ávila, Jaca, Castellón de la Plana, Barcelona, Tarragona, Gerona, Tortosa, Lérida, Sangüesa, Olite, Tudela, and Estella.

Since no continuous price or wage series were unearthed for Castile or Catalonia, the present study is confined to the kingdoms of Valencia, Aragon, and Navarre. Owing to the close commercial contacts between Barcelona and the three kingdoms studied, there is little reason to doubt that the trends of prices and wages in these regions roughly portray the secular movements in Catalonia. The lack of Castilian material is a much greater defect; but, inasmuch as Valencia, Aragon, and Navarre bordered on, and traded with, Castile, considerable interdependence probably characterized the price structures of the four kingdoms.

Archival and statistical work on the scale required by the present study was rendered possible by a generous grant to the International Committee on Price History by the Laura Spelman Rockefeller Foundation. Fourteen months of research in Spanish archives in 1932-1933, with assistance that greatly accelerated the work, were largely devoted to the collection of medieval material; and during the last two years, while this book was in preparation, I have had all the help needed in typing the manuscript at various stages, constructing charts, and computing averages and index numbers. Furthermore, the completion of this project has been expedited by the part-time assistance of my extraordinarily able and faithful friend, Don Miguel Bordonau y Mas, a member of the Cuerpo de Archiveros attached to the Sección de Manuscritos of the Biblioteca Nacional, who has supplied data to remedy many deficiencies that have risen to the surface in statistical processes.

Helpful ideas and constructive criticism were received from members of the International Committee on Price History during the meeting at Locarno in April, 1933. I am also indebted to

Professor Arthur H. Cole, the Financial Representative of the Rockefeller Foundation, for judicious advice in planning and conducting my research.

I welcome this opportunity to pay tribute to the superior ability, tireless energy, and sound judgment of Mr. Warren C. Scoville, who computed most of the averages and index numbers and effectively criticized practically all of the manuscript. The incomparable paleographic skill, general intelligence, thorough knowledge of Spanish history, and charming personality of Sr. Bordonau have proved invaluable in the archival work. Mr. Henry B. Scarborough has rendered efficient service as a computer and proofreader. At one time or another the following workers have taken dictation in the transcription of price and wage statistics: Sres. Ángel González López, José María Esteve, Antonio Abizanda Ballabriga, and Juan Lategui; and Srtas. Maruja Arellano and Julia Gutierrez. Sr. González was unusually skillful as a clerk; and, having mastered paleography for the purpose, he took some data directly from manuscripts in the closing stages of the work. Mr. W. K. Cunningham, Jr., who typed the manuscript, has detected numerous mistakes and contributed very few.

Two of my colleagues and former students have placed me under heavy obligation. Dr. Robert S. Smith has read the entire manuscript more than once and offered much constructive criticism of content and style; Dr. Walter H. Delaplane has computed a part of the quarterly and annual wages and proofread several chapters. My colleague, Professor Christopher Roberts, has ably criticized the first Chapter; and Dr. Rector R. Hardin has read most of the manuscript.

To my former teacher, Professor A. P. Usher, I am indebted for several improvements in the chapter on "Money in Valencia" and for a large part of what knowledge I possess of medieval economic history. I cheerfully acknowledge my obligation to Professor Edwin F. Gay, who first interested me in the study of Spanish prices that has absorbed most of my energy during the last nine years. The example of his profound scholarship, the stimulus derived from his unfailing interest in the project, the

wise counsel he has offered concerning many difficult problems, and above all the enthusiasm derived from personal contacts with him have lightened the drudgery involved in this undertaking.

Don José María de Huarte y Jáuregui, Director of the Archivo General de Navarra, in which the papers of the Cámara de Comptos are deposited, cheerfully rendered service not required in the complete discharge of his official duties. He placed his thorough knowledge of Navarrese history at my disposal and in many ways contributed to the pleasure of six months' residence in the picturesque capital of Navarre. Don José is the third member of the distinguished de Huarte family to promote the study of Spanish prices. The well-kept accounts of the Francisco "Duartes"—father and son—, who served as factors of the *Casa de la Contratación* at Seville in 1542-1557 and 1562-1615 respectively, were useful sources of price statistics for Andalusia.¹ Don Jacinto Peré Villader, Dean of the Cathedral at Huesca, and Don Elías Olmos Canalda, Archivist of the Cathedral at Valencia, gladly permitted the use of documents in their custody. His Eminence, the Archbishop of Saragossa, made available the records of Nuestra Señora del Pilar; and Don Pedro Serrano, President of the Diputación Provincial de Valencia under the Berenguer dictatorship, authorized examination of the excellent account-books of the Hospital dels Inocents. For numerous courtesies I am indebted to the following Directors of Spanish archives and libraries: Don Miguel Artigas of the Biblioteca Nacional, Don Fernando Valls y Taberner of the Archivo de la Corona de Aragón, Don Fernando Ferraz Penelas of the Archivo Regional de Valencia, Don Pascual Clemente Galbe Sánchez-Plazuelos of the Archivo de la Diputación Provincial de Zaragoza, Don Juan Boix Vila of the Archivo Municipal de Valencia, and Don Manuel Abizanda Broto of the Archivo Municipal de Zaragoza. Don Pedro Longás y Bartibás of the Sección de Manuscritos of the Biblioteca Nacional and Don Antonio Lattur

¹ Vide Earl J. Hamilton, "American Treasure and Andalusian Prices, 1503-1660," *Journal of Economic and Business History*, I, 11 n. 6.

Cortés of the Archivo Municipal de Valencia have called attention to many important documents.

The Editors of *The Economic Journal* have kindly permitted the publication of the first half of the chapter on "Money in Valencia" which appeared in "The Economic History Supplement," Vol. III, pp. 45-62.

Of inestimable value have been the frequent contacts with my friend, Don Ramón Carande Thovar, formerly Professor of Economics and Rector of the University of Seville, who is probably the greatest living authority on Spanish economic history in the Middle Ages.

My wife, Gladys Dallas Hamilton, has elaborated the statistics of coinage in Valencia and Navarre; made virtually all of the most difficult computations in the entire study; prepared all the statistical tables in the text and the Appendices; supervised the construction of charts and the calculation of index numbers; and extirpated many faults of style and content. Above all, she has willingly made many economic sacrifices in the interest of this project; and, largely to prevent interruptions of my research, she has renounced a normal social life during the past nine years.

EARL J. HAMILTON

DURHAM, NORTH CAROLINA

June 24, 1935

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BIBLIOGRAPHY

THE Bibliography has been divided into (I) Money and (II) Prices and Wages. All of the sources of wages contain some material relating to prices, but the reverse is not true. Since some future investigator may be interested in wages alone, the price material containing no important wage data is marked with an asterisk. To conserve space, all printed items relating to money, prices, and wages have been listed under Money and not repeated.

The quantity of manuscript material consulted for Navarre was far greater than that for the other two kingdoms combined. In fact, a citation of the thousands of short miscellaneous papers stored in boxes, hundreds of volumes of bound manuscripts, and dozens of parchment rolls in the Archivo de la Cámara de Comptos, at Pamplona, would have required considerably more space than has been devoted to the entire Bibliography. Moreover, the voluminous manuscript inventory of these documents prepared by the learned and indefatigable archivist, Liciniano Sáez, and printed in abridged form by José de Yanguas y Miranda (*Diccionario de Antigüedades del Reino de Navarra* [Pamplona, 1840-1843]) will enable one to locate documents in the Archivo de la Cámara de Comptos. A large part of the material for the other two kingdoms has been drawn from hospital and ecclesiastic archives that lack serviceable inventories, and the municipal archives are very inadequately catalogued. Hence the bibliographical references to material in the Archivo de la Cámara de Comptos have been limited to a statement of the leading titles of the documents examined, but it has seemed desirable to list references that will enable one to locate manuscripts in other archives without assistance.

Critical discussions of the sources have been reserved for the appropriate sections of the text.

The key to frequently recurring abbreviations follows.

ABBREVIATIONS

- ACA. Archivo de la Corona de Aragón, Barcelona.
ACC. Archivo de la Cámara de Comptos, Pamplona.
ACH. Archivo de la Catedral de Huesca.

- ACP..... Archivo de la Catedral de Pamplona.
 ACV..... Archivo de la Catedral de Valencia.
 ADZ..... Archivo de la Diputación Provincial de Zaragoza.
 AHN..... Archivo Histórico Nacional, Madrid.
 AMP..... Archivo Municipal de Pamplona.
 AMV..... Archivo Municipal de Valencia.
 AMZ..... Archivo Municipal de Zaragoza.
 AP..... Archivo de Nuestra Señora del Pilar, Zaragoza.
 AR..... Archivo Regional de Valencia.
 AS..... Archivo General de Simancas.
 BN..... Biblioteca Nacional, Madrid.
 BUV..... Biblioteca Universitaria de Valencia.
 Cortes de Cataluña. Cortes de los Antiguos Reinos de Aragón y de
 Valencia y Principado de Cataluña.
 Fueros..... Fueros y Observancias del Reyno de Aragón.
 Furs..... Furs e Ordinations Fetes per los Gloriosos Reys
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2. ARAGON

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3. NAVARRE

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The following manuscripts have supplied a modicum of monetary data.

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¹ Vide supra, p. xix.

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* Contains no significant wage data.

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2. ARAGON

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Prepositura, rep. 1^o, ligs. 5²-5⁸, 5⁶-5⁸, 6, 6¹, 6⁴-6¹⁰, 7⁴, 7²-7¹⁰, 8¹-8⁷, 9¹-9⁹, 10¹-10¹¹, 11¹-11⁶, 12¹-12⁶, 13¹-13⁴, 14¹-14⁹, 15¹-15⁹.

3. NAVARRE

Not less than 150 distinct titles of documents containing the expense accounts of the royal household appear in Liciniano Sáez's voluminous manuscript inventory of the Archivo de la Cámara de Comptos. Any one using the following list and keeping on the alert for variants will be able to locate the documents containing price and wage statistics.

- a ACC, *Asentadores de Piedra*.
 **Cartulario de Carlos II*.
Compto de las Espensas del Hostel del Rey.¹
Comptos del Tesorero.
Copia de las Escroas del Hostel del Rey.
Cuentas de la Receipta del Impuesto sobre las Ventas.
Cuentas del Gasto en la Despensa del Rey.
Cuentas de los Emolumentos de la Receipta de la Tabla de la Villa de Estella.

* Contains no significant wage data.

¹ There are 11 variants of this title.

Cuentas de Obras en el Palacio del Obispo de Pamplona.
Deudas a Causa de la Espensa del Señor Rey.
*Diario del Gasto de la Casa del Rey.*¹
Diferentes Espensas de la Familia Real.
Espensa del Príncipe de Viana.
Espensa de Obras en Varias Casas.
Espensa en Obras y Reparaciones en los Palacios del Rey y de la Reyna.
Gastos.
*Gastos de la Despensa de la Reina.*²
Labores de la Bailía de Tudela.
Legajo de Cuadernillos Suelos de Cuentas.
Libro de las Escroas de la Casa de la Reyna.
Libro de las Obras en el Castillo Mayor de Estella.
Libro del Gasto del Visconde de Castellón y de sus Gentes.
Libro del Gasto Hecho por la Reyna.
Libro de Obras.
*Obras.*³
Obras para Facer Moneda en la Villa de Sampelay (Saint-Palais).
*Papeles Suelos. Cuenta de la Despensa del Hostal.*⁴
Papeles Varios.
Parroquia de S. Nicolás.
Provisiones Hechas en Tudela por Mandamiento de la Reina.
Reparación de los Castillos de Olite y Estella.
Reparación de un Molino en Corella.
Vendimia en Olite.

- b** Archives des Basses-Pyrénées, B130.
c ACP, *Arca Fábrica*, 5, *Libro de los Recognoscimientos del Trigo . . . 1444-1474*; 26, *Gasto de las Obras de la Iglesia de Santa María*; 27, *Libro de la Espensa de las Obras de los Años 1472-73*; 29, *Gastos de las Sillas del Coro*; 29, *Libro de las Obras de Santa María de Pamplona*; *Recepta de la Obra del Año 1481*.
d Bibliothèque Nationale, Paris, *N. Latins*, Ms. 10,150; *N. A. Latins*, Ms. 81.

¹ Thirty variants of this title occur.

² There are 13 variants.

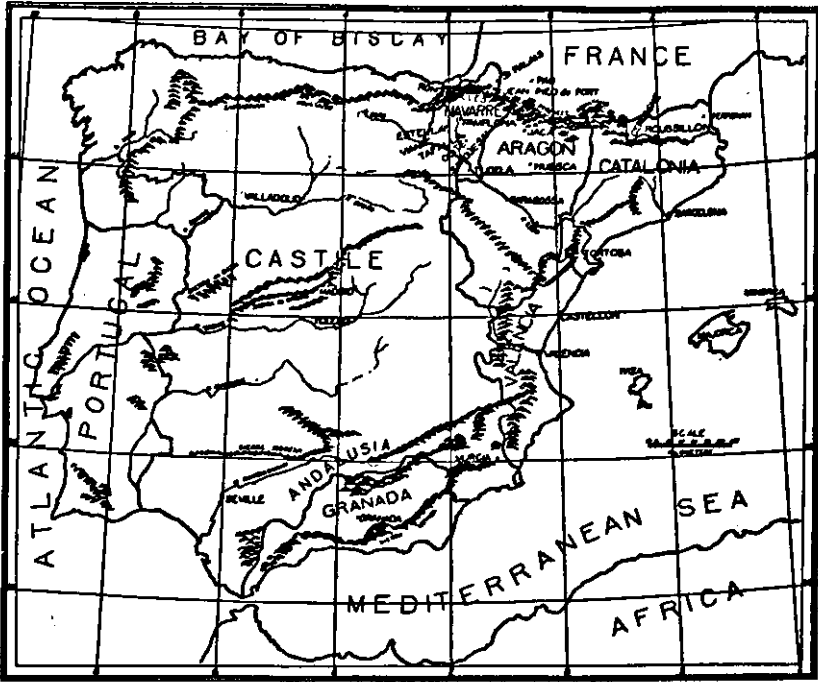
³ Twenty-four different titles are used for *Obras*. In most cases the inventory indicates the locality.

⁴ There are 11 variants.

**MONEY, PRICES, AND WAGES IN
VALENCIA, ARAGON, AND NAVARRE, 1351-1500**

PART I

VALENCIA



MAP OF SPAIN

CHAPTER I

MONEY IN VALENCIA

WHEN the capital of the Moorish kingdom of Valencia fell before the invading hosts of James the Conqueror (1218-1276), in 1238, a bewildering conglomeration of Christian and Moslem coins constituted the medium of circulation. The subjugation of the territory to the southwest of the capital, the protection of the newly-won royal demesne against land-hungry Aragonese knights, the establishment of Christian institutions, and the resistance to excessive inroads of the Church upon the sources of royal revenue engrossed the attention of the Conqueror for almost a decade. Not until May 8, 1247, did James I establish a monetary system in the new land.

Apparently attentive to the low ebb of economic life which resulted from the conquest, the partial Moslem evacuation, and the unfamiliarity of the Christian settlers with their new environment, James I instituted only vellon money, or *menuts*, a token coinage of copper with an admixture of silver. The statute of May 8, 1247, provided that from a mark of bullion containing 3 *dineros* of silver 11 1/2 *dineros* fine, making the silver content 23.9 per cent, 18s. in pennies or 20s. in half-pennies should be struck.¹ Holders of foreign coins were required to present them at public exchange offices, created for the purpose, within forty days for redemption in domestic vellon² according to stipulated tariffs.³

¹ Archivo Municipal de Valencia (hereafter AMV), *Llibres de Cartes Reals*, h², lib. 2, fol. 58-60.

This vellon money resembled very closely that established in Catalonia in 1258 and in Aragon shortly afterward. *Vide* Josef Salat, *Tratado de las Monedas en el Principado de Cataluña* (Barcelona, 1818), I, 135-136; "Pruebas" VII-VIII; Joaquim Botet y Sisó, *Las Monedas Catalanas* (Barcelona, 1908-1911), II, 49-50.

² Since coinage of the vellon did not get under way before the spring of 1249, the forty-day period must not have commenced until the Valencian money became available.

³ Eleven kinds of coins representing a wide geographic area and including at least one counterfeit issue were quoted.

The circulation of alien silver or vellon coins was forbidden, and the new menuts were endued with unqualified legal-tender status in Valencia, Majorca, and Minorca.¹ Notaries might not draft or seal documents involving foreign monetary units, and in the future only marriage contracts and rent annuities might be drawn in terms of gold or silver. The law provided that existing contractual obligations in exotic money should be paid in Valencian coins at the current quotations of the former by money changers.² Christians, Moors, and Jews were commanded to trade exclusively in terms of Valencian pennies; infractors faced the penalty of death and the confiscation of their property. James I solemnly pledged himself and his successors during the first decade after his death to sanction a further issue of the new vellon only in case it should prove genuinely necessary; to leave unaltered its weight, fineness, tariff, size, impression, and form; and to institute no additional coin of silver or copper.³

On February 28, 1248, James I granted his silversmith the privilege of engraving the dies for the money recently established; and in April, 1249 he leased the operation of a mint from Easter of that year to Pentecost of 1250. The lessee guaranteed to pay 60,000s. for the seigniorage during this period. A truly remarkable feature of the agreement was the specific renunciation by the King of the right to supervise the coinage, to station guards at the mint, or to require of the contractor either reports or an accounting.⁴

On April 14, 1266, James I promised the representatives of the kingdoms of Valencia and Majorca never to tamper with the Valencian coinage nor to sanction an emission of the money then

¹ The establishment of a separate line of Majorcan kings under Aragonese suzerainty in 1276 ended the monetary unity of Valencia and the Balearics.

² Whether James I referred to the current quotations of the public exchange offices, which may have operated after the expiration of the forty-day period, or to those of private money changers is not clear.

³ *Aureum Opus* (Valencia, 1515), fol. 9; Joaquim Botet, *op. cit.*, II, 47-48; III, 257-258; Felipe Mateu y Llopis, *La Ceca de Valencia y las Acusaciones Valencianas de los Siglos XIII al XVIII* (Valencia, 1929), pp. 10-13.

⁴ *Ibid.*, p. 15; Joaquim Botet, *op. cit.*, II, 48. Probably through a misprint, Sr. Botet lists 1243 as the year of the mint contract.

current without the previous consent of the city council.¹ His Majesty also covenanted to mint duly authorized issues only in the capital under the surveillance of two guards chosen by the municipality. In consideration of this pledge the kingdoms of Valencia and Majorca granted the King a tax of one *morabetin*, or 7s., every seventh year upon each household owning property worth fifteen or more morabetines. The coronation of every successor of James the Conqueror included a formal confirmation of the monetary oath of 1266.²

Considering the vellon issued in 1249-1250 no longer adequate, early in 1271 the city council (exercising the prerogative conferred by the royal covenant of April 14, 1266) authorized the Conqueror to coin 20,000 marks of fine silver in pennies and half-pennies of the weight and fineness fixed in 1247. The mint farmer agreed to pay the Crown 6s. per mark of silver.³ Later in the year the council sanctioned an additional issue of 3000 silver marks; and on April 25,⁴ their coinage was farmed to a group of six, which included three Pisans.⁵ There were no further emissions of Valencian money during the reign of James the Conqueror.

No extant data will permit an accurate determination of the quantity of money minted by James I. In 1271 issues containing 23,000 marks of silver were authorized, and we know that the mint farmers in 1249-1250 paid 60,000s. for their contract. Arbitrarily assuming that this sum represented 6s. per mark,⁶ as in the first lease of 1271, I estimate that 10,000 marks of silver were struck. If the mint assays were accurate, the total of 33,000 marks of silver produced about 132,000 marks of bullion. Mak-

¹ Hereafter the unqualified terms *capital*, *municipality*, *city council*, and the like refer to the city of Valencia.

² Archivo de la Corona de Aragón (hereafter ACA), registro 2586, fol. 95; *Aureum Opus*, fol. 105; Joaquim Botet, *op. cit.*, II, 48-49; III, 259-262; Felipe Mateu, *op. cit.*, pp. 19-20.

³ ACA, registro 14, fol. 120.

⁴ Joaquim Botet (*op. cit.*, II, 49) and Felipe Mateu (*op. cit.*, p. 21) erroneously list the date as July 26, 1271.

⁵ ACA, registro 16, fol. 262.

⁶ This figure is chosen instead of 7s. only because the resultant round number seems more plausible than the estimate which a seigniorage of 7s. gives.

ing no allowance for departures from normal weight and assuming that the concessionaires exercised the legal privilege of coining 50 per cent of the total in half-pennies, it appears that the output of money during the Conqueror's reign was approximately £125,400.

For counterfeiting James I provided a penalty of death and the confiscation of goods;¹ but, not hesitating to practice what he so drastically punished, on June 20, 1263, the Conqueror authorized an issue of *millareses*,² an Arabic silver coin then widely current in the Mediterranean kingdom, thus inaugurating the princely counterfeiting which flourished in Valencia during the next eleven decades. In the third quarter of the fourteenth century the coinage of foreign monetary units under patents of the King of Aragon was particularly atrocious, even for an age when royal abstention from this nefarious practice was the exception rather than the rule.³ From 1349 to 1373 not less than fifteen royal permits to mint foreign coins,⁴ especially French and Castilian, were issued.⁵ When the representatives of Aragon and Castile, treating of peace in 1370, considered the mutual cessation of royal counterfeiting, Aragon demanded an annual indemnity of 20,000 or 30,000 florins, a sum subsequently reduced to 10,000, for the loss of seigniorage such a covenant would entail.⁶ It must not be supposed that the counterfeiting was confined to periods of open hostility. On more than one occasion the contracts provided for an equitable refund to the concessionaire in case a war should preclude smuggling of the coins into the "parent" country.⁷

¹ *Furs e Ordinations Fetes per los Gloriosos Reys de Aragó* (hereafter *Furs*), fol. 65.

² ACA, registro 12, fol. 90.

³ Cf. Marc Bloch, "Le Problème de l'Or au Moyen Âge," *Annales d'Histoire Économique et Sociale*, Janvier, 1933, pp. 19-21.

⁴ Occasionally the concessionaire was empowered to strike a certain coin or "any other similar money." Still less frequently he received the blanket privilege to coin "any foreign money whatsoever."

⁵ For a partial list of the licenses *vide* Joaquim Botet, *op. cit.*, II, 140-147.

⁶ *Ibid.*, II, 146. When one considers that royal counterfeiting in Castile doubtless reduced the yield of seigniorage on Aragonese money, even the demand for 10,000 florins appears excessive. The privilege of coining Castilian money at Saragossa and Valencia from November 1, 1370, to October 31, 1372, returned only 10,000 florins (ACA, registro 1231, fols. 65-68).

⁷ *Vide*, for instance, ACA, registro 1231, fols. 56-59, 65-68.

Like most other contemporary monarchs guilty of this practice, the prince of Aragon was an honest counterfeiter, who coined foreign money only in order to reap the seigniorage, which (inasmuch as the mint contracts explicitly required the lessees to turn out coins of full weight and exact fineness¹) obviously afforded the sole possibility for "legitimate" profit.²

From 1271 to 1369 no Valencian money was struck, but alien gold and silver and the Valencian *menuts* doubtless provided satisfactory media of circulation.³ That there was no significant opposition to *menuts* is attested by the obstinate resistance of the Estates General (Corts) to their being smelted to provide alloy for the coinage of florins in the 1370's⁴ and by the fact that on March 24, 1300, Murcia, finding Castilian money intolerable, petitioned the King of Aragon for the extension of *menuts* to that kingdom, offering to submit to the substantial tax levied upon Valencia and Majorca in 1266 in return for the grant.⁵

In the twelfth and thirteenth centuries — after some four hundred years of virtually exclusive dependence upon silver money (including vellon) — the revival of trade, the growth of population, the rise of cities, the contact of the crusaders with Levantine gold money, the discovery of important gold deposits in Silesia and Hungary, the expansion of commerce with the gold-produc-

¹ The contracts generally stated that in case the foreign prince should change the weight or fineness of his money, the Valencian counterfeiter must scrupulously adopt the alteration (*vide*, for instance, ACA, registro 1231, fols. 65-68; Joaquim Botet, *op. cit.*, III, 339).

² In 1370 Aragonese diplomatic representatives reproached Castile for striking base Aragonese money and insisted that Castilian coins counterfeited in Aragonese mints were at least as good as the genuine products (*ibid.*, II, 146).

³ While passing through Valencia on his return from the abortive attempt to wrest Almería from the Moors, on April 3, 1310, James II was forced to pay his "knights and others" in Aragonese vellon (*moneda jaquesa*), which, to favor the recipients, he made legal tender at a premium of 50 per cent over Valencian *menuts*. But facing spirited opposition from the city council, which denounced this action as a flagrant violation of the royal pledge of 1266, on the same day James II revoked the legal-tender status of the Aragonese coins (ACA, registro 206, fols. 110, 113; *Aureus Opus*, fol. 50; José Martínez Aloy, *Geografía General del Reino de Valencia*, I [Barcelona, 1924], 395; José Teixidor, *Antigüedades de Valencia* [Valencia, ed. 1895], I, 119; Felipe Mateu, *op. cit.*, p. 26).

⁴ *Furs*, fols. 134, 147; ACA, registro 1353, fols. 80-81; Felipe Mateu, *op. cit.*, p. 35.

⁵ ACA, *Colección de Cartas Reales*, Jaime II, 804.

ing regions of northwestern Africa, and the development of industries which tended to reverse the unfavorable balance of trade with the Levant — a gateway to the Crimean gold fields: all these provided the means and created a favorable conjuncture for a revival of the coinage of gold.¹ Although their action may possibly have been anticipated by isolated minting of indigenous gold pieces two or three decades earlier, Florence and Genoa inaugurated the permanent coinage of gold in 1252; and during the next four decades most of the important commercial cities of northern Italy followed their example. Efforts to mint gold in England in 1257 and in France about ten years later proved premature; but, except in Poland (where the experiment was delayed until 1528, when the recommendation of Copernicus prevailed), after the turn of the century the emission of gold money spread rapidly throughout northern Europe and became general before 1350. Owing to its superior beauty and to the international financial prestige of the Florentine Republic, the florin served as a model for the first gold coins of many countries.

Although Catalonia and Valencia traded actively in the entire Mediterranean basin and maintained intimate political and economic contacts with Italy, the tenacious preference of the Aragonese subjects for their traditional coins together with the coronal pledge against monetary innovation delayed the issue of gold money in the realm of Aragon until after the suppression of the separate line of Majorcan kings under Aragonese suzerainty and the consequent direct annexation of Cerdagne and the Roussillon had supplied territory unaffected by the accessional inhibition.

On August 7, 1346, two years after the conquest of the trans-Pyrenean provinces, Peter IV (1336-1387) established a mint at Perpignan and provided for the coinage of Aragonese florins.² Since these florins were based on the Florentine original, it is

¹ Cf. Marc Bloch, *op. cit.*, *Annales d'Histoire Économique et Sociale*, Janvier, 1933, pp. 4-8, 25-31; W. A. Shaw, *The History of Currency* (London, 1896), pp. 1-14.

² Joaquim Botet, *op. cit.*, II, 122; Josef Salat, *op. cit.*, I, 117.

Although gold had been steadily coined in France since the reign of Philip the Fair, an issue of French "florins" was first authorized on April 27, 1346 (A. Blanchet and A. Dieudonné, *Manuel de Numismatique Française*, II [Paris, 1916], 248).

believed that they were 24 carats fine and weighed $1/68$ of a Perpignan mark. On March 29, 1349, imitations of Florentine and French coins, both of pure gold,¹ were authorized;² but the absolute purity of the gold money was not long maintained. Depletion of the public treasury by the bloody civil war against the Aragonese and the Valencian Unions and by the struggle for empire against the Majorcan King and the Genoese-Pisan claimants to Sardinia, together with the exhaustion of the sources of public revenue by the Black Death, educed progressive debasement. In 1352 (probably on the eve of his departure to quell an insurrection in Sardinia) Peter IV reduced the fineness of the florin to $22\ 3/4$ carats (94.79 per cent), and in the next decade the mint at Perpignan was farmed at least seven times for the coinage of florins of this fineness.³

Purportedly in order to obstruct the loss of gold to France because of the high mint price resulting from the light weight of the French coins,⁴ on June 29, 1362, Peter IV lowered the fineness of the florin to 22 carats (91.67 per cent) and ordered the farmers of the Perpignan mint to raise the price of bullion accordingly. A distinctive sign differentiated these coins from their finer predecessors.⁵

In 1353 Aragon became embroiled in the bloody, cruel, and protracted civil war in Castile, espousing the cause of the Pretender, Henry of Trastamara, against Peter the Cruel. To provide funds for this conflict and to ameliorate the scarcity of

¹ On May 6, 1349, Philip VI instituted the *écu d'or*, 21 carats fine, the first French gold coin to be minted with an alloy (A. Blanchet and A. Dieudonné, *op. cit.*, II, 248).

² Josef Salat, *op. cit.*, II, "Pruebas," 33; Joaquim Botet, *op. cit.*, II, 123.

³ *Ibid.*, II, 124-126; Felipe Mateu, *op. cit.*, p. 32.

⁴ From October 31, 1354, to April 15, 1359, the weight of coined gold rated at 25 sous *fournois* declined from $1/52$ to $1/69$ of a mark; but on December 5, 1360, it rose to $5/252$ (A. Blanchet and A. Dieudonné, *op. cit.*, II, 255-256).

Obviously the King of Aragon was poorly informed concerning French money. On June 29, 1362, he authorized an issue of French florins 21 $1/2$ carats fine and weighing $1/68$ of a mark, "like the said florins of the king of France" (Joaquim Botet, *op. cit.*, III, 333). But France was not then minting and, in fact, had never issued gold money 21 $1/2$ carats fine, although there had been coins of 22, 20, and even 18 carats (cf. A. Blanchet and A. Dieudonné, *op. cit.*, II, 225, 230, 233-234, 242, 244, 247-248, 255-256).

⁵ Joaquim Botet, *op. cit.*, II, 126-127; III, 332-333.

money, "which is a great injury and disservice to the entire country," the Catalan Estates General in session at Tortosa in 1365 authorized Peter IV to lower the fineness of florins to 18 carats (75 per cent),¹ with the weight remaining 1/68 of a mark, and to coin 100,000 marks of fine gold at Perpignan in the next two years.² The gold content of the florin established at this time never changed; and on April 16, 1365, Peter IV provided for the recoinage of all the outstanding pieces, reducing them to 18 carats.³

The crushing defeat of the Aragonese and the Valencian Unions of nobles and municipalities late in 1348 strengthened the authority of the Crown sufficiently to render possible the coinage of gold in the kingdoms south of the Pyrenees in defiance of popular objections exacerbated by failure to observe the coronal abjuration of monetary innovations; but the step was not taken until December 2, 1353, when Peter IV farmed the privilege of minting florins anywhere in Catalonia, including the Duchy of Gerona and the County of Cervera.⁴ Royal preparations for a secret issue of florins, presumably below the legal standard, were forestalled in 1365 by a vigorous protest from the Catalan Estates General.⁵ Advised by mint technicians and other monetary experts that such a policy would double the yield of the seigniorage, on August 22, 1369, Peter IV farmed for one year the privilege of coining gold at Barcelona, Saragossa, and Valencia;⁶ and from this time forward gold was steadily minted in the Mediterranean kingdom.

In striking contrast with the jeremiads emanating from countless partisans of the gold standard upon its abandonment in

¹ Presumably even baser florins had been coined (whether overtly or covertly is not known) with the consent of the King. On September 17, 1353, Peter IV revoked a concession to Ramón Boxadó to mint florins only 16 carats fine (Joaquim Botet, *op. cit.*, II, 124).

² ACA, registro 1506, fols. 74-76; AMV, *Privilegios de Alfonso III*, no. 44; *Cortes de Cataluña*, II (Madrid, 1899), 302-305; Josef Salat, *op. cit.*, I, 118; Joaquim Botet, *op. cit.*, II, 127; III, 444.

³ *Ibid.*, II, 128.

⁴ *Ibid.*, II, 124.

⁵ *Ibid.*, II, 128-129; *Furs*, fol. 134; Felipe Mateu, *op. cit.*, p. 33.

⁶ Archivo Regional de Valencia (hereafter AR), *Real: Títulos y Enajenaciones*, lib. II, fol. 122; Joaquim Botet, *op. cit.*, II, 130-131.

country after country in the last two decades, predilection for the traditional vellon money, coupled with the fact that gold had never before been coined in Valencia (not even by the Romans or the Moors)¹ and with the suspicion that menuts would be smelted to obtain alloy, evoked loud and bitter parliamentary protests against the introduction of florins and strenuous efforts to impede their becoming legal tender. The Estates General of 1365, 1369-1370, and 1374 denounced the coinage of base florins, "to the great detriment and injury of the body politic," and successfully petitioned the Crown to prohibit the smelting of menuts and to deny the florin legal-tender status.² According to Josef Salat,³ the exemption of florins from the general ban on the exportation of money and specie⁴ in 1365 and 1370 purposed to give them currency; but it appears that this legislation may have been designed largely or exclusively to attract specie to the mints.⁵

In the beginning the Aragonese florin was apparently not tarified in the kingdom of Valencia, but it circulated at 11s. In June, 1370 — less than a year after coinage had commenced in this kingdom — the city of Valencia paid a commission of only £7 16s. 2d. to exchange vellon coins, at 11s. per florin, for 6240 of the 10,000 florins promised the King to expend on galleys for Corsican waters.⁶ In 1382-1384, the earliest period for which the records are available, the master of the mint at Valencia counted the florin at 11s.⁷

On April 15, 1388, John I (1387-1395) farmed the privilege of

¹ Josef Salat, *op. cit.*, I, 4.

² *Furs*, fols. 134, 147; ACA, registro 1353, fol. 80.

In the Cortes of Tortosa in 1365 the florin was made legal tender in Catalonia and tarified at 11s. (*Cortes de Catalunya*, II, 304-305; Josef Salat, *op. cit.*, II, "Pruebas," 39); and a *cria* of April 22, 1370, interdicted the rejection of florins on the pretext that they lacked a metallic "ring" (*ibid.*, II, "Pruebas," 40).

³ *Op. cit.*, I, 119-120; II, "Pruebas," 39-41.

⁴ Joaquim Botet, *op. cit.*, II, 127, 134; *Furs*, fols. 134, 147.

⁵ A clause prohibiting the exportation of bullion, foreign coins, and all domestic coins save the ones to be struck was then a common feature of mint contracts (*vide*, for example, ACA, registro 1353, fol. 81; registro 2260, fols. 88-95).

⁶ AMV, *Cleverte Consols*, letra I, 4, fol. 2.

At the maximum legal rate in Barcelona, 1d. per florin (*Cortes de Catalunya*, II, 305), the commission would have been £26.

⁷ AR, *Maestre Racional: Tesoreria*, leg. 488, ca. 9982.

coining 25,000 Perpignan marks of fine gold into florins of the conventional standard or into pieces of pure gold, 90 $\frac{2}{3}$ to the mark,¹ in any of the mints of the realm of Aragon except the Majorcan;² but the records fail to disclose that florins of pure gold were struck in Valencia.³ No further changes in gold money occurred before 1426; and the mint was inactive, florins (18 carats fine and weighing $\frac{1}{68}$ of a mark of Perpignan) being coined only in 1388-1389, 1411-1412, and 1417-1419.

To alleviate the acute scarcity of fractional money resulting from the complete cessation of vellon coinage during more than a century, in 1393⁴ John I provided for the first emission of silver since the reconquest. From a Valencian mark 11 dineros 6 grains (93.75 per cent) fine 68 reals, tarified at 18d., were struck. Extant documents fail to disclose the quantity of bullion minted; but some reals were issued, for the competent Valencian numismatist, Sr. Mateu, has catalogued four specimens.⁵ The vigorous royal complaint against the paucity of the seigniorage upon silver, addressed to the *baile* on October 27, 1397,⁶ and the dearth of surviving coins suggest that the output was small.

Owing to the difference in the units of weight for gold and silver and to the impossibility of ascertaining the precise metrological equivalent of either, I am unable to determine the exact bimetallic ratio established in 1393; but sufficient accuracy for most economic analyses can be attained. That the Valencian mark, used for silver, contained about 236.67 grams is fairly certain;⁷

¹ Which would give an identical gold content.

² Joaquim Botet, *op. cit.*, II, 167; III, 352.

³ AR, *Maestre Racional: Tesorería*, leg. 488, ca. 9985.

⁴ The exact date is not known, but the year can be established. A Catalan mint contract of November 10, 1394, referred to a recent provision for the coinage of Valencian silver; and six days later John I mentioned having farmed "last year" the privilege of minting silver in Valencia (ACA, registro 1984, fols. 12-18; registro 1384, fols. 3-4; Joaquim Botet, *op. cit.*, II, 165-166; Felipe Mateu, *op. cit.*, pp. 48-49).

⁵ *Op. cit.*, pp. 50-51.

⁶ ACA, registro 2229, fol. 34.

⁷ Metrological tables commonly list 355 grams as the equivalent of the Valencian pound, which contained 1.5 marks. That the Castilian pound weighed 460.093 grams is well known. The ratio of the Valencian to the Castilian pound in the numerous purchases of delicacies in Valencia from 1508 to 1513 for consumption by *Juana la Loca* at Tordesillas was generally as 355 to 460.01 (Archivo General

and it appears that the mark of Perpignan weighed 239.4 grams.¹ If we accept these metrological equivalents and disregard the fact that one-third of the alloy in the florin was silver,² the bimetallic ratio was 9.06 to 1.

The bimetallic ratios of other European countries were considerably higher than the Valencian,³ and proximity to the African gold deposits⁴ and the activity of commerce with the Levant hardly warranted the differential.⁵ The undervaluation of gold was probably an important factor in the greatly reduced output of florins for several decades after the introduction of the real.

On February 20, 1407, Martin I (1395-1410), possibly influ-

de Simancas, *Casa Real* [E. M.], 9-1, 9-2, 10-1). Hence it appears that the Valencian mark was equivalent to 236.67 grams. Joaquim Botet (*op. cit.*, II, 17) rated it at 237.2508 grams but adduced no documentary evidence.

¹ On June 20, 1424, the councilor "charged with collecting what remained to be paid the king for the dowry of the queen" listed 169 marks, 5 ounces, 4 dineros, 5 1/4 grains of Cologne as equivalent to 165 marks, 5 ounces, 8 dineros, 2 1/2 grains of Perpignan (AR, *Real*, lib. 454, fol. 136). If we consider the Cologne mark as 233.8 grams, the proportion gives 239.4 for the Perpignan mark.

² AR, *Real: Títulos y Enajenaciones*, lib. II; ACA, registro 1231, fols. 56-59.

When John I provided, on April 15, 1388, for the coinage of 90 2/3 florins of pure gold from a mark, with the presumable intention of duplicating the intrinsic value of the current florins, he evidently failed to consider the silver alloy. The astute medieval money changers, who eagerly awaited opportunities for pecuniary gain from monetary discrepancies, may have taken the silver alloy into account; but allowance for the silver would never have affected the ratio appreciably. For instance, adjustment for the silver would reduce the ratio for 1426-1448 from 9.94 to 1 to 9.88 to 1 and the ratio for 1479 from 12.17 to 1 to 12.06 to 1. In all cases consideration of the silver alloy would have slightly widened the chasm between the Valencian and the general European bimetallic ratios.

³ The ratios obtaining in 1393 listed by W. A. Shaw (*op. cit.*, p. 40) range from 10.59 to 1 in Milan to 13.17 to 1 in Venice. The French ratio was 10.74 to 1. Cf. Adolf Soetbeer, *Edelmetall-Produktion und Verhältnisse zwischen Gold und Silber seit der Entdeckung Amerikas bis zur Gegenwart* (Gotha, 1879), p. 119.

⁴ A large part of the gold coined in Valencia was derived from Moorish *doblas* (vide, for instance, AR, *Maestre Racional: Tesorería*, leg. 444, ca. 9517; leg. 488, ca. 9985, 9989). On September 26, 1405, the city council wrote Francisco Ferrer, master of the mint, that his absence was depriving foreign and native merchants returning from the Barbary States of an outlet for their *doblas*, and "that [thereby] the city is losing a great deal . . . because gold is leaving the country" (AMV, *Letras Miradas*, g^o, lib. VIII).

⁵ Adolf Soetbeer (*op. cit.*, p. 120) remarked that "in general the value ratio of gold to silver appears to have been somewhat lower in Italy during the Middle Ages than in Germany, France, and other countries" and suggested that the phenomenon may have been due to the advantage of gold over silver for the heavy remittances to the papacy. The fact that the Valencian ratio was virtually always below that of any important Italian city-state casts doubt upon Soetbeer's hypothesis. Valencia undoubtedly paid heavy tribute to the Holy Sea.

enced by his reign in Sicily before ascending the throne of Aragon, farmed the privilege of coining silver for $3\frac{1}{3}$ years to Thomé Galni de Beliotis¹ and Mateo Bonacursi de Berardi, Florentine merchants, for 2000 florins.² The circulation and the exportation of alien silver coins were forbidden, and Martin promised to debase the real.³ Arguing that the scarcity of fractional money was irreparably injuring trade, and that, owing to the increase in the price of bullion since the fineness of the real was fixed at 11 dineros 6 grains (with two grains of tolerance), silver could not be coined without an insufferable loss, on February 28, 1407, Martin lowered the fineness of the real to 11 dineros (91.67 per cent), with the weight, tolerance, and tariff unchanged.⁴ The bimetallic ratio became 8.86 to 1. To facilitate the coinage of reals, on December 1, 1407, Martin prohibited the minting of silver or an increase in the mint price of bullion at the mints of Majorca, Barcelona, or Perpignan and decreased the weight of the real from $\frac{1}{68}$ to $\frac{1}{70}$ of a mark.⁵ The new bimetallic ratio was 8.61 to 1, which was not only out of line with the European ratios,⁶ but the lowest point ever reached in Valencia. Extant records fail to reveal the volume of coinage under the mint contract of 1407. In fact, the King specifically renounced the right

¹ His name was also written in the same document Tomás Galter de Biliotis, and in a royal letter of December 1, 1407, it appeared as Tomás Galé de Belloch (ACA, registro 2260, fol. 160).

² Among many other privileges and immunities, the Florentines were granted the use of the royal galley, *Nuestra Señora de Montserrat*, throughout the period of their contract (ACA, registro 2260, fols. 90-91). Yet only six years had elapsed since, on January 15, 1401, Martin had declared his intention to enforce the legislation prohibiting "Florentines, Luccans, Siense, Tuscans, Lombards, and Italians to negotiate or trade in any of the kingdoms of the Crown of Aragon . . . because of their fraud, deceit . . . cunning, machinations, base treachery, dishonesty . . . and usury" (AR, *Real*, lib. 612, fols. 82-85).

In 1271 Pisans had participated in a mint contract (*vide supra*, p. 9); and in 1473 Francisco de Molina, a Venetian merchant, leased the coinage of gold for one year (Felipe Mateu, *op. cit.*, p. 80).

³ ACA, registro 2260, fols. 88-93.

⁴ ACA, registro 2260, fols. 94-95; Joaquim Botet, *op. cit.*, III, 372.

Probably because of a lack of punctuation in the statement "11 dineros 2 grans mes 0 menys" in the original document, Joaquim Botet (*op. cit.*, II, 191) and Felipe Mateu (*op. cit.*, p. 57) erroneously state that the fineness of the real was fixed at 11 dineros 2 grains rather than at 11 dineros, 2 grains more or less.

⁵ ACA, registro 2260, fols. 160-161.

⁶ Cf. W. A. Shaw, *op. cit.*, p. 40.

to require the Florentines to submit reports or render accounts.¹

On October 15, 1407, the city council resolved to establish the *Taula*, or Bank of Deposit, an institution modeled after the Taula of Barcelona, one of the earliest public banks founded in Europe, to hold the funds belonging to the "kingdom, public officials, and others" to the honor, profit, and convenience of the municipality and its residents.² Five days later the Crown chartered the Taula.³ By February 25, 1408, its organization had been completed,⁴ and it had entered upon that long and honorable career which was destined to make its name a popular synonym for unquestionable solvency.⁵

The real was not the only coin to elicit the attention of the Crown and the city council early in the fifteenth century. In the contract, on October 23, 1405, for the coinage of florins in any of the mints of the realm of Aragon until September 4, 1411, the King promised to debar from circulation the "French crowns and other foreign gold pieces which circulate freely throughout the realm with great injury and loss to the body politic" and to fix the penalty for exchanging them except at their true bullion value, presumably to be determined by assay, at the loss of the coins and a fine of 1000 morabetines. To avert "the great frauds through the counterfeiting and clipping of florins widely current today," Martin forbade anyone to receive florins without weighing them — for which purpose the master of the mint was obliged to supply scales upon request — and, on pain of confiscation, prohibited the acceptance of light pieces.⁶ The evident purpose was to force the possessors of foreign and underweight Aragonese gold coins to surrender them for recoinage. The King directed

¹ ACA, registro 2260, fol. 88.

² AMV, *Manuels de Consells*, A23, fol. 253.

³ AMV, *Manuels de Consells*, A23, fol. 285.

⁴ AMV, *Manuels de Consells*, A23, fols. 287-288, 291-293, 298.

⁵ Although the Taula failed on several occasions (*vide*, for example, Earl J. Hamilton, *American Treasure and the Price Revolution in Spain, 1501-1650* [Cambridge, Massachusetts, 1934], pp. 119 n. 2, 134) and ceased operations in the eighteenth century, its local reputation to this day has remained untarnished. In Valencia to say "I will pay through the Taula of Valencia" is still to offer the maximum verbal guarantee to meet an obligation.

⁶ AR, *Real: Titulos y Enajenaciones*, lib. II; Biblioteca Universitaria de Valencia (hereafter BUV), *Llibre de Noticias de Valencia*, Ms. 1206.

the mint farmers to pay £36 5s. per mark of florins,¹ 5s. more than the current mint price for gold bullion 18 carats fine.

In a special meeting on February 7, 1407, the city council reported to the Crown that the demonetization of underweight florins had entailed significant losses, forcing their possessors to deliver them to a mint for recoinage, with a depreciation of 7d. each for seigniorage² in addition to the loss from shortage in weight. The injured parties "protested with intemperate and excessively violent language to the officers and, particularly, to the farmers of the mint; and the public suspected the guards and the inspectors" who watched over the processes of coinage, as well as the officials who released the florins. The councilors argued that under rigid enforcement of the law a full-weight coin subjected to normal abrasion could not circulate more than four years. Since currency at face value irrespective of weight would "quickly lead vicious individuals to clip all the florins," the council decided that the tale of all pieces weighing $1/68$ of a Perpignan mark should be 11s., with 1d. added or subtracted for every half-grain of surplus or deficiency in weight. In accordance with the recommendations of the city council, on February 16, 1407, Martin fixed a penalty of 20s. for refusal to pay or receive florins at 11s. with an adjustment of 1d. for each half-grain of over- or underweight; and, to facilitate the operation of the new plan, the master of the mint was directed to prepare and seal weights graduated from $1/2$ to 100 florins.³ In the next few decades purchases and repairs of scales to test florins frequently appeared in ecclesiastical and institutional account-books.⁴ On March 11, 1407, the city council cordially accepted a proposal from the municipal council of Barcelona that neither city independently of the other should petition the Crown for a substantial alteration of the *crida* of February 16 regulating the

¹ Although his supporting document (*op. cit.*, III, 419) gives the correct figure, Joaquim Botet states that the mint price for florins was £35 5s. (*ibid.*, II, 201).

² This is an error. The loss from seigniorage was slightly less than 4d. per florin.

³ AMV, *Manuels de Consells*, A23, fols. 139-141. This *crida* was promulgated in Barcelona one day later than in Valencia (Joaquim Botet, *op. cit.*, III, 419-421).

⁴ *Vide*, for instance, Archivo de la Catedral de Valencia (hereafter ACV), leg. 1485, fol. 22.

currency of florins; and the Valencian council favored the institution of a public weigher (*balanza de justicia*) of irreproachable probity to pass upon these coins.¹ In response to the vigorous protests from the mint farmers evoked by the decline in the receipts of bullion resulting from the legal circulation of light florins, Martin issued a *crida* on January 3, 1409,² ordering individuals having gold for sale to carry it to a mint and requiring brokers cognizant of such bullion to report the fact to the master of the mint.³

If the coins that can be traced into or out of the hands of the Cathedral were random samples,⁴ the wholesale complaints against the clipping and counterfeiting of florins were grossly exaggerated. On 137 1/2 florins delivered for recoinage in April, 1406 the Cathedral incurred a loss of 17 florins 5s. 7d., or 12.73 per cent, which, after allowing for the seigniorage (including coinage fees) of 3.07 per cent,⁵ represented a metallic deficiency of only 9.66 per cent. Forty-five florins presented for recoinage in January, 1407 were 1.48 per cent short in weight, and on 180 florins disbursed in April, 1407 — when the circulation of light pieces was tolerated — only 2d. each, or 1.52 per cent, was deducted.⁶

One cannot deny the possibility that the public discrimination against florins merely reflected an appreciation of fractional money resulting from undue scarcity. The preamble to the *crida* of February 28, 1407, which lowered the fineness of the real, declared that on account of the paucity of vellon money "only with difficulty can florins be exchanged for menus for change and petty transactions without a heavy discount on the florins."⁷ The integrity of the coins tested by the Cathedral tends to confirm this hypothesis.

¹ AMV, *Manuels de Consells*, A23, fol. 156.

² Promulgated in Valencia on March 11.

³ AR, *Beitta*, lib. 1144, fol. 275.

⁴ There is strong reason to believe that the florins were actually below the average. The receipt and expenditure of pieces of exact weight gave rise to no balancing entries by which the type of coin could be identified.

⁵ The seigniorage on ordinary bullion was 3.74 per cent. The mint differential of 5s. per mark in favor of florins accounts for the discrepancy.

⁶ ACV, leg. 1476.

⁷ ACA, registro 2260, fol. 04.

It appears that the emission of sufficient reals by the Florentine mint farmers in 1407-1410 to destroy the public preference for fractional money set in motion the undervaluation of gold by the Valencian bimetallic ratio, causing a significant drain of the yellow metal into foreign countries. The loss of specie perturbed the Valencians, staunch partisans as they were of the mercantilist concepts regarding treasure, and about 1420 educed a nostrum by Francisco Ferrer, master of the mint, for the reform of the gold coinage. The purpose of Ferrer's memorial addressed to the Crown was to avert the "incessant exportation of florins . . . which greatly impoverishes the kingdom and consequently your Majesty." According to Ferrer, the increase in the quantity of money (which, in mercantilist fashion, he identified with wealth) depends upon two factors: first, abundant imports of gold and silver; and, second, the retention of the present stock and the future imports of treasure. To attain the first objective, the mint price of fine gold should be raised from £48 to £50 8s. per mark. The existing legislation could be relied upon to attract and hold silver. The simple expedient of altering the fineness, weight, and tariff of florins sufficiently to extinguish the profit on their exportation would retain gold within the kingdom "even without guards." Ferrer recommended the coinage of 64 florins tarified at 15s. from a mark 21 carats fine. The king would gain 58s. per mark "without cost to the kingdom"; and the widely current manufacture of hollow coins would cease, for, when thus counterfeited, the larger and finer florins would bend too easily. The weight of the new florins could be readily ascertained, since 1/8 of an ounce was a common commercial unit of weight. Ferrer recognized that the value of gold was not immutable and pointed out that any future loss of specie resulting from a higher price abroad could be corrected by an adequate additional increase in the mint price. To farm the mint to the Deputation of Valencia (General del Reino) would promote integrity of the coinage and afford pecuniary gain to king and kingdom.¹

Doubtless influenced by this memorial and by advice from the syndic and the city council, Alfonso V (1416-1458) maintained

¹ AR, *Real: Títulos y Enajenaciones*, lib. II, fol. 225.

in a crisis of September 27, 1426, that the impossibility of paying more than £48 per mark of fine gold for the coinage of florins, when the prevailing price "in other places" was £54, had entirely precluded deliveries of bullion at the mint and had occasioned such an "exodus of florins that very few remain in the city and kingdom to the great and perdurable destruction of commerce." To restore the gold money Alfonso V instituted the *timbre*,¹ a coin weighing 1/96 of a Perpignan mark, 20 carats (83.33 per cent) fine,² and tarified at 10s. The *timbre* was to be issued experimentally over a period of ten years, upon the expiration of which, if the metropolis so desired, the Crown would be obligated to stop its coinage and to retire the existing pieces from circulation. To forestall popular objections, the *timbre*, like the florin in its infancy, was not made legal tender.³ The city council was apparently convinced that the *timbre* was a sound monetary unit; for it survived the experimental period and, along with the florin, was an important medium of circulation for almost half a century.

If we compare reals and timbres, the bimetallic ratio established in 1426 was 9.94 to 1, a figure still below the prevailing European standards, but possibly not a great deal more so than the closer proximity to the African gold deposits warranted.

Like the ducat in Castile after 1537 and in Valencia after 1544,⁴ the florin was widely employed as an accounting unit at 11s. for at least six decades after its commercial tariff had risen above this figure. The use of florins as a money of account and their circulation by weight (with appropriate deductions for shortage) render it difficult to determine their exact market tariff; but the records of the Cathedral,⁵ the mint,⁶ the city of Valencia,⁷ and

¹ The official title was *real d'or de Valencia*, but *timbre* was invariably used in commercial papers and almost always in official documents.

² The tolerance on fineness was 1/4 carat and on weight, 18 grains, or 0.39 per cent, in a coined mark. Hence it appears that the mint weighed timbres in lots of a mark rather than individually.

³ AMV, *Privilegios de Alfonso III*, no. 44; Joaquim Botet, *op. cit.*, II, 240-241; III, 444-447.

⁴ Earl J. Hamilton, *op. cit.*, pp. 55 n. 3, 87 n. 5, 110, 120.

⁵ Particularly legn. 1481-1485.

⁶ AR, *Moestre Real: Tesoreria*.

⁷ AMV, *Ciudad Concelo*.

the Hospital dels Inocents¹ furnish fairly continuous and, when critically examined, reliable data. I have found no evidence that the legal tariff of the florin was advanced upon the introduction of the timbre; but at least by 1434 (and probably in 1426) the market tale of full-weight coins rose to 12s. 9d., which corresponded closely to their bullion content coined into timbres,² and remained steady at this figure until 1450.³

According to Felipe Mateu,⁴ additional vellon money of the "identical type"⁵ introduced by James the Conqueror was authorized in 1421 and imitated at Perpignan in 1427; but one cannot be sure that Alfonso V coined vellon at this time. I have found no legislation fixing the weight and fineness of the menuts issued in 1450,⁶ but the mint records show that 22s. 6d. in pennies and half-pennies was struck from a mark containing only 1 dinero 20 grains of silver 11 1/2 dineros fine, making the pure silver content 15.28 per cent.⁷

Probably in order to harmonize the abraded reals in circulation with new coins, in 1442 the weight of the real was reduced to 1/72 of a mark.⁸ But this legislation apparently remained latent

¹ *Llibres de Administració*.

Josef Teixidor (*op. cit.*, I, 124-128) also gives a few figures taken from primary sources, but the data of the friar — whose undoubted erudition did not include proficiency in economics — must be used with caution. For instance, he utterly failed to distinguish between the florin as a coin and as an accounting unit and was thus led to the palpably erroneous conclusion that through 1485 "the value which the Aragonese florin regularly had in the city and kingdom of Valencia was 11 Valencian shillings" (*ibid.*, I, 129).

² The mathematical value was 12s. 8.47d.

³ In 1447 the Convento de Val de Crist at Altura, a village near Segorve, spent 20 florins at 12s. 5d; but the pieces were probably short in weight (Archivo Histórico Nacional [hereafter AHN], *Clero, Castellón*, leg. 16).

⁴ *Op. cit.*, pp. 69-71.

⁵ Owing to the change in the price of silver since the thirteenth century, one wonders whether the identical silver content could have been maintained in 1421.

⁶ A scarcity of fractional coins may have induced the influx of base vellon money from Cagliari, Sardinia, in the 1440's. A crida designed "to avert the infinite and irreparable harm" resulting from the circulation of these coins was promulgated on December 18, 1449; and on December 27 the city council reported that everyone was "reluctant to accept them at any price" (AMV, *Lletres Misives*, g³, lib. 21, fol. 65).

⁷ AR, *Maestre Racional: Tesorería*, leg. 355, ca. 8484.

⁸ Felipe Mateu, *op. cit.*, p. 68.

until May 17, 1449, when the first of the new reals entered circulation.¹

From 1450 to 1465 the mint rated the florins released for circulation at 12s. 8d.;² but the reduction in the weight of the real in 1449 gave the florin a theoretical value of 13s. 1.4d., and its market tale fluctuated around this figure. In the ten cases unearthed of unquestionable exchanges for reals,³ the average tariff of the florin was 13s. 2d; the extreme range was from 12s. 8d. to 13s. 6d., but in eight cases the fluctuations did not rise above 13s. 4d. nor fall below 13s.⁴ I have found only one case in which, as one would expect *a priori*, the timbre exceeded the legal rating. In April, 1480 the Cathedral exchanged one at 11s. 4d.⁵ But the utilization of the timbre at 10s. as a money of account obscured the phenomenon, and the continuous clipping to which it was subjected probably tended to harmonize its market value with the accounting and legal tariff. There is strong reason to believe that good timbres largely disappeared from circulation. If one counts the florin at 13s. 2d., the bimetallic ratio from 1450 to 1465 remained virtually unchanged at 10.02 to 1.

Alfonso V revived the princely counterfeiting which had apparently lapsed since the third quarter of the fourteenth century. On December 1, 1428, he instructed the master of the mint to coin approximately 500 marks of silver into pieces of exactly "the same stamp, weight, and fineness struck" in the Moorish kingdom of Granada.⁶ While preparing to press his claim to the

¹ AR, *Maestre Racional: Tesorería*, leg. 355, ca. 8484.

² AR, *Maestre Racional: Tesorería*, leg. 355, cas. 8485-8492.

³ Especially in ACV, leg. 1483; Hospital dels Innocents, *Llibres de Administració*, 1450-1465; AR, *Maestre Racional: Tesorería*, leg. 355, 401.

⁴ Occasionally the rating at 11s. as a money of account gave rise to argument concerning the commercial tariff of the florin. In August, 1456 the Monastery of Val de Crist delivered to the Gran Cartuja 1300s. to pay a contribution of 100 florins toward the reparation of a building damaged by fire but later attempted to recover 200s. on the ground that the florin should have been counted at 11s. The Gran Cartuja replied that all other contributors had considered the florin as 13s; and in March, 1458 Val de Crist accepted this tale and discontinued the claim for overpayment (AHN, *Clere, Castellón*, leg. 16).

⁵ ACV, leg. 1483, fol. 7.

⁶ ACA, registro 2712, fol. 57; Joaquim Botet, *op. cit.*, II, 241; Felipe Mateu, *op. cit.*, p. 71.

vacant throne of Naples¹ against René d'Anjou and against the Holy See supported by the Genoese and the Visconti, on March 23, 1435, Alfonso V wrote the Valencian baile from Messina to smelt the 59,466 florins 7s. 3d. derived from the subsidy and a levy upon the clergy, together with the indeterminate quantity of florins expected from other sources, in order to mint Genoese ducats of the proper weight and fineness, "which can be done at a profit," and to send the proceeds posthaste to his Majesty. In the event that a large quantity of gold could not be coined, the baile was ordered to purchase silver to strike *gillats*² "of a good weight and fineness," using as a model the specimen to be delivered by the merchant, Juan de Marroma.³ As we have seen, in the second epoch of counterfeiting the prince of Aragon, measuring up to the high traditions of his line, was an honorable counterfeiter who skimmed neither on the weight nor the fineness of his coins.

The greatly augmented output of silver from the central European mines⁴ and the Catalan uprising of 1461-1472,⁵ which diverted specie that would otherwise have gone to the mint at Barcelona, gave a powerful stimulus to coinage in Valencia. In 1462-1470 the heavy total of 23,304.2 marks of standard silver was minted.⁶ This figure was not exceeded in any decade prior to 1611-1620; and it surpassed the output of reals from the Valencian mint in the entire second half of the sixteenth century,⁷ when the mines of New Spain and Peru were transcending the wildest dreams of the *conquistadores*.

Although Valencia escaped the confusion resulting from the

¹ Queen Joanna had died without an heir in February, 1435.

² A Neapolitan coin.

³ AR, *Real*, lib. 455, fols. 158-159.

⁴ Jakob Strieder, *Studien zur Geschichte kapitalistischer Organisationsformen* (Munich and Leipzig, 1914), pp. 6-11; Adolf Soetbeer, *op. cit.*, pp. 14-16.

⁵ Precipitated by the death of the Prince of Viana, supposedly from poison administered at the behest of John II or the Prince's hostile mother-in-law, Joanna Enriquez, who coveted the throne of Aragon for her progeny.

⁶ *Vide infra*, Appendix I.

Considerably more than twice as much silver was coined in the London mint in 1451-1475 as in the preceding half-century and slightly more than in the first quarter of the sixteenth century (Ethel Stokes, "Tables of Bullion Coined," *Numismatic Chronicle*, 5th Series, LX, 27-69).

⁷ Earl J. Hamilton, *op. cit.*, p. 126.

protracted princely alteration which the Catalan money underwent during the revolt, clipping (and to a less extent counterfeiting), which may have commenced at this auspicious time, had reduced the reals and timbres in circulation to a deplorable state by the close of the reign of John II (1458-1479).¹ Constantly preoccupied with intrigues at home and abroad, particularly in Castile and Navarre, John II neglected monetary reform, his legislation for Valencia being limited largely to a royal order of January 27, 1475, directing the baile to exercise "great diligence in detecting counterfeiters and [in] imprisoning them until his Majesty is consulted."²

When Ferdinand the Catholic ascended the throne of Aragon, the degradation of the coinage was no longer tolerable; and efforts toward improvement were not long delayed. On January 14, 1480, the city council advised his Majesty that a commission investigating means of "benefiting the kingdom through restoring the greatly deteriorated reals and timbres" was expected to reach a decision presently; on February 21 the Estates General, the municipal council, and certain royal councilors were still deliberating upon monetary reform,³ and on March 27 the municipal government of Murcia was advised that plans for reform had not been adopted.⁴ The city council wrote the Crown, on April 8, that after many days of arduous labor and animated discussion the commission appointed by his Majesty, with the consent of the Estates General, to end monetary disorder⁵ had rendered its report and that an ordinance promulgated in Valencia on April 6, and subsequently in Castellón de la Plana, Játiva, and Orihuela, had provided that reals and timbres should

¹ The overvaluation of silver at the mint naturally offered a constant temptation to clip reals; and the tendency of the public to accept the overrated coins, even when clipped, pulled in the same direction. The low legal tariff of timbres strongly invited clipping.

² AR, *Real*, lib. 506, fol. 127.

³ AMV, *Lletres Mirades*, 2^a, lib. 29, fol. 200.

On January 18 the city council exhorted Ferdinand to observe his coronal oath and to instruct the baile to guard against its violation.

⁴ AMV, *Lletres Mirades*, 2^a, lib. 29, fol. 201.

⁵ AR, *Maestre Racional: Tesoreria*, leg. 357, ca. 8550.

circulate by weight only¹ and had required every holder of these coins to deliver them at one of the twelve specially created exchange offices² to be counted, weighed, and deposited in the chests of the royal treasury. To avert hardship upon the poor, provision had been made "in the principal and most public places in the city" for the exchange of vellon money for small quantities of reals and timbres.³ In April-June, 1480 fractional money was borrowed to constitute a redemption fund.⁴

As often happens, deflation proved incontestably more unpopular than had the degraded coinage. On April 6, the very day that the reformatory ordinance was preconized, ominous murmuring and articulate discontent led the city council to commission six assistant criminal justices, armed with plenary powers, to repress any uprising that might ensue.⁵ On May 20 the city council informed the King that the crida of April 6 had evoked a turbulent protest from the populace and that precautions against social disorder were necessary. And on June 4 the municipality wrote Ferdinand that a certain fraction of the disgruntled burghers had commenced "some agitation"; had petitioned the city council for redress; and, after failing to be placated by the assurance that the monetary commission enjoyed and, in fact, had already exercised the authority to amend the unsavory legislation when conditions warranted, had "in a very dishonorable manner elected a commission" to lay their claim personally before the Crown. The city councilors confidently hoped that his Majesty would receive the commissioners in such a fashion "that neither they nor those who remain here will ever again dare to embark upon such a venture."⁶ Apparently the social disorder had subsided by June 10, for on this date the municipal

¹ Crides of June 6, 1480, and March 2, 1481, prohibited the payment or the acceptance of "any gold or silver coin whatsoever" that had not been weighed upon scales bearing an official seal (AMV, *Manuels de Consells*, A42, fols. 14, 92).

² Each office was controlled by a member of the Estates General or a competent deputy.

³ AMV, *Lletres Missives*, g³, lib. 29, fol. 207.

⁴ AMV, *Claverta Consells*, N41, fol. 3; *Manuels de Consells*, A41, fol. 326; A42, fols. 20, 25, 28, 110.

⁵ AMV, *Manuels de Consells*, A41, fol. 316.

⁶ AMV, *Lletres Missives*, g³, lib. 29, fol. 215.

council referred in the past tense to "some meetings and movements because of monetary changes."¹

To place the recoinage of timbres and reals under popular control, with mitigation of the anticipated public dissatisfaction presumably in view, on April 5, 1480, the mint was farmed to the Estates General for three years² for the purely nominal annual payments of one mark of silver and one of gold.³ Efforts to locate the records of the mint as well as those of the public exchange offices during this period having failed, it is now impossible to estimate the quantity of recoinage. Neither the Cathedral nor the Hospital dels Inocents paid the slightest attention to the injunction to surrender their reals and timbres by April 10; the Cathedral disbursed both coins (by weight to be sure) as late as May 12,⁴ and through September 22 the Hospital paid out reals and timbres with appropriate deductions for shortage in weight.⁵ On July 28 the city of Valencia held at least a hundred marks of the proscribed reals.⁶ Spanish monetary history is replete with futile efforts to force the holders of coins to surrender them to, or even to declare them before, public authorities;⁷ and, when a revolutionary movement was patently brewing, it is highly improbable that the government pressed individuals to come forward with their reals and timbres. Yet some reals were recoined.⁸ The municipality of Valencia sent reals to the mint on April 17, 1480, for recoinage.⁹ On June 10, 1480, the city council assured Ferdinand that his exhortation of May 30 to

¹ AMV, *Lletres Miseses*, 8^a, lib. 29, fol. 217.

² AR, *Maestre Racional: Tesoreria*, leg. 355, ca. 8492.

The Estates General apparently sub-leased the mint to professional farmers.

³ AR, *Maestre Racional: Tesoreria*, leg. 357, ca. 8550.

⁴ ACV, leg. 1483, fol. 30.

⁵ *Llibres de Administració*, 1480.

⁶ AMV, *Manuels de Consells*, lib. 42, fol. 23.

⁷ *Vide*, for instance, Earl J. Hamilton, *op. cit.*, pp. 88-89, 95, 118-119.

⁸ On February 1, 1483, Ferdinand said that the "coinage of the said silver [that is, the recoinage of reals] soon ceased" (AR, *Maestre Racional: Tesoreria*, leg. 357, ca. 8550).

⁹ AMV, *Manuels de Consells*, A41, fol. 316.

The records fail to indicate the exact quantity of reals. The city wrote off a loss of £946 17s. 2d. on the coins in its possession when the reform decree was promulgated, but the records fail to indicate either the amount or the kinds of money involved (AMV, *Closets Consells*, N41, fol. 11 ff.)

make certain that money was expeditiously struck to replace the retired coins was being respected;¹ and on July 28 the council instructed the *clavari de quitament dels censals* to deliver a hundred marks of old reals to the mint, which, in accordance with a recent provision by the "magnificent governor," would return "new and good money within a few days."² In response to general complaint, on August 21 the city council ordered the master of the mint to open the closed section of Zapatería Street, "where money is being coined," in order not to interfere with the traditional bullfights.³

In the absence of documentary evidence the extent of the actual monetary restoration is a matter of sheer conjecture. The best guess seems to be that the worst reals were recoined and that the ones relatively or completely free from clipping⁴ remained in circulation. Since no gold was struck during the mint concession of the Estates General,⁵ it appears that the timbres were not recoined; but the great decrease in the frequency of their occurrence in account-books after 1480 suggests that most of them were retired from circulation.⁶

The disastrous losses incurred by the Hospital dels Inocents and the Cathedral upon the reals and timbres disbursed in the spring and summer of 1480 palpably illustrate the atrocious lengths to which clipping had been carried. On a nominal value of £659 17s. 7d. in reals the Cathedral realized £349 14s. 4d., or 53.0 per cent; and £37 in timbres yielded £25 12s. 1d., or 69.2

¹ AMV, *Llibres Misives*, g^o, lib. 29, fol. 217.

² AMV, *Manuale de Consells*, lib. 42, fol. 23.

³ AMV, *Manuale de Consells*, lib. 42, fol. 29.

⁴ An insignificant quantity of counterfeit reals and timbres was in circulation at Segorve as early as 1455 (AHN, *Clero, Castellón*, leg. 16); but, even if contemporary documents did tend to speak as though the two were of equal magnitude, counterfeiting was much less serious than clipping. In 1479-1480 the alms boxes of the Valencian Cathedral and parishes collected only 28 1/2 false reals. Of 3466 1/2 reals received by the Cathedral from Murviedro in April, 1480 only 16, nominally worth £1 4s., proved to be counterfeit; and the loss on the remaining 3450 1/2 through shortage in weight was £122 10s. 3d. (ACV, leg. 1483).

⁵ In a letter from Ferdinand the Catholic to Andrés Catalá, master of the mint, on February 1, 1483, the former stated that absolutely no gold had been coined by the Estates General (AR, *Maestro Racional: Tesorería*, leg. 357, ca. 8550).

⁶ As in other cases, the bullion may not have been minted at all until considerable time had elapsed.

per cent.¹ The Hospital received only £31 5s. for 96 timbres, or 65.1 per cent of their face value; and on a sample of £24 19s. 3d. in reals² £12 11s. 4d., or 50.34 per cent, was realized.³ Why the Cathedral salvaged the higher percentage of the nominal value of both reals and timbres is not clear; but its advantage may have been due to the adequate facilities for testing coins rendered necessary by the fact that the sacristy, like the temples of old, served as a sort of bank of deposit.

Owing to the discussions of the monetary problem in the Estates General and to the common expectation of a deflationary edict, everyone was reluctant to accept reals;⁴ while possessors frantically sought to get rid of them.⁵ Hence prices and wages soared in the first quarter of 1480. The retirement of most of the timbres from circulation, the neutralization of a portion of the clipped reals pending recoinage, and the restoration of the weight of the silver coins — along with the inevitable downward reaction from the speculative heights reached by labor and commodities — proved radically deflationary.⁶ The precipitate decline of prices in the last three quarters of 1480 more than overbalanced the high averages for the first quarter and pulled the index number of commodity prices downward. The wage index fell disastrously.⁷

¹ ACV, leg. 1483.

² The loss on light reals received and disbursed by the Hospital in 1480 amounted to £180 13s. 11d; so the total nominal value was about twice this figure. Since the percentage of loss was fairly constant, however, the sample may be regarded as representative.

³ *Libres de Administració*, 1480.

⁴ In March, 1480 the Cathedral refused to accept £100 in "vile and degraded" reals offered in payment of an obligation, because of the expected monetary decree (ACV, leg. 1483).

⁵ Even the Cathedral strenuously endeavored to avert a loss by anticipating its needs for both labor and goods (ACV, leg. 1483).

⁶ On May 8, 1480, the municipal council wrote the governor of the fortress of Almansa that, "owing to the decimation of trade resulting from the recent monetary alterations," the purchasers of 95 bulls needed to supply the capital with beef had been "unable to find gold money in this city." The governor was urged to persuade the sellers to deliver the bulls. The city council guaranteed payment either in gold coins, "if they can be found, or in a bill of exchange drawn by a trustworthy dealer on Toledo or any other center that may be selected." (AMV, *Letras Misivas*, 2^a, lib. 29, fol. 210.)

⁷ *Vide infra*, p. 72.

Since no alteration of the weight, fineness, or tariff of the real accompanied the recoinage, the reform left the legal bimetallic ratio unchanged. Actually the ratio of the coins in circulation was lowered,¹ and the legal ratio was approximated.

The complete lack of market data for florins, which apparently escaped the orgy of clipping, from 1466 to 1472 and the scarcity of quotations from 1473 to 1482, when only five are available, suggest that these coins largely disappeared from circulation. In the two cases of exchanges for reals in 1473 the florin averaged 13s. 10d.² The tariff fell to 13s. 3d. in April, 1475;³ but the coins were probably short in weight. In 1477 the tale rose to 15s.,⁴ and in 1480 the Hospital dels Inocents paid 16s. each for 8 1/2 florins before the edict of April 6 and spent them at 14 1/2s. afterward.⁵

Seeking relief from the crushing burden of debt contracted during the dynastic struggle in Castile against *la Beltraneja* and her fiancé, King Affonso the African of Portugal (casually supported by Louis XI of France), Ferdinand the Catholic, then heir apparent in Aragon, resorted to counterfeiting, which on numerous occasions had extricated his forbears from financial difficulties. On June 12, 1477, the royal secretary wrote Andrés Catalá, master of the mint, that the King, owing Juan de Medina and Gómez de Valladolid large sums of money⁶ and being indebted to many others, was preparing to coin in the Valencian mint 2000 marks of gold into Venetian ducats. Anticipating the opposition destined to arise, the secretary remarked: "We are well aware that this must be done at night and very secretly." On August 6, 1477, Juan de Medina and Gómez de Valladolid

¹ It is not possible to say exactly to what extent. One cannot utilize the percentage deficiency of weight in the reals expended by the Cathedral and the Hospital, for good coins were probably excluded from these samples.

² AR, *Maestre Racional: Tesorería*, leg. 355, ca. 8492; Hospital dels Inocents, *Llibres de Administració*, 1473.

³ AR, *Maestre Racional: Tesorería*, leg. 355, ca. 8492. There was only one quotation.

⁴ AR, *Maestre Racional: Tesorería*, leg. 355, ca. 8492.

⁵ *Llibres de Administració*, 1480.

⁶ A royal letter to the master of the mint on August 10 stated that Ferdinand owed Juan de Medina 1059 florins and Gómez de Valladolid 5090 florins (AR, *Maestre Racional: Tesorería*, leg. 355, ca. 8492).

were dispatched from Medina del Campo with royal instructions for the master of the Valencian mint, "selected because of the superiority of its personnel, the excellence of its physical equipment, and the probity of its master," to strike gold money such as "French crowns, Genoese ducats, Florentine florins, Venetian ducats, and the coins of Castile or Portugal." Only mint employees of unquestionable character, chosen by the master, should know "what money is struck," and they should "take an oath and give bond in their persons and goods not to divulge the secret." In a letter of August 10 Ferdinand authorized the two creditors "to coin whatever money they wished" and to apply the seigniorage toward the liquidation of his debt.¹

In spite of the attempted secrecy, the city council soon learned of the princely counterfeiting; and so virulent was its opposition that, upon the advice of the master of the mint, Ferdinand appealed to the King of Aragon to confirm his orders. John II complied with this request on September 6 but, at the expense of Ferdinand's creditors, retained for himself one-third of the seigniorage. In response to a complaint from the master of the mint that the imposition of secrecy obstructed the purchase of bullion and the outlet for coins, on October 1 John II authorized him, upon obtaining adequate written guarantees of secrecy, to take certain gold merchants and money changers into his confidence.²

On October 2, 1477, the mint purchased bullion at £64 5s. per mark of fine gold³ and commenced to coin crowns⁴ 22 carats fine, weighing 1/68 of a mark, and tariffed at 18s; but inasmuch as the seigniorage proved disappointing, the crowns were smelted, and the coinage of *juanines*, or *ducados* *juanines*, similar to those

¹ AR, *Maestre Racional: Tesorería*, leg. 355, ca. 8492.

² The master of the mint was warned that two Jewish money changers of Murviedro were suspected of obstructionist tactics and base designs and was authorized to expel them from Valencia at his discretion (AR, *Maestre Racional: Tesorería*, leg. 355, ca. 8492).

³ This price could not have been paid for gold to coin florins at 122. 8d. each, the official tariff; for at this figure a mark of fine gold would have yielded only £57 8s. 5d., and coinage fees had to be paid.

⁴ French crowns then being coined by Louis XI were 23 1/2 carats fine and weighed 1/72 of a French mark (A. Blanchet and A. Dieudonné, *op. cit.*, II, 208).

being minted at Barcelona and Saragossa was begun. Late in November the city council attempted to force the master of the mint to suspend the emission of foreign money in violation of the constitution (furs); but the only result was the meaningless revocation, on November 30, of the latent privilege of coining timbres, florins, and reals, "in order to make some concession to the [council's] supplications." Owing to the secrecy that enshrouded their coinage we do not know how many were struck;¹ but on December 19, 1479, the indebtedness which gave rise to the princely counterfeiting had not been liquidated.²

No subsequent issues of exotic coins by the king of Aragon in Valencia have come to light. True to the Aragonese traditions to the very last, Ferdinand and John II insisted in every letter or order affecting the counterfeit money that only coins of full weight and fineness be minted.

Lamenting that no gold and little silver had been recoined during the mint contract of the Estates General and that monetary disorder had driven much specie out of the kingdom,³ on February 1, 1483, Ferdinand the Catholic resolved to alleviate the scarcity and improve the quality of gold and silver money. "We have decided . . . to coin only gold at first, because, being the more noble, if its just price is fixed, then silver, governed by it, cannot be badly ordered. We have been informed that in Spain,⁴ the Barbary States, and other places from which gold used to come to the Valencian mint the price has risen so much that bullion cannot be carried to the said mint without great loss, because our mint price is unduly low, and that gold is even being exported to the great injury of the realm, on account of its higher value elsewhere; . . . to remedy these evils, we have decided that our mint shall pay those who deliver bullion £66

¹ Neither do we know the weight and fineness of the *juanín*. A sort of *résumé* of the regulations for the coinage of gold from 1482 to 1544 found in AR, *Maestre Racional: Tesorería*, leg. 357, ca. 8558 states that before 1482 (in addition to florins) ducats called *juanines* weighing $1/67$ of a mark, $23\ 7/8$ carats fine, and tariffed at 20s. were struck; but it is easily possible that the writer confused the *juanín* with the ducat, or half-*excelente*, introduced in 1483.

² AR, *Maestre Racional: Tesorería*, leg. 355, ca. 8492.

³ "To the great injury of trade and other things."

⁴ Obviously Castile.

per mark of fine gold." Breaking with the past in the name as well as the type of the gold unit, Ferdinand provided for the coinage of *excelentes*, 33 1/2 of which were struck from a mark 23 7/8 carats fine. The tolerance remained 1/8 of a carat on fineness and 18 grains per mark on weight.¹ Quarter- and half-*excelentes* were minted; and until 1544 the latter, known as a *ducat*, was the predominant gold coin of the Valencian kingdom.

With the institution of the ducat the coinage of the florin ceased, but the existing pieces were not demonetized. From 1483 through the end year of 1500 the market tariff of full-weight coins remained steady at 16s; but, having largely disappeared during the orgy of clipping, few florins circulated.

No extant edict substantiates this view; but it appears that upon the introduction of the ducat Ferdinand dropped the mark of Perpignan, originally employed to harmonize the gold coinage of the peninsular kingdoms of the Crown of Aragon, and adopted the Valencian mark, thus unifying the standards of weight in the Mediterranean kingdom. The complete absence of the Perpignan mark in the mint records subsequent to 1483 and the references to the "new standard of weight for gold" in the account-books of the Cathedral in 1493 and 1494² tend to confirm my hypothesis.

The ducat was not made legal tender, and no official tariff was fixed. From its inception through the year 1500 the market tariff was 21s. The bimetallic ratio rose to 12.00 to 1 and remained at this figure through 1500. For the first time in history gold was overvalued at the Valencian mint, and the coinage was heavy until the close of our period.

The mint records disclose no emissions of silver during the reign of Ferdinand. In fact, the coinage apparently ended in

¹ AR, *Maestro Racional: Tesorería*, leg. 357, cas. 8550, 8558. A shorter copy of the letter to the master of the mint instituting the coinage reform is in leg. 355, ca. 849s.

² ACV, leg. 1485, fols. 20, 26. The bimetallic ratio for 1483-1500, the statistics of coinage in Appendix I, and the data in Table 2 are based on the assumption that in 1483 the Valencian mark superseded the Perpignan mark as the standard for gold. If this assumption proves erroneous, all of these figures should be corrected by applying the ratio of the exact weight of the mark to 236.67 grams.

1470,¹ more than a decade before the undervaluation of silver at the mint rendered deliveries economically imprudent.²

No vellon had been coined since the insignificant issue of 1450; and the notable increase in population and trade during the second half of the fifteenth century (when industry and commerce, profiting from the decline of Catalan competition resulting from the revolt against John II, reached their apogee) created an acute scarcity of fractional money. The foreign coins which inevitably filled the hiatus proved even more unpopular than the dearth of change. Informed that, in spite of the constitutional prohibitions against the importation and circulation of alien vellon, "Aragonese, Catalan, Florentine, and other forbidden coins," certainly worth less than 25 per cent of their nominal value, had recently entered the kingdom and commenced to circulate "with great damage to the inhabitants of the city and kingdom," on July 24, 1494, Ferdinand the Catholic fixed a penalty of death and the confiscation of goods against smuggling foreign vellon into the realm and a fine of 6os. — 500s. in the case of a money changer — for passing or accepting it.³ But the paucity of fractional Valencian money rendered the interdiction of foreign vellon nugatory and necessitated a domestic issue. In a letter to the Crown on February 13, 1498, the city council emphasized "the most urgent need we have for additional coinage of the said vellon" and, manifesting the deeply ingrained preference for menuts, "which are and will be the true money that, in accordance with our constitution and privileges, ought to be coined," strenuously protested against the supposed intention of the King to limit the legal tender of vellon to sums not exceeding £15.⁴ On April 27, 1499, Ferdinand granted the request of the city

¹ When the brisk activity resulting from the Catalan revolt came to a close.

² It is significant that in the *crida* of April 27, 1499, providing for the coinage of vellon Ferdinand the Catholic stated that the current price of silver 11 1/2 dineros fine was £6 6s. 6d. (AMV, *Llibres de Cartes Reales*, h³, lib. 2, fols. 57-61) and that it was necessary to pay £6 12s. per mark for 120 marks of silver bought from August 2 to September 7, 1499, for use in coining vellon (AR, *Maestre Racional: Tesoreria*, leg. 357, ca. 8507). Even a mark of pure silver coined into reals was worth only £5 17s. 10d.

³ AMV, *Manuale de Consells*, A48, fol. 69.

⁴ AMV, *Llibres de Cartes Misesives*, g³, lib. 33, fol. 106.

council, treasurer, and syndic to remedy "the insufferable scarcity of fractional money in the city and kingdom, which may occasion great scandal and danger." As in 1450, the fineness of menuts was fixed at 1 dinero 20 grains;¹ and the legal weight was reduced so that 25s. 8d. in pennies or 26s. 6d. in half-pennies could be struck from a mark.² The tolerance on fineness was fixed at 2 grains and on weight, at 6 dineros a mark. The legal tender of menuts was limited to 50s.³ A crida of February 13, 1500, required the holders of Florentine and Sienese vellon to surrender it to public authorities and carried the liberal promise to redeem as much as 40s. per individual,⁴ presumably at par.⁵ The coinage of the new menuts did not begin until 1501, when 300 marks of bullion from Florentine and Sienese coins and 11,639 marks bought in 1499-1500 were struck.⁶

Table 1 lists the bimetallic ratios from 1393, when the coinage of silver began, through 1500.

TABLE 1
BIMETALLIC RATIOS IN VALENCIA⁷

1393-1406	9.06 to 1 ⁸	1475-1476	11.03 to 1
1407	8.86 to 1	1477-1478	11.41 to 1
1408-1425	8.61 to 1	1479	12.17 to 1
1426-1448	9.04 to 1	1480-1482	11.60 to 1
1449-1472	10.02 to 1	1483-1500	12.00 to 1
1473-1474	10.52 to 1		

¹ Apparently ignorant of the vellon issue of 1450, Ferdinand took great pains to explain that the increase in the mint price of silver since the thirteenth century had rendered it impossible to coin vellon of the weight and fineness prescribed by James the Conqueror.

² The mint records show that in practice the decrease in weight was greater. The average yield of bullion under this edict was 27s. 7d. (AR, *Maestre Racional: Tesoreria*, leg. 356, cas. 8509-8511).

³ AMV, *Libres de Cartas Reales*, h², lib. 2, fols. 57-61.

⁴ The vellon was widely held, for most possessors redeemed only 5 or 10s. worth (AR, *Maestre Racional: Tesoreria*, leg. 356, ca. 8509).

⁵ BUV, *Libre de Noticias de Valencia*, Ma. 1206.

⁶ AR, *Maestre Racional: Tesoreria*, leg. 356, ca. 8510.

⁷ Timbres and reals have been compared in 1426-1448, when florins circulated but were not minted. But the substitution of florins for timbres would have given very nearly the same result. Counting florins at 12s. 9d., their commercial tariff from 1434 to 1448 and probably from 1426 to 1433, one arrives at a ratio of 9.97 to 1. The ratio of 10.02 to 1, listed for 1449-1472, began on May 17, 1449, when lighter reals entered circulation. I have arbitrarily assumed that in 1466-1472 the florin continued at 12s. 2d., the commercial tariff that obtained from May, 1449 through 1465, and estimated that, while remaining steady in the intervals,

From 1351, the earliest date for which records are available, accounts were invariably kept in terms of pounds, shillings, and pence; and prices were virtually always quoted in these units. Occasional transactions in terms of the real (at 18d.), timbre (at 10s.), florin (at 11s.), and ducat (at 21s.) occurred; but the total sums were always reduced to and recorded in the customary units. At no time during the period under investigation did menuts threaten to fall to a discount. In fact, vellon money — constantly kept too scarce to satisfy the demand for change and petty transactions — often enjoyed public preference; and there is reason to believe that only exotic fractional money prevented menuts from commanding a premium in the open market.

Table 2 lists the equivalence of a penny in grams of fine gold and silver. Because of the dependence of the value of menuts upon their scarcity (which was itself largely independent of the quantity or the value of silver or copper available) and for lack of a better method, the gold equivalent of the penny in 1369 has been extrapolated for 1351-1368; and the silver equivalent in 1393 has been taken for 1351-1392.

TABLE 2
EQUIVALENCE OF THE VALENCIAN PENNY IN FINE GOLD AND SILVER

A. Gold¹

1351-1425 .....	.02000334 gram	1477-1478 .....	.01466912 gram
1426-1448 .....	.01731771 gram	1479.....	.01375230 gram
1449-1472 .....	.01671165 gram	1480-1482 .....	.01442864 gram
1473-1474 .....	.01590627 gram	1483-1500 .....	.01394440 gram
1475-1476 .....	.01517495 gram		

the tale jumped to 13s. 10d. in 1473, to 14s. 6d. in 1475, to 15s. in 1477, and to 16s. in 1479 and fell to 15s. 3d. in 1480-1482 (*vide supra*, p. 32). The reader must remember that owing to the paucity of the data, which renders necessary interpolations and extrapolations of the rating of the florin, and to the uncertain average silver content of the real, the ratios for 1466-1482 are little more than controlled guesses.

¹ Cf. *supra*, p. 17 n. 3.

¹ In arriving at the gold equivalence of the penny, I have counted the florin at 11s. in 1369-1425, the timbre at 10s. in 1426-1448, the florin at 13s. 2d. in 1449-1472, the florin at the divers tariffs listed on p. 37 n. 7. *supra* in 1473-1482, and the ducat at 21s. in 1483-1500. Furthermore, I have concluded that the Valencian mark superseded that of Perpignan upon the institution of the ducat in 1483 (*vide supra*, p. 35). I reiterate that there is a possible error in my reductions of the Perpignan and Valencian marks to metric weights and in the tariffs assigned the gold monetary units, particularly in 1466-1482.

B. *Silver*¹

1351-1406 .....	.18127298 gram	1408-1448 .....	.17218055 gram
1407.....	.17724469 gram	1449-1500 .....	.16739776 gram

Although incomplete, the records of coinage in the Valencian mint are among the best that exist for the Middle Ages and obviously should be made accessible in printed form. Appendix I lists the volume of coinage in marks of standard bullion, grams of fine metal, and monetary yield.

In many respects the money of the Mediterranean kingdom was unique. Except possibly in some of the Italian city-states it would be difficult, if not impossible, to find a country that rivaled Valencia in the stability of its gold and silver coinage. The fineness of silver money was altered only once and the weight only twice in the course of 108 years; and the total reduction in the silver content of the real during this period was only 8.29 per cent.² The weight and fineness of the florin remained constant from 1369, when it first issued from the Valencian mint, until 1483, when its coinage was abolished. The timbre, introduced in 1426, contained less alloy than the florin, but a fixed weight of gold was coined into more monetary units; and the same was true of the ducat (instituted in 1483) when compared with the timbre. But in an epoch marked by debasement two basic alterations of gold money were conspicuously few, and the total decrease in the weight of fine gold represented by the penny from 1369 to 1500 was only 30.29 per cent. Even if in addition

¹ The tariff of the real, constant at 18d., presents no problems; but there is a possible error in my estimate that the Valencian mark weighed 236.67 grams (*vide supra*, p. 26). Unlike gold coins, silver pieces ordinarily circulated by tale rather than by weight. Near the close of the reign of John II clipping reduced the weight of some of the reals in circulation by almost 50 per cent (*vide supra*, pp. 30-31); and, owing to their infrequent coinage (*vide infra*, Appendix I), the average abrasion of reals was usually significant. But lacking adequate data, I am unable to allow for light reals in estimating the silver equivalence of the penny.

² According to Mr. R. G. Hawtrey (*Currency and Credit* [2nd. ed., London, 1923], pp. 287-288), "of all countries [in the Middle Ages] England was the freest from illegitimate debasements." Yet his figures show that after debasements totaling more than 20 per cent in the fourteenth century, from 1411 to 1464 the weight of silver in the penny ("silver rather than gold, being the standard") fell by 36 2/3 per cent.

The degree of debasement of gold in England (*vide W. A. Shaw, op. cit.*, p. 44) and Valencia was approximately the same.

to these legal alterations of gold one considers the market changes that resulted from, and tended to correct, the overvaluation of silver at the mint, one finds no incessant fluctuations such as plagued medieval France.¹ The reductions in the weight and fineness of vellon money at the middle of the fifteenth century were of no consequence, for the Crown always kept menuts sufficiently scarce to maintain them at par. In fact, the Valencians, strongly attached to their traditional vellon unit (in spite of the prevalence of the mercantilist adoration of the precious metals), resisted the introduction of gold money, opposed the smelting of menuts to secure alloy for gold or silver coins, strove to prevent reals or florins from being made legal tender, and vehemently remonstrated against the anticipated limitation of the legal tender of vellon. The extreme simplicity of the domestic money and the scarcity of foreign coins (which circulated in spite of the royal interdiction, but never in large quantities or bewildering variety) precluded the perplexing heterogeneity of the media of circulation that perturbed the contemporaneous economic life of many nations. Furthermore, the Mediterranean kingdom escaped the monetary confusion, unfortunately prevalent in Europe during the Middle Ages, which the multiplication of mints through the unrestrained issue of franchises to feudal overlords and court favorites entailed.

What is most important, all of the monetary changes, save the retirement of clipped reals and timbres from circulation in 1480, moved in a single direction, toward a slight currency expansion. Fortunately, the official inflation, always mild in character, never reached a point that brought deflation in its wake; and it occurred when the growth of population and industry and the expansion of commerce were outstripping additions to the stocks of the precious metals, with falling prices, ever pernicious to trade, as an inevitable consequence. That the remarkable advance of Valencia in material prosperity in the fifteenth century, which furnished a basis for the golden age in literature and the fine arts, was partially due to "sound" money is incontrovertible.

¹ In 1351-1500 the monetary alterations in France averaged more than one a year (Anonymous, "Les Variations de la Livre Tournais sous l'Ancien Régime," *Bulletin de Statistique et de Législation Comparée*, XXIII, 7-9).

CHAPTER II

PRICES IN VALENCIA

BATING discontinuous quotations for building materials and wax candles¹ beginning in 1380, no significant price series for the Mediterranean kingdom prior to 1413 have been unearthed; and all the contemporary account-books now known to exist seem to have been exploited.

As in the case of the other quantitative data employed in this study, it has proved necessary to rely exclusively upon manuscript sources deposited in the ecclesiastical, public, and private archives of Spain. The oldest records are those of the Valencian Cathedral, available in its Archive. But either the canons, unlike those of Huesca and Saragossa, failed to live communally or the records of their expenses have not survived. Hence the prices derived from the account-books of the Cathedral are limited largely to the materials for the construction and maintenance of the edifice. Prices for wax candles are also available, but regular quotations for tallow candles and sacramental wine are strangely wanting. From 1413, when the principal Valencian price series begin, through the end year of 1500 lacunae mar the Cathedral accounts in only three years — 1414, 1451, and 1478; but the data for a few other years are scant and unsatisfactory.

Commencing in 1413 and extending to the present, with only two gaps (in 1445 and 1464), the account-books of the Hospital dels Inocents, deposited in the Provincial Hospital at Valencia, constitute one of the longest continuous sources of prices in existence. These excellent records supplied the basic quotations for all the commodities included in the index numbers, except wax candles and building materials, and furnished data to fill hiatuses in the annual averages for these articles (based on pur-

¹ Candle quotations prior to 1413 have not been tabulated.

chases by the Cathedral). Unfortunately, however, the account-books are chiefly confined to the *Llibres de Administració*, general ledgers and summaries of the administration, invariably bound in parchment and on the whole well preserved; these recorded the infrequent and irregular purchases of large quantities of staple commodities such as wine, olive oil, and wheat. The *Querns de Campanage*¹ (journals containing the daily recurring expenditures, especially for foods and other perishable goods, which comprised the greater part of the total purchases by hospitals) have been preserved for only six years, all falling between 1484 and 1495. These Querns have remained unbound; at least half the months are missing in each year; and many of the surviving documents are moth-eaten. The cultivation of fruits and vegetables by the Hospital for its own use and the prevalence of alms in kind further diminished the list of commodities quoted in the account-books. The transfer of several articles from the *Llibres* to the Querns and the persistent failure of the Hospital and Cathedral bookkeepers to specify the prices or the quantities (or both) of certain commodities after the middle of the fifteenth century reduced the number of articles in the index numbers of general prices in 1451-1500 by almost half.

The accounts of the Convento de Santa Clara, at Valencia, deposited in the Archivo Regional de Valencia,² supplied quotations for a fair number of articles in 1454-1468 and 1492; but, owing to their discontinuity, the data could be employed only to fill gaps and serve as controls. The same is true of the records of the Monasterio de Val de Crist, at Altura,³ available for 1447-1458 in the Archivo Histórico Nacional, at Madrid.⁴ These were the only acceptable accounts supplied by any institution outside the metropolis. The records of the municipality of Valencia, extraordinarily rich in salaries, proved worthless for prices. The accounts of the royal household of Aragon during its sojourns in the kingdom of Valencia apparently have not survived,⁵ and

¹ Usually called *Querns del Hospital* in 1501-1650.

² *Conventos*, libs. 956, 1105.

³ A village 2 kilometers from Segorve and 37 from the capital.

⁴ *Clero, Castellón*, legs. 16, 18.

⁵ At least they do not appear in the manuscript inventories of any of the archives at Valencia, Barcelona, Saragossa, or Madrid.

no records of expenditures by noble or bourgeois families could be unearthed.

Once located, the principal series were sampled at intervals of ten years. The commodities extending over the entire period and occurring with reasonable frequency, along with other articles that one might hope to find in case new sources should be uncovered, were printed on four-faced paper about 23 by 33.5 centimeters. Approximately 20 per cent of the space at the bottom of the page was ruled and left blank for the insertion of unpredictable items.

To obviate the distortion of annual averages by seasonal variations, the year was divided into the four quarters: January-March, April-June, July-September, and October-December. The first four quotations occurring in each quarter were recorded, thus making, when the data were ample, a yearly total of sixteen entries for each article. Distinct grades of a commodity were treated as separate items, and occasionally additional prices were transcribed for several metrological units in order to clarify their relationships.¹ That the accounts seldom yielded the full sixteen quotations per annum is attested by the exponents of the annual averages in Appendix III.

In all cases the quantities purchased have been recorded, but rather than as weights in computing quarterly averages they have been used in evaluating entries and eliminating aberrant data. The prices for each quarter represent arithmetic averages of the entries, but dissimilar quantities have not been crudely combined. For instance, the *fanega*, equivalent to one-sixth of a *cahiz*, was the metrological unit for wheat; and *cahiz* prices bridged a few gaps. In deriving *fanega* prices, however, quotations in terms of the *cahiz* were divided not by six (as the metrological tables suggest) but by 5.4, the average of twenty-five strictly comparable ratios of *cahiz* to *fanega* quotations. Drayage was invariably either included or excluded in transcribing the quotations of bulky commodities such as wine, grain, and building materials. The practice of the contemporary accountant was

¹ For instance, prices of oak, grape, mulberry, and olive firewood have been collected in terms of loads, *arrobas*, and quintals. As the exponents in Appendix III indicate, more than twenty quotations for firewood were recorded in many years.

usually adopted, but it frequently proved necessary to make adjustments for changes in his method of recording local transportation costs. As a safeguard against errors resulting from differences in the size of purchases, regional discrepancies in measures, and local variations in supply, demand, transportation, and the like, data from the Convento de Santa Clara and the Monasterio de Val de Crist have been combined with those from the Hospital dels Inocents or the Cathedral, the principal sources, only through multiplication by the average ratios of comparable overlapping entries.¹ To avoid the acceptance of data vitiated by corrupt purchasing or accounting, the quotations from the two main Valencian institutions were not averaged before a thorough inspection (including arithmetic comparisons in all doubtful cases) had disclosed homogeneity.

The annual prices for the commodities that are quoted in virtually all the quarters represent the arithmetic means of the seasonal figures. But lacunae in the data often necessitated some other method of striking the annual average. Fortunately, the even climate of the Mediterranean kingdom mitigated seasonal fluctuations to an extraordinary degree. Construction projects and public works could progress in winter as in summer; so the prices of building materials remained steady the year around. Since vegetation flourished throughout the year, meat prices suffered no pronounced seasonal variations; and the natural stability was spuriously enhanced by the tendency for institutions to negotiate yearly contracts for the purchase of meat at a fixed price. Inasmuch as firewood was required solely for cooking, the demand and the price exhibited little or no seasonal influence.

The following table shows the percentages of deviation of the quarterly averages from the annual prices of certain leading commodities.

¹ For instance, the prices of wheat, wine, and olive oil paid by the Hospital dels Inocents averaged 88.8, 89.2, and 91.3 per cent respectively of the Santa Clara quotations. Larger purchases by the Hospital seem to account for the difference; but, since the deviations from these figures were both few and slight, since three different metrological units were involved, and since the percentages varied inversely with the bulkiness of the commodities, these perplexing discrepancies may possibly reflect the expenses of transportation to Santa Clara from some more distant source of supply than was utilized by the Hospital dels Inocents.

TABLE 3

PERCENTAGE DEVIATIONS OF QUARTERLY FROM ANNUAL PRICES IN VALENCIA

	1st quarter	2nd quarter	3rd quarter	4th quarter
Flax	+1.1	0.0	-1.8	+0.7
Hens.....	+6.4	-8.0	+5.0	-3.4
Olive oil.....	-1.1	-3.0	+0.7	+3.4
Wheat	+3.2	+1.9	-3.8	-1.3
Wine.....	-7.2	+0.8	+9.9	-3.5

Adjustments for seasonal variations averted distortion of the annual averages of the above articles and several others. Only in the case of onions is there a significant likelihood that gaps in the quarterly data together with inadequate material for seasonal comparisons may have led to untrustworthy annual prices of any article included in the general index numbers. But onions occur only in 1451-1500, when the indices comprise fourteen other items; and onion prices were not included until a minute examination had failed to disclose abnormal behavior.

The meager correlations rendered possible by the Valencian series suggest that fish (doubtless on account of Lent) was considerably dearer in the first quarter than in the remainder of the year. For instance, hake quotations averaged about 33 per cent higher in the first quarter than in the second, and sardines cost 26 per cent more than in either the second or the fourth quarter. But the data are too incomplete for the accurate determination of seasonal fluctuations, and in most cases they will not permit (what would be a satisfactory substitute) the compilation of annual averages in terms of a single quarter. Although the fairly close agreement of the prices of certain fishes from which seasonal variations were largely eliminated with those from which they could not be extirpated suggests that this defect did not destroy the validity of the data, the fish series have not been included in the general index numbers.¹

The virtually complete neglect of Valencia by economic historians, the persistent lack of interest in metrology on the part of native chroniclers and political historians, and the unfortunate

¹ Other reasons for doubting the reliability of the fish quotations, which partially motivated their exclusion from the general index numbers, are discussed on p. 58 *infra*.

failure to preserve the germane royal ordinances (*crides*) have drawn a thick veil over Valencian weights and measures. Although definitive pronouncements are impossible, metrology, an essential part of price history, requires brief consideration.

Aragonese and Catalan influence upon the earliest Christian legislation surmounted the effects of protracted Moorish domination over Valencian weights and measures and introduced a strong Roman element, exemplified by the prevalence of duodecimals.

In the wake of the reconquest, James the Conqueror, with unusual care for his day, formulated the basic metrological laws. For wine he established the fluid *arroba* equivalent in volume to 30 pounds; and for barley, oats, wheat, and other grains he adopted a fanega of 8 *almudes*. Unlike the Castilian monarchs, who persistently neglected to indicate whether arid units should be heaped or stricken, James I specifically adopted stricken standards. He established the mark of 8 ounces, the pound of 12 ounces, the *carnicera* pound of 36 ounces, the arroba of 30 pounds, and the quintal of 4 arrobas; and he decreed that wool, grapes, cheese, silk, flax, hemp, jute, figs, raisins, flour, and "all other things, large and small," should be weighed by these units.¹ On November 24, 1255, the Conqueror introduced the arroba (subsequently called the *arroba grosa*) of 36 pounds "for heavy things," leaving the standard of 30 pounds (*arroba prima*) for "light things."² Apparently without a statutory basis, an arroba of 32 pounds for flour and a pound of 18 ounces for large fish soon became firmly fixed in practice.

Inasmuch as the price tables represent almost exclusively quotations from the metropolis, and since as a prerequisite for interpolation the modicum of prices supplied by the account-books of the Val de Crist Monastery have been multiplied by the average inverse ratio between them and strictly comparable overlapping metropolitan data, thus rendering metrological distortion extremely unlikely, local divergence of weights and measures may be neglected. Decennial averages of price relatives com-

¹ *Furs, Capítols, Provisions e Actes de Cort* (Valencia, ?), pp. 238, 260.

² *Awenum Opus* (Valencia, 1515), fol. 16.

puted for use as gauges of metrological stability disclose no variations during the period under investigation. Since alterations of standards would have induced similar price variations, one may rationally conclude that no major changes have escaped detection. But much more uncertainty attaches to the estimates of the modern equivalents of weights and measures, presently to follow. Since the fundamental needs of the price historian are met by establishing either the constancy or the percentage of change in a unit, extensive inquiry into modern equivalences seemed hardly justified. Hence I have relied upon the commonly accepted tables of conversion; and, inasmuch as not only Valencian but Spanish metrology has proved singularly unattractive to scholars, there is a considerable chance for error in my estimates.

Of the 29 commodities that enter into either the general or the group index numbers of prices, 17 were exchanged by weight. Rice, iron, large nails, cheese, and wax candles were sold by the pound of 12 ounces, rated in metrological tables at 355 grams.¹ Wax candles and rice were occasionally purchased by the *arroba prima* (30 pounds, or 10.65 kilograms); and the three remaining articles, by the *arroba grosa*. The pound of 18 ounces (522.5 grams) was the unit for fish; and the *carnicera* pound of 36 ounces (1045 grams) weighed beef, veal, pork, and mutton. Carob beans, flax, and straw were exchanged by the *arroba grosa*; and the quintal, containing 4 of these *arrobas*, or 144 pounds, was the standard for firewood. Failure to specify the kind of *arroba* and inability to determine whether *arroba* meant *prima* or *grosa*, sources of confusion in 1501-1650, occasioned few problems in the present study.

Bricks and sardines were sold by the thousand,² hake by the dozen, and kids and hens by the head.

¹ If one allows for the fact that 31 Valencian ounces approximately equaled 32 of Castile and considers the Castilian pound equivalent to 460.093 grams (an assumption that admits of little doubt), numerous statements of equivalence between Valencian and Castilian weights in the records of the purchases of delicacies in Valencia from 1508 to 1513 for consumption by Juana la Loca in Tordesillas (Archivo General de Simancas, *Casa Real* [E. M.], 9-1, 9-2, 10-1) confirm the estimate of 355 grams for the Valencian pound.

² And occasionally by the hundred.

Owing to the lack of textile quotations, lineal measures are not represented in the price tables; but the *alna*, approximately equivalent to 91 centimeters, and the *palmo* ($1/4$ alna) served as bases for piece-rate wages.

There was a dual system of liquid measures. For olive oil the fluid arroba, approximately equivalent to 11.93 liters, and the pound ($1/30$ of an arroba) were the commonest units. The ounce ($1/12$ pound) and the *carga* (12 arrobas) occurred at times; but the former was too small, and the latter, too large for general use. Wine was ordinarily measured by the *cántara*, estimated by metrologists at 10.77 liters. The *azumbre* ($1/4$ cántara) and the *carga* (15 cántaras) often occurred; the *cuartillo* ($1/8$ azumbre) and the *bota seixentena* (60 cántaras) were encountered at rare intervals.

The following arid units were employed: almud ($1/4$ barchilla), barchilla (16.75 liters), fanega (33.5 liters), and cahiz (201 liters). The barchilla was the ordinary standard for salt, the fanega for wheat, and the cahiz for plaster of Paris;¹ but the fanega frequently measured salt, and the cahiz, wheat. Grain units (and presumably those of plaster of Paris) were stricken. From the meager evidence available I suspect that salt was exchanged by measures slightly larger than the grain standards. The initial legislation of James the Conqueror implied a difference between the units, but the enumeration of barley in the list of commodities to be measured by each standard obscures the phenomenon.² Early in the seventeenth century the city of Valencia engaged in litigation to retain the customary salt measures; and in 1604 the Estates General requested the Crown to prohibit the use of grain standards by the salt monopoly. It appears, however, that the salt measures exceeded those for grain only slightly and that the discrepancy may have been due to the adoption of heaped

¹ A law, enacted in 1442, requiring the sale of plaster of Paris by weight rather than by measure and fixing the price at 3d. an arroba (Biblioteca Universitaria de Valencia [hereafter BUV], Ms. 1206), apparently had no effect upon practice. Not a single quotation in terms of weight occurred in any of the accounts examined.

² *Furs, Capitols, Provisions e Actes de Cort*, pp. 238, 260; Earl J. Hamilton, *American Treasure and the Price Revolution in Spain, 1501-1650* (Cambridge, Massachusetts, 1934), p. 179.

units for the former. But whatever the metrological standard may have been, there is no evidence that a change in it during the period under investigation vitiated the annual salt prices. I regret that inability to state the exact equivalence of a barchilla of salt precludes reduction to modern metrological units, a prerequisite for international study of absolute prices. Perhaps the best possible guess would be that it contained about eighteen liters; but, until precise data shall have become available, I recommend the omission of salt in international price comparisons.¹

Lime was exchanged by the load, and sand, by the dozen loads;² but the large numbers purchased and the narrow range of the metrological fluctuations countervailed the lack of fixed standards and permitted the compilation of satisfactory price series. The average load of lime was roughly equivalent to the grain cahiz, and the deviations from this figure were seldom great. But I have found absolutely no means of estimating the modern equivalence of a dozen loads of sand.

Onions were bought by the *forch*, or string, a unit that defies conversion into modern standards. But the price tables fail to reveal metrological distortion; and the present-day use of the forch not only in petty trade, but in wholesale transactions, suggests that it may not have been inherently erratic.

To throw the periodicity of good and bad wheat crops into sharp relief, thus facilitating study of their nature and consequences, the adoption of a harvest year running from July 1 to June 30 suggested itself. But this plan was rejected because new crops of olive oil and common wine, commodities that rivaled wheat in importance, reached the market in the first and second quarters respectively rather than in the third; while flax, rice, and carob beans were at least a full quarter later than wheat.

¹ The fact that the quotations of salt were determined by the Crown monopoly rather than by the free play of economic forces constitutes a further (and perhaps still more valid) objection to the inclusion of this commodity.

² Prices for sand by the *dozen* occurred in the account-books of the municipality and the Hospital dels Innocents from the sixteenth through the eighteenth century; but not until the medieval records of the Cathedral were consulted did it become clear that *dozen* meant a dozen loads.

All commodities considered, it appeared that no better harvest year than the calendar year itself could be devised. Except when original records run in terms of harvest years, series for calendar years can be transcribed, elaborated, tabulated, and published with considerably less difficulty. Hence I have adopted the calendar year.

One must not suppose that the bewildering variety of articles which modern science and sophisticated capitalistic grading have thrown onto the market were available in the Middle Ages. For instance, the Hospital dels Inocents and the Convento de Santa Clara purchased the same quality of olive oil for cooking, table use, and illumination. But medieval goods were obviously not completely uniform. The price series for some of the leading articles run in terms of the following grades: hulled rice, salted tuna fish, yellow wax candles, unslaked lime, iron gratings for windows and doors, white bricks, oak firewood, unspun flax, dried hake, milk cheese, table salt, dried sardines, very large nails, mattress straw, new wine (either red or white), and average milling wheat. It seems that beef and mutton, almost exclusively roasted or stewed (with vegetables), were indiscriminately cut from the fore and hind quarters.

The most glaring defect of the commodity prices in Appendix III is the complete lack of spices (highly important in medieval commerce)¹ and textiles, which were eliminated by the customary manufacture of the coarse fabrics for their own use by the Hospital dels Inocents and the various convents together with the infrequent purchases and inadequate descriptions of the necessarily heterogeneous fine linens, silks, and woollens. Hempen sandals occurred regularly from 1413 to 1500; but the impossibility of determining the quality, or even whether they were for men, women, or children, rendered the series worthless. The absence of fruits and nuts and the limitation of poultry quotations to hens also constitute a decided weakness.

The account-books listed prices in terms of pounds, shillings, and pence; and the yearly averages in Appendix III have been

¹ Cf. Fritz Rörig, *Mittelalterliche Weltwirtschaft* (Jena, 1933), p. 17.

reduced to pence. Besides foreign gold and silver coins, many of which were generally accepted, the monetary circulation consisted of gold, silver, and copper with an admixture of silver. Since strict limitation of issue (rather than intrinsic worth) prevented the *menuts* from falling below par, their metallic content need not be considered. The prices in Appendix III represent money of account. To reduce the quotations to fixed weights of gold or silver, the data in Table 2, p. 38 *supra*, may be employed.

Unweighted arithmetic index numbers have been constructed. The reasons for choosing this type were: first, the conviction that it would be not only otiose, but positively misleading, to apply the more sophisticated, hair-splitting types of index numbers to price series no more accurate than the best that can be compiled for the Middle Ages; second, the utter inadequacy of data for weighting; and, third, the belief that of all classes of index numbers the arithmetic will prove the least esoteric to historians — little accustomed to precise quantitative measurements. To minimize the slight upward bias inherent in the unweighted arithmetic indices and to take advantage of a decade pregnant with data, 1421-1430 (midway between 1351 and 1500, the terminal dates for most of the medieval price and wage series in Spain) has been selected as a base.¹ To emphasize the percentage of change, the significant factor in price movements, charts have been drawn to a logarithmic scale.

Table 4 lists the index numbers of commodity prices. The exponents indicate the number of price relatives that each index comprises. The articles in Appendix III marked with an asterisk have been excluded from these indices.

¹ To convert the index numbers to a 1451-1475 base, the period adopted by the International Committee on Price History for medieval prices and wages in Austria, England, France, Germany, and the Netherlands, one may multiply by 1.03048. The civil strife in Spain, especially in Castile, Navarre, Aragon, and Catalonia, in 1451-1475 renders this period an unsatisfactory base.

TABLE 4

INDEX NUMBERS OF COMMODITY PRICES IN VALENCIA

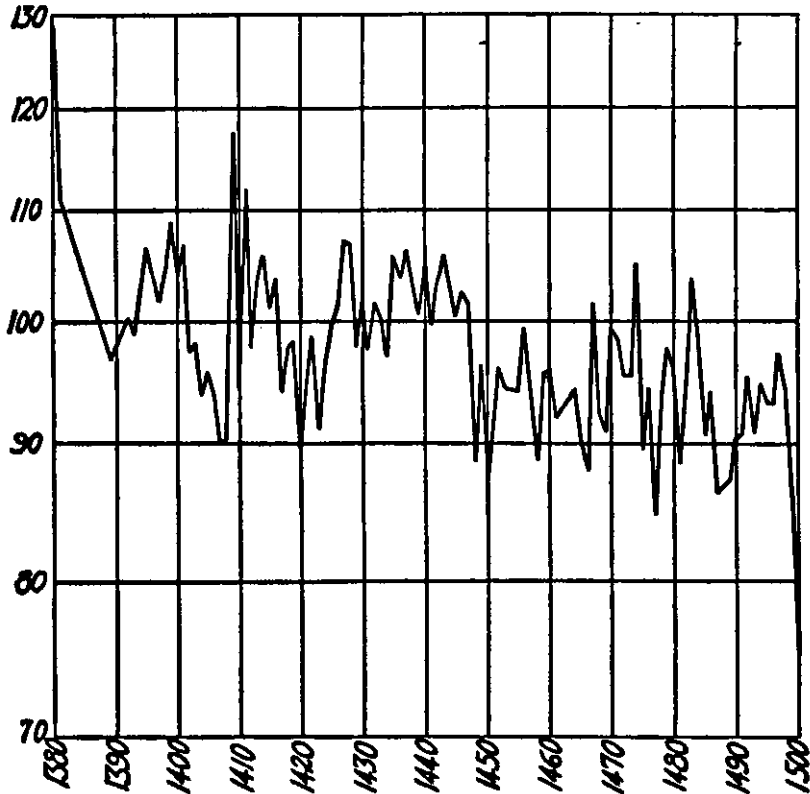
Base = 1421-1430

Year	Indices	Year	Indices	Year	Indices
1380.....	128.8 ⁵	1421.....	94.7 ¹²	1462.....	93.0 ¹³
1381.....	111.0 ⁴	1422.....	98.7 ¹⁸	1463.....	93.5 ¹³
1382.....	.....	1423.....	91.1 ¹⁴	1464.....	94.3 ⁹
1383.....	.....	1424.....	96.8 ¹⁷	1465.....	90.1 ¹⁴
1384.....	.....	1425.....	99.7 ¹⁸	1466.....	88.2 ⁹
1385.....	.....	1426.....	101.4 ¹⁹	1467.....	101.5 ¹⁹
1386.....	.....	1427.....	107.1 ¹⁷	1468.....	92.5 ¹³
1387.....	.....	1428.....	106.9 ¹⁸	1469.....	91.0 ¹¹
1388.....	.....	1429.....	97.9 ¹⁷	1470.....	99.2 ¹¹
1389.....	96.7 ³	1430.....	101.6 ¹⁸	1471.....	98.5 ¹³
1390.....	.....	1431.....	97.6 ¹⁷	1472.....	95.4 ¹⁰
1391.....	.....	1432.....	101.7 ¹⁸	1473.....	95.4 ¹³
1392.....	100.3 ⁴	1433.....	100.2 ¹⁸	1474.....	105.0 ¹²
1393.....	98.8 ⁵	1434.....	97.1 ¹⁷	1475.....	89.7 ⁹
1394.....	.....	1435.....	105.6 ¹⁸	1476.....	94.4 ¹⁰
1395.....	106.4 ⁵	1436.....	103.8 ¹⁸	1477.....	84.7 ⁵
1396.....	103.6 ⁹	1437.....	106.0 ⁷	1478.....	93.7 ⁷
1397.....	101.7 ⁵	1438.....	103.8 ¹⁸	1479.....	97.7 ¹⁰
1398.....	104.7 ⁴	1439.....	100.5 ¹⁷	1480.....	96.0 ¹¹
1399.....	108.8 ⁵	1440.....	104.9 ¹⁵	1481.....	88.6 ¹³
1400.....	104.0 ⁴	1441.....	99.8 ¹⁷	1482.....	94.5 ¹⁰
1401.....	106.7 ²	1442.....	103.2 ¹⁷	1483.....	103.7 ⁸
1402.....	97.4 ⁵	1443.....	105.8 ¹¹	1484.....	98.3 ¹¹
1403.....	98.0 ⁴	1444.....	103.1 ¹⁸	1485.....	90.6 ¹⁴
1404.....	93.8 ⁴	1445.....	100.4 ⁵	1486.....	94.1 ¹¹
1405.....	95.7 ⁵	1446.....	102.6 ¹⁷	1487.....	86.3 ¹⁰
1406.....	93.9 ⁹	1447.....	101.6 ¹⁸	1488.....	86.9 ¹³
1407.....	89.9 ⁵	1448.....	88.7 ¹⁶	1489.....	87.2 ¹⁴
1408.....	90.2 ²	1449.....	96.1 ¹³	1490.....	90.2 ⁸
1409.....	117.4 ²	1450.....	87.6 ¹³	1491.....	90.6 ¹¹
1410.....	94.4 ⁵	1451.....	90.2 ⁹	1492.....	95.2 ¹²
1411.....	112.0 ²	1452.....	95.9 ⁸	1493.....	90.8 ¹²
1412.....	97.8 ⁵	1453.....	94.4 ¹¹	1494.....	94.7 ¹³
1413.....	103.6 ¹⁰	1454.....	94.3 ¹⁸	1495.....	93.2 ¹²
1414.....	105.6 ⁵	1455.....	94.1 ¹³	1496.....	93.2 ¹³
1415.....	101.1 ⁹	1456.....	99.3 ¹²	1497.....	97.2 ¹²
1416.....	103.6 ¹⁴	1457.....	94.7 ¹⁴	1498.....	94.3 ¹²
1417.....	94.1 ¹⁷	1458.....	88.9 ¹⁵	1499.....	85.9 ¹³
1418.....	97.8 ¹⁴	1459.....	95.5 ¹⁴	1500.....	75.2 ⁹
1419.....	98.2 ¹²	1460.....	95.7 ¹²		
1420.....	89.5 ¹³	1461.....	92.2 ¹¹		

Chart 1 presents the data in Table 4.

CHART 1

INDEX NUMBERS OF COMMODITY PRICES IN VALENCIA



From 1380 to 1412 the index numbers comprise only building materials, but the notable correlation between these special indices and those of general commodities from 1413 to 1475, revealed by Chart 3, suggests that the index numbers of building materials probably gauge the trend of commodity prices in 1380-1413¹ with fair accuracy, but that considerable divergence may have characterized the short swings.

¹ The high indices in 1380-1381 may have resulted from the beginning of important work on the Cathedral in 1380. A smooth curve of English wheat prices exhibits a similar decline in 1380-1390 (A. P. Usher, "Prices of Wheat and Commodity Price Indexes for England, 1259-1930," *Review of Economic Statistics*, XIII, 104), and commodity prices were falling in France (A. P. Usher, "The General Course of Wheat Prices in France, 1350-1788," *ibid.*, XII, 164); but the index numbers for Aragon and Navarre rose in this period (*vide infra*, Chart 20).

With minor recessions in 1393 and 1397, prices rose sharply from 1389 to 1399, registering an advance of 12.5 per cent; but the down swing in 1400-1407 carried the index 6.8 points below the 1389 level. The peaks in 1409 and 1411, when only two relatives are available, may well be specious; but the high indices for 1410 and 1412 point to a reaction following the nadir in 1407-1408. The index moved forward 7.8 points in 1413-1414 but dropped 15.2 per cent from 1415 to 1420, when the lowest position before 1448 was reached.¹ Largely reflecting high quotations of agricultural products and building materials, prices advanced strongly in 1421-1427; but a sharp decline in 1429 absorbed about half the gain. After oscillating around the base level during a quinquennium, the index shot upward 8.5 points in 1435, when the prices of all groups except building materials soared. Following a slightly negative zigzag movement in 1436-1447, a bountiful harvest forced the index down 12.9 points in 1448. Prices significantly recovered in 1449 but failed to hold the gain the next year, when the quotations for all classes of commodities² sank precipitately.

Poor harvests in 1451-1452 and 1456 forced the index 13.4 per cent above the 1450 level, but a decline in 1457-1458 absorbed most of the advance. Largely reflecting rising agricultural prices, the index ascended irregularly from 88.9 in 1458 to 105.0 in 1474, the highest peak attained in the second half of the fifteenth century. Excellent crops in 1475 and 1477 greatly depressed prices; but short harvests — probably exacerbated by inveterate clipping of reals and *timbres*³ — in the next two years restored more than half the loss. After falling 7.4 points in 1481, possibly as a result of monetary deflation,⁴ the indices rose sharply in 1482,

¹ It was about 1420, when economic distress caused by falling prices was acute, that Francisco Ferrer, master of the mint, presented to the Crown a notable memorial upon "the incessant exportation of florins . . . which greatly impoverishes the kingdom and consequently your Majesty" and advanced a nostrum for increasing the quantity of money (Archivo Regional de Valencia [hereafter AR], *Real: Títulos y Enajenaciones*, lib. II, fol. 225).

² Except fish, not included in the general index numbers. As Chart 3 indicates, there was a notable inverse correlation between fish prices and those for other groups in 1447-1450.

³ *Vide supra*, pp. 26-28.

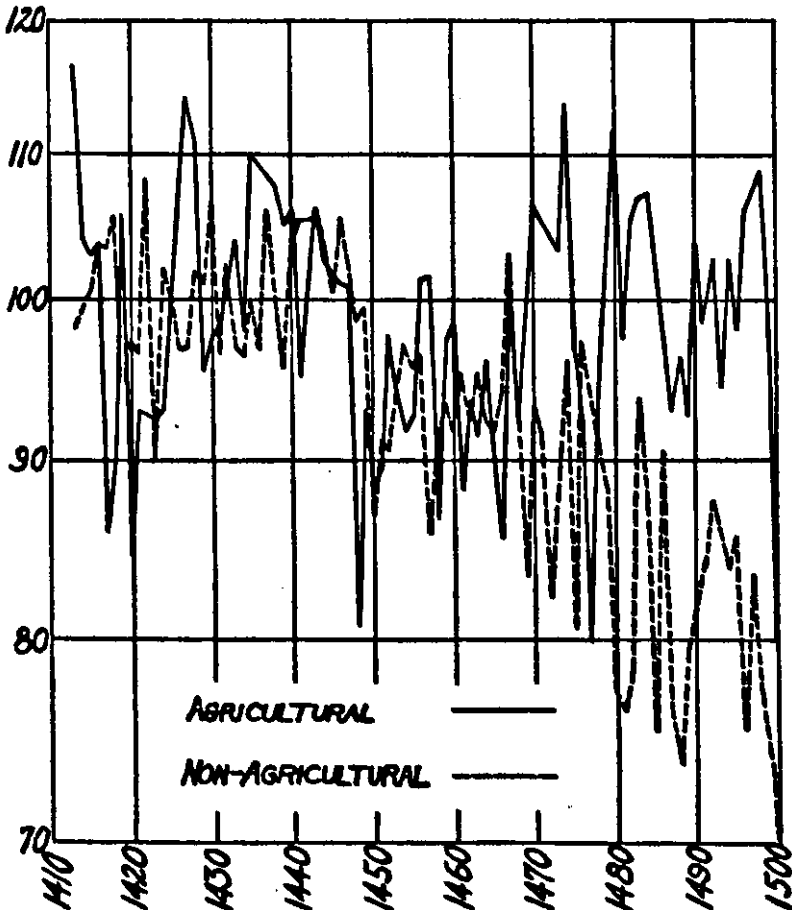
⁴ *Vide supra*, p. 31.

when exorbitant quotations of agricultural products prevailed. Although wheat and onions were dear, most of the advance in the following year was probably a spurious result of the lack of relatives for building materials, which, at this time, ordinarily stood considerably below the composite level. With all groups of commodities participating, prices plunged downward 7.7 points in 1485; and, interrupted by a moderate reaction in 1486, the

CHART 2

INDEX NUMBERS OF THE PRICES OF AGRICULTURAL AND
NON-AGRICULTURAL COMMODITIES IN VALENCIA

Base = 1421-1430



decline (again general in character) continued in 1487. Checked only by a recession of 4.4 points in 1493 and a slight relapse in 1495-1496, the indices rose steadily from 1489 to 1497, the net advance being 10.3 points. Affecting all groups of commodities, a disastrous collapse of prices in 1499-1500 lowered the index from 97.2 to 75.2, the nadir for the entire period under investigation.

Attention has hitherto been focused upon the course of general prices, but the movements of special groups of commodities are also significant. Chart 2 presents index numbers of the agricultural products (including processed goods, such as olive oil and wine, of agricultural origin) and of the non-agricultural articles listed in Appendix VI.

In spite of the striking inverse correlations in certain years (for example, 1419 and 1426), the trends of the agricultural and the non-agricultural groups were remarkably similar until about 1468. In 1469-1500 the non-agricultural index numbers fell 24.8 per cent; and, after an upturn in 1466-1470, the course of agricultural prices was only slightly negative. In the last third of the century the agricultural indices tended to maintain an average in the neighborhood of 20 per cent above the non-agricultural, but the inclusion of fish in the latter would have reduced the disparity by almost one-half. In accordance with *a priori* expectations, non-agricultural indices fluctuated less frequently and violently than did the agricultural, which were subject to all the vagaries of good and bad seasons.

The utilization of certain commodities not quoted with sufficient regularity to justify listing them in the general price tables in Appendix III has rendered it possible to construct index numbers for animal products and fish. Besides hake and sardines the fish index includes fresh fish (*peix*) and tuna fish (*tonyina*) in 1413-1450 and conger eel (*congre*) in 1451-1500. The indices for animal products comprise beef, cheese, kid (*cabrit*), mutton, salt pork (*cansalá*), and veal. Quotations for all six of the building materials available in 1413-1450 have also entered the index numbers for this group in 1451-1500. Owing to the cardinal importance of wheat, "the staff of life," its price relatives have

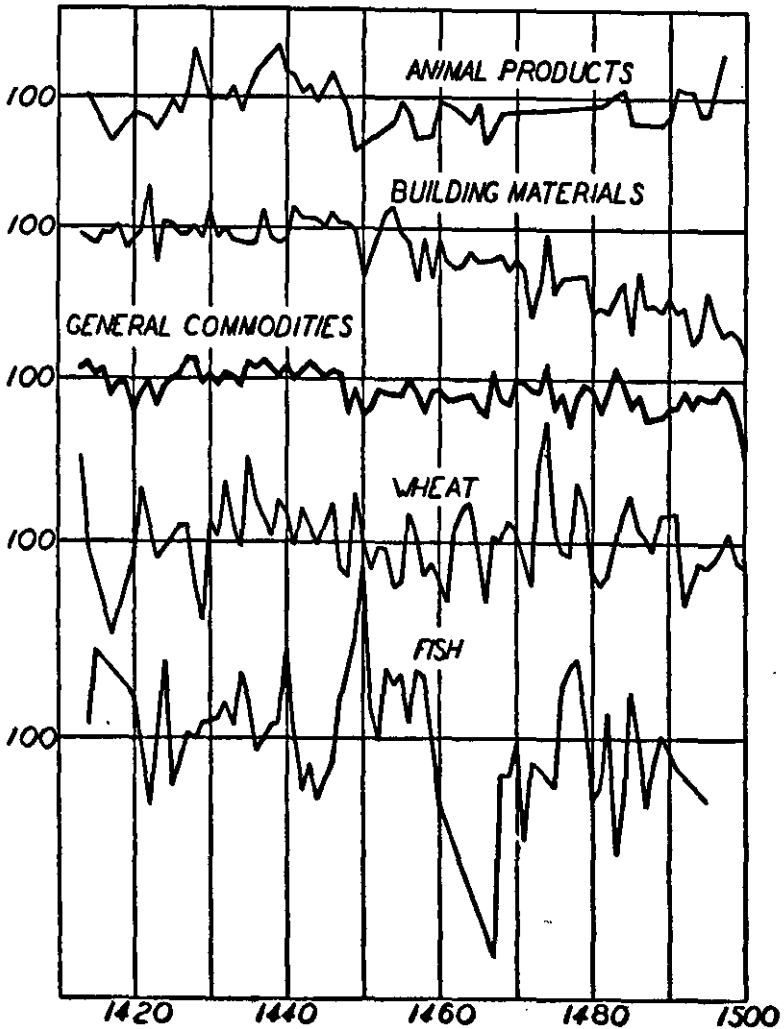
been drawn on Chart 3 with the group indices. To facilitate comparisons, the general commodity index numbers have also been included.

The most striking fact revealed by Chart 3 is the similarity

CHART 3

INDEX NUMBERS OF GROUP PRICES IN VALENCIA

Base = 1421-1430



among the trends of the various curves. The disparities were largely confined to the tendency of fish to remain above the composite level until about 1455, the resistance of wheat and animal products to the general decline during the last quarter of the century, and the peculiarly violent fall of building materials after about 1470.

The sharp year-to-year fluctuations of the fish indices are partially due to the small number of components. Even when the data are complete only 4 fishes are present in 1413-1450 and 3 in 1451-1500, and indices were constructed when a minimum of 2 relatives was available. The tendency toward simultaneous variation exhibited by the different kinds of fish suggests that the series were not seriously distorted by the difficulty of identifying the multiple grades, such as fresh, dried, and salted. The rigid division of the year into quarters and the circumstance that Easter sometimes fell in March heightened the instability of the annual averages. But the fundamental causes of the abrupt fluctuations were probably the inelastic demand emanating from religious dogma and the irregularities in the supply resulting from the undeveloped state of the fisheries and of the fish trade.

Economists have long recognized that wheat is one of the most reliable single measures of long-run value, but that throughout history the short-period fluctuations have been notoriously violent. Valencia was not an exception to the rule. As Chart 3 demonstrates, the strenuous and protracted efforts of the Valencian city council to secure a cheap and abundant wheat supply,¹ the constant preoccupation of the Crown and the Estates General with the actual and potential impediments to grain exports from Sicily (one of the leading European granaries since time immemorial) into the Mediterranean kingdom,² the subsidization of imports,³ the obstruction of exports,⁴ the prohibition of

¹ In the proceedings of the city council, papers of the *Clavari de Quitaments* and of the *Clavari de Censals*, and other series of documents in the Valencian Municipal Archive a wealth of virgin material awaits the historian of the grain trade not only in the kingdom of Valencia, but in the entire Mediterranean basin.

² *Vide*, for example, *Aureum Opus*, fols. 38, 159.

³ Archivo Municipal de Valencia, *Clavari Censals*, 547; Hospital dels Innocents, *Llibres de Administració*, 1463, fol. 16; BUV, Ms. 1206.

⁴ *Aureum Opus*, fols. 76, 81, 84, 94, 99, 154.

regrating,¹ and the wide area drawn upon for supplies may have mitigated, but certainly did not obviate, sharp oscillations of Valencian wheat prices.

Although the short-term movements of prices have engrossed most of the foregoing discussion, the secular trend, as portrayed by averages in which the perturbing annual fluctuations merge, is also highly important. Table 5 lists the quinquennial averages of the index numbers in Table 4 in terms of (1) money of account, (2) a fixed weight of fine gold, and (3) a fixed weight of fine silver. The averages begin with 1391-1395, but only building materials are included before 1413.² Of the two series representing constant weights of the precious metals, the gold indices are doubt-

TABLE 5
QUINQUENNIAL INDEX NUMBERS OF PRICES IN VALENCIA (IN MONEY OF ACCOUNT, A FIXED WEIGHT OF FINE GOLD, AND A FIXED WEIGHT OF FINE SILVER)

Base = 1421-1430

Period	Money of Account	Gold	Silver
1391-1395.....	101.8	109.8	107.2
1396-1400.....	104.6	112.7	110.1
1401-1405.....	98.3	106.0	103.5
1406-1410.....	97.2	104.7	98.7
1411-1415.....	104.0	112.1	104.0
1416-1420.....	96.6	104.1	96.6
1421-1425.....	96.2	103.7	96.2
1426-1430.....	103.0	96.1	103.0
1431-1435.....	100.4	93.7	100.4
1436-1440.....	103.8	96.8	103.8
1441-1445.....	102.5	95.6	102.5
1446-1450.....	95.3	87.7	94.2
1451-1455.....	93.8	84.4	91.2
1456-1460.....	94.8	85.4	92.2
1461-1465.....	92.6	83.4	90.0
1466-1470.....	94.5	85.1	91.9
1471-1475.....	96.8	83.8	94.1
1476-1480.....	93.3	73.0	90.7
1481-1485.....	95.1	72.4	92.5
1486-1490.....	88.9	66.8	86.5
1491-1495.....	92.9	69.8	90.3
1496-1500.....	89.2	67.0	86.7

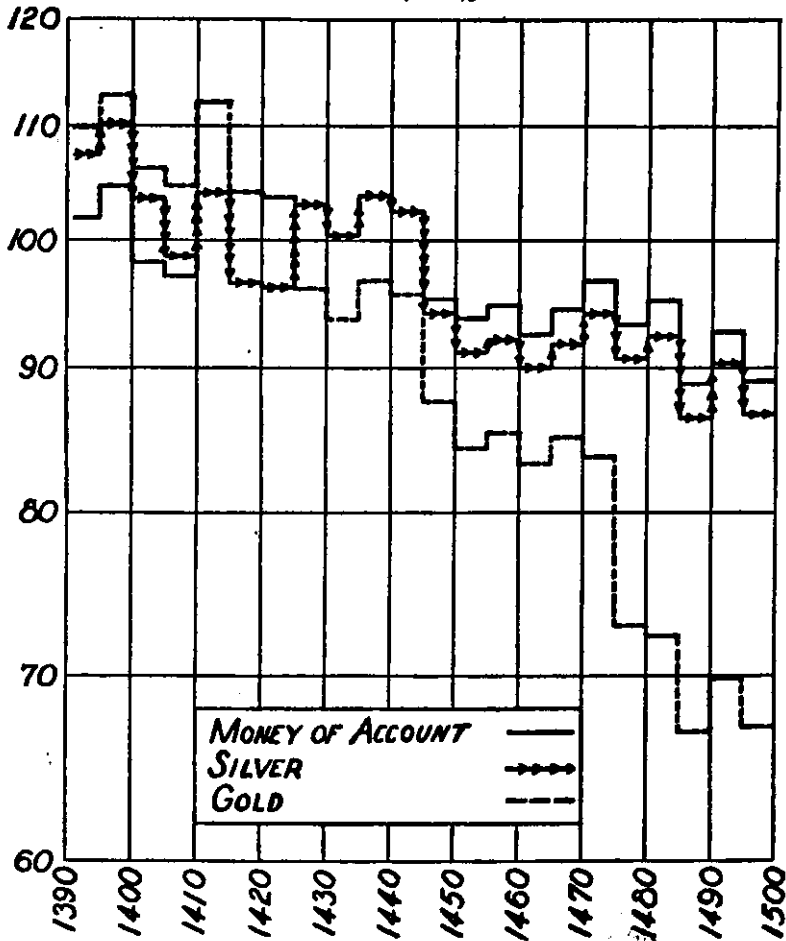
¹ *Aureum Opus*, fol. 95, 120.

² The figure for 1411-1415 represents the prices of building materials in 1411-1412 and of general commodities in 1413-1415.

CHART 4

QUINQUENNIAL INDEX NUMBERS OF PRICES IN VALENCIA (IN MONEY OF ACCOUNT, A FIXED WEIGHT OF FINE GOLD, AND A FIXED WEIGHT OF FINE SILVER)

Base = 1421-1430



less the more significant. Probably owing to the close commercial contacts with the gold-producing regions of northern Africa, the monetary yield of the gold coined in Valencia from 1382 to 1500 was several times that of the silver; and on February 1, 1483, while contemplating monetary reform, Ferdinand the Catholic wrote the master of the mint: "We have decided . . . to coin only gold first, because, being more noble, if its just price is

fixed, then silver, governed by it, cannot be badly ordered."¹ But the only prices of any significance to contemporaries were those expressed in money of account, the unit in terms of which business was transacted, debts and credits were measured, goods were bought and sold, and incomes were received and disbursed.²

Chart 4 portrays graphically the data in Table 5.

The trend of prices in terms of the original monetary units was clearly downward from 1396-1400 to 1421-1425. Only in 1411-1415 did the index rise above the preceding average, but the drop during the quarter-century was less than 8 per cent. Prices reacted in 1426-1430, held most of the gain in the following quinquennium, and rose sharply in 1436-1440. The average fell 1.3 points in 1441-1445, and the half-century ended with a figure more than 9 points below that of 1396-1400. From 1446 to 1485 the indices moved virtually horizontally, oscillating around a level about 10 per cent lower than that of the two preceding decades. After falling 6.5 per cent, to the lowest point reached in the entire period under investigation, in 1486-1490, prices rose approximately 4 points in the following quinquennium; but practically all of the gain disappeared in 1496-1500. The final index stood about 14.7 per cent beneath the average of a hundred years before. Prices were on a distinctly lower plane in the second than in the first half of the fifteenth century. Five of the ten quinquennial indices in the first half were above 100, and only one, 1446-1450, fell below 96; while in the closing half only one index was as high as 96, and two were under 90.

Only in 1406-1410 and 1451-1455, when debasement of the real (in 1407 and 1449 respectively) exerted no corresponding influence upon commodity prices, did the curve in terms of a constant weight of pure silver fail to move in consonance with the indices representing money of account.³ Owing to this diver-

¹ AR, *Moneda Real: Tesorero*, leg. 357, ca. 8550, 8558.

² Of course, barter and payments in kind were considerably more important in the fifteenth century than at present.

³ The advance of the annual indices in 1478-1480 (see Table 4) resulted largely from the orgy of clipping, particularly of silver, then in progress; but inability to estimate the resultant diminution in the weight of the real precluded allowance for this factor in computing the silver index. As gold prices indicate, the parallel movement of the silver and the money-of-account curves in 1476-1480 was spurious.

gence, however, the decline of prices reduced to a fixed weight of pure silver exceeded the fall expressed in the original monetary units, the silver index in 1496-1500 being almost 21.3 per cent lower than in 1396-1400, as compared with a drop of about 14.7 per cent in the original indices. The major disparities between gold prices and the unadjusted index numbers occurred in 1426-1430, when gold inflation through the introduction of the timbre took effect, and in 1471-1480, when the commercial tariff of the florin mounted skyward. From 1396-1400 to 1496-1500 gold prices declined almost 40.6 per cent, and from 1441-1445 to 1486-1490 the drop was approximately 30.1 per cent. The fall of gold prices in the fifteenth century greatly exceeded the decline of silver prices, and the index numbers in terms of money of account showed the greatest stability.

The downward trend of prices in 1380-1500, particularly in 1446-1500, doubtless resulted largely from the impact of the growth of population, the notable increase in the production of wealth which accompanied the rise of capitalism, and the decrease of barter upon a lagging advance in the output of the precious metals. Moderate gold and silver inflation in Valencia materially abated, but did not arrest, the downward trend. The rapid expansion of German, Austrian, and Hungarian silver production in the last half of the fifteenth century¹ apparently exerted its greatest influence upon bimetallic ratios. The rising output of silver may have been partially responsible for the stability of prices in 1486-1500, but no upward tendency was discernible before the close of the century.² The Price Revolution of the sixteenth and seventeenth centuries obviously did not take root in the Mediterranean kingdom before the dawn of the modern era.

¹ Jakob Strieder, *Studien zur Geschichte kapitalistischer Organisationsformen* (Munich and Leipzig, 1914), pp. 6-11; Adolf Soetbeer, *Edelmetall-Produktion und Werthverhältniss zwischen Gold und Silber seit der Entdeckung Amerikas bis zur Gegenwart* (Gotha, 1879), pp. 14-16.

² The data collected by d'Avenel and Rogers suggest that the upturn of French and English prices did not occur until early in the sixteenth century, and the statistics for Münster published by Dr. Ludwig Keller ("Zur Geschichte der Preisbewegung in Deutschland während der Jahre 1466-1525," *Jahrbücher für Nationalökonomie und Statistik*, XXXIV, 181-207) give reason to suspect that the new supplies of silver did not even cause German prices to rise before 1500.

In the fifteenth century Valencia not only enjoyed her period of greatest economic prosperity but passed through her golden age in literature, learning, and the fine arts. Intimate political and commercial contacts with the leading cities of Renaissance Italy and the civil strife in Catalonia and Castile powerfully conduced to the great achievements of Valencia in the closing century of the Middle Ages; but sound money also played an important rôle. Unlike many medieval countries, the Mediterranean kingdom escaped the devastating effects of flagrant monetary debasement, which in many other kingdoms bred chaos and necessitated restoration of the coinage, with falling prices and stagnant business as inevitable concomitants. It is true that during the fifteenth century both gold and silver coins served as media for inflation; but, ever restrained and definitive, the monetary alterations attenuated the price decline which, throughout most of Europe, fettered economic progress and imposed a serious obstacle to the rise of modern capitalism. Had inflation been carried somewhat further, the moderate decline of prices might have been averted or possibly converted into an advance, thus enhancing the economic progress that furnished the basis for intellectual enlightenment.

CHAPTER III

WAGES IN VALENCIA

AGAIN only contemporary account-books have yielded quantitative data; and, since the sources largely coincide with those used for prices, extensive bibliographical criticism will be unnecessary.

The records of the city of Valencia, deposited in the Municipal Archive and catalogued under *Clavertia Censals* and *Clavertia Comuna*, have furnished the earliest series. These account-books begin in 1351; so no wage series prior to the Black Death are accessible. Lacunae in twenty-three years mar the data for the second half of the fourteenth century; but, inasmuch as only salaries, which varied little from year to year, are available, interpolations¹ have closed the hiatuses. In 1404-1450 the statistics are more complete and satisfactory; salaries for twenty grades of labor occur, and the longest interpolation bridges a gap of only three years. Although quotations for a long list of employees are available for the second half of the fifteenth century, the wide chasm from 1461 through 1483 has materially weakened the series.

Political as well as economic considerations doubtless influenced the salary schedule of the municipality; and the abnormal percentage of professional workers, particularly of lawyers, constitutes a still stronger objection. The wages of the skilled and unskilled labor employed in paving streets, constructing irrigation canals, and building and repairing walls and towers, which are available in the sixteenth and seventeenth centuries, are strangely wanting in the Middle Ages.

The Archive of the Valencian Cathedral² supplied quotations for the building trades, commencing in 1380; and from 1392 on,

¹ This device has been used only when the terminal entries were identical.

² Especially legs. 1473-1486.

the series are sufficiently complete and continuous to limn the trend of wages. Unlike the municipal payrolls, the records of the Cathedral yield daily wages almost exclusively. The extreme paucity of workers outside the building trades¹ is perhaps the greatest weakness of the Cathedral data as well as of the wage statistics as a whole, but one must not forget that building was by far the greatest medieval industry carried on predominantly with free labor.

The *Llibres de Administració*, or ledgers and summaries of the administration, of the Hospital dels Inocents begin in 1413; but for several decades afterward the work of the Hospital was in a formative stage, with a skeleton organization and a shifting personnel. Not until 1451-1500 did the staff become sufficiently numerous and stable to warrant tabulation of the payroll. At no time did the medieval employees approach in either diversity or number the staff assembled in the sixteenth century to feed, clothe, heal, and regale the afflicted and to minister extreme unction to the moribund. Owing to the repairs on the Hospital building and on dwellings held as investments, wages for the building trades occasionally occurred; but discontinuity relegated them to the rôles of filling gaps in the Cathedral series and serving as controls. In the second half of the fifteenth century yarn spun by the women patients from flax purchased by the Hospital was "put out" to linen weavers and finishers, but it did not prove feasible to compile piece-rate wages for the latter in terms of a homogeneous unit.²

Like the generality of Spanish convent records, the account-books of the Convento de Santa Clara, in the capital, and of the Monasterio de Val de Crist, at Altura, proved weak in wages; but the former supplied quotations for masons and their helpers in 1454-1460, 1463, and 1465-1466. These data were used for interpolations in 1456-1457, 1459-1460, and 1465-1466 and as controls in the remaining years.

¹ Even the *ester*, who, for want of a better term, has been called a mat-maker, seems to have been engaged in building. Apparently he made coarse mat-like fabrics of hemp to be used as a base for plaster.

² *Vide infra*, p. 70.

Numerous difficulties not encountered in the transcription of prices impeded the collection of homogeneous wage statistics. Part-time employees comprised a large percentage of the salaried workers of the municipality and of the Hospital dels Inocents; and, since the accounts seldom listed their duties, rarely was it easy to ascertain whether variations in the rate of remuneration merely reflected changed obligations. Inasmuch as the strong penchant for multiple posts (apparent to every observant alien in Spain to-day) is not a modern phenomenon, workers occasionally obtained dual positions at less than the combined rates of pay; and at times it proved difficult to ascertain what had occurred. When a salaried position became vacant, it was often filled at a lower stipend; and after one or two years the normal pay was restored. Regarded as unrepresentative, these temporary salaries have been eliminated. Whether payments in kind (and, if so, their nature and extent) supplemented money wages presented a perplexing question, to which no satisfactory answer could be found in many cases. That the salaried workers of the Cathedral and of the municipality drew only money wages seems fairly certain. The unmarried employees of the Hospital dels Inocents received subsistence; and the married workers were apparently supplied with dwellings and sufficient meat, wine, and bread for their own consumption. The daily wages of skilled and unskilled labor offered the greatest problem. That the homogeneity of the series for daily wages has not been impaired by a shift in the character of the rewards is highly probable, but it has not been easy to determine whether the workers were furnished bread and wine. The available evidence leads me to conclude that the money wages in Appendix X represent the total remuneration of the laborers. The bulk of the quotations have been derived from the account-books of the Cathedral, which record no prices of bread or wine, commodities that almost certainly would have been supplied had the workers been fed by the institution. On rare occasions the Cathedral gave laborers one or two meals or furnished them food and drink, and the addition of the sums thus expended to the low money wages brought them squarely into line with the ordinary unspecified

entries. The papers of the Hospital dels Inocents often stated that only money wages were paid artisans and their assistants, and the rates were no higher than the Cathedral quotations.

Inasmuch as salaries were paid semiannually, quarterly transcriptions proved unnecessary. But on account of the marked seasonal variation (largely resulting from the difference between the length of the working day in summer and winter coupled with the intense demand for agricultural labor at planting and, particularly, at harvesting time) revealed by most historical wage investigations, it seemed necessary to collect data by quarters. Following the method adopted for prices, I have transcribed the first four quotations encountered in each quarter for the different grades of skilled and unskilled labor paid on a daily basis. The number of men hired at each wage-rate has also been noted, but rather than as a means of weighting the quarterly averages this information has been used as a factor in evaluating the data and rejecting dubious quotations.

One of the most curious facts disclosed by the present investigation is the unquestionable lack of seasonal variation in the daily wages of skilled and unskilled workers. The uniformity of rates throughout the year applied to every grade of labor and is revealed by all the account-books examined. I am unable to offer a wholly satisfactory explanation of this phenomenon. Yearly contracts at a fixed rate of pay were not responsible, for perfect seasonal stability characterized the remuneration of the workers employed for short intervals. The powerful influence of customary wage rates, the rigidity imposed by the guilds, and the unusually high representation of the building trades (coupled with the even climate, which permitted construction throughout the year) undoubtedly militated against seasonal fluctuations.

Owing to the complete absence of seasonal variations, combinations of the unadjusted quarterly figures have produced trustworthy annual averages.

The course of the yearly salaries powerfully reflects the policies of the three institutions involved. The prevalence of part-time employment, the highly specialized nature of much of the labor, and the lack of quotations of identical grades by more than one

institution preclude the possibility of ascertaining whether either the movements or the absolute levels of the salaries paid by the Cathedral, the Hospital dels Inocents, and the municipality may be taken as random samples of Valencian salaries. But the daily wage-rates of the Cathedral and of the Convento de Santa Clara were invariably either identical or virtually so; and, aside from the slightly lower remuneration of master craftsmen on a few occasions, there was little difference between the wages paid by the Hospital dels Inocents and the schedules of the other two institutions. Hence the data given in Appendix X probably indicate with tolerable accuracy the prevailing rates of pay for the artisans and laborers represented.

Annual salaries are listed in Appendix IX.

Index numbers of the salaries of municipal and Cathedral employees appear in Table 6. Owing to the lack of satisfactory data for 1421-1430, the base period, and to the circumstance that the Hospital staff either received food and lodging or their equivalent in kind, while the Cathedral and the municipal employees were paid only money wages, the Hospital salaries have been excluded from the indices.

TABLE 6

INDEX NUMBERS OF SALARIES IN VALENCIA

Base = 1421-1430 *

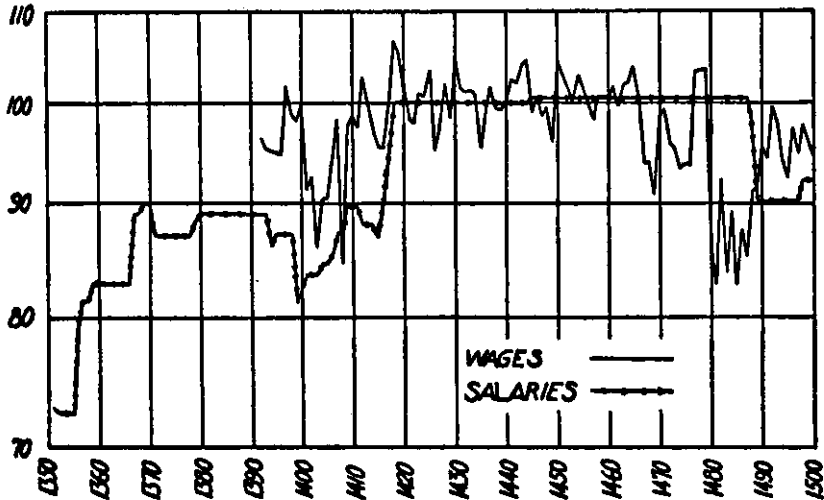
Year	Indices	Year	Indices
1351.....	73.0	1404-1405.....	84.8
1352-1355.....	72.7	1406.....	85.7
1356.....	79.3	1407-1408.....	87.3
1357-1358.....	81.4	1409-1411.....	89.8
1359-1366.....	83.0	1412-1414.....	88.1
1367-1368.....	89.2	1415.....	87.0
1369-1370.....	90.1	1416.....	90.0
1371-1378.....	87.2	1417.....	....
1379.....	88.4	1418-1444.....	100.0
1380-1393.....	89.2	1445-1450.....	100.5
1394.....	86.4	1451-1487.....	100.6
1395-1398.....	87.4	1488.....	98.2
1399.....	81.3	1489-1497.....	90.2
1400.....	82.7	1498-1500.....	92.2
1401-1403.....	83.8		

* On 1451-1475 as a base the indices are identical (*vide supra*, p. 51 n. 1).

Chart 5 contains the data in Table 6 together with index numbers of wages to permit comparison.

CHART 5

INDEX NUMBERS OF SALARIES IN VALENCIA.



The most striking phenomenon revealed by the salary indices is stability over long periods; several decades witnessed no alteration. The significant advances of the index numbers in 1356 and 1367 and the violent decline in 1399 were due to corresponding changes in the remuneration of a single worker, a hiatus in the data for one grade of labor, the beginning of a new series, or a combination of two of these factors. Upon only two occasions in the entire fifteenth century did the salary index change abruptly: in 1418, when the rewards of the upper stratum of municipal workers rose sharply, and in 1489, when the remuneration of the least skillful of these employees collapsed. The violent swings of salaries in 1399 and 1418 synchronized fairly closely with corresponding movements of wages; but the precipitate fall of salaries in 1489 lagged a decade behind the decline of wages.

The average of the Hospital salaries rose in 1451-1500, largely because of the higher remuneration of the physician, the barber-surgeon, and the superintendent. But the advance in these sal-

aries probably arose from an increase of responsibilities and resources attendant upon expansion. It may have reflected the slight improvement in the financial position of the Hospital accompanying the decrease in the cost of the payments in kind which resulted from falling prices.

Appendix X lists annual wages. The data for linen weavers represent the piece-rate for a yard (91 centimeters) of cloth a yard wide. The figures for linen finishers run in terms of a yard of uncertain and perhaps variable width.¹ All other wages are for a day's labor. The exponents indicate the number of quotations available in each year.

With average earnings approximately 21 per cent above those of the master stonemason, 13 per cent above those of the master mat-maker, and 8 per cent above those of the master mason, the master carpenter was the most highly rewarded artisan. As the figures in Appendix X indicate, the master stonemason stood at the bottom of the list. The average wages of journeymen carpenters, masons, and stonemasons were equal; but the journeyman mat-maker received about 5 per cent less. Carpenters' helpers, masons' helpers, and common unskilled laborers (peones) were paid at substantially the same rate; the wages of stonemasons' helpers were about 12 per cent below the general level. The comparatively low remuneration of masters and laborers in stonemasonry suggests either ignorance of or indifference to the hazardous nature of the occupation.

The wages of many grades of labor (particularly of master craftsmen) not quoted with sufficient frequency to justify tabulation occasionally appear in the account-books of the Cathedral and of the Hospital dels Inocents. The following rough comparisons may throw some light upon the relative earnings of divers classes of workers. Master sculptors, painters, well diggers (poceros), wood carvers, locksmiths, and adobe masons (tapia-dores) received approximately the wages of master masons; while the earnings of master sawyers and glass workers roughly equaled those of master carpenters. The few data available suggest that the wages of vine pruners and cultivators ranged between those

¹ These quotations have been tabulated but excluded from the index numbers.

of unskilled laborers and journeymen masons. Possibly because a low order of proficiency sufficed for the manufacture of the rough garments required for charity patients, the Hospital dels Innocents regularly paid tailors no more than common unskilled laborers.

On the average, master masons obtained 28 per cent more than journeymen and 70 per cent more than helpers; master carpenters, 40 per cent more than journeymen and 83 per cent more than helpers; master stonemasons, 17 per cent more than journeymen and 63 per cent more than helpers; and master mat-makers, 33 per cent more than journeymen. The composite mean ratio of the wages of masters to journeymen was 1.30 to 1, of masters to helpers 1.72 to 1, and of journeymen to helpers 1.33 to 1.

The perdurable constancy of the relationships among the earnings of different classes of artisans and of the several grades of skill within each craft tends to verify David Ricardo's theory that when once established, the comparative rates of pay of divers grades of labor tend to remain fixed from one generation to another.¹

Table 7 lists index numbers of wages, which comprise all of the series in Appendix X except those for linen finishers, eliminated by the lack of base quotations and of a uniform unit, and for a man and a horse, obviously not a "wage series" at all. The exponents show the number of relatives included in the index numbers.

Chart 6 presents graphically the data in Table 7 along with the index numbers of commodity prices to facilitate comparison.

After remaining steady in 1393-1396, the wage index rose 7 points in 1397, possibly as a belated result of the pestilence in 1394.² Wages remained virtually stationary in 1398-1400 but, in sympathy with prices, fell precipitately in 1401-1403. Temporarily halted by recessions in 1408 and 1413-1416, a general advance carried the index upward more than 20 points from 1403 to 1418, when the highest peak in the entire period under investi-

¹ *Principles of Political Economy* (Gonner ed., London, 1903), pp. 15-17.

² Archivo Regional de Valencia (hereafter AR), *Real*, lib. 512, fol. 183; Marcos Antonio de Orellana, *Valencia Antigua y Moderna*, I (Valencia, ed. 1923), 292

TABLE 7

INDEX NUMBERS OF MONEY WAGES IN VALENCIA

Base = 1421-1430 *

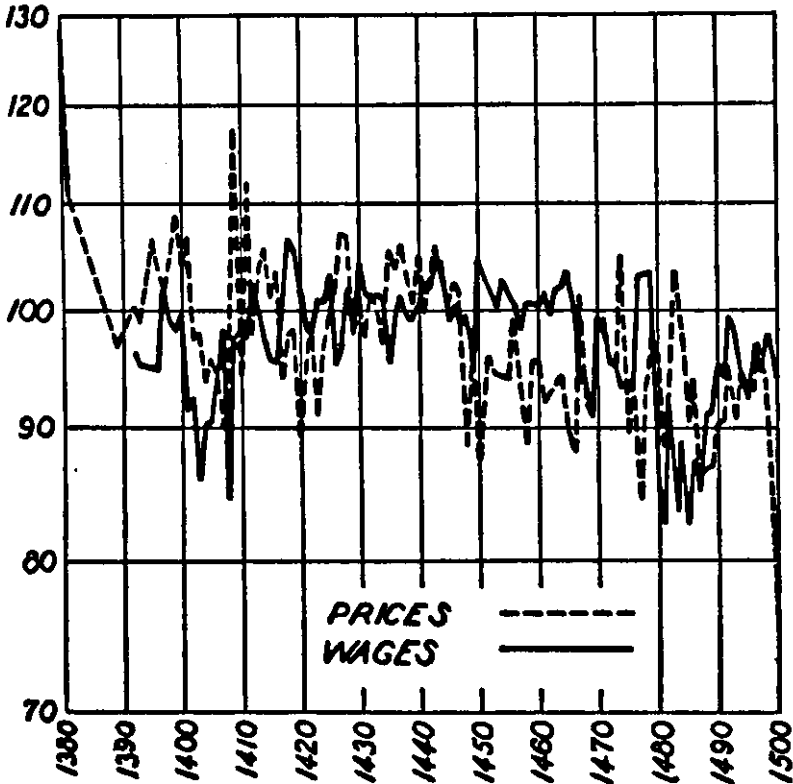
Year	Indices	Year	Indices	Year	Indices
1391	.....	1428	102.0 ⁸	1465	103.7 ⁸
1392	96.4 ²	1429	98.3 ⁴	1466	100.4 ²
1393	95.5 ⁷	1430	104.7 ⁸	1467	93.9 ⁸
1394	.....	1431	101.4 ⁸	1468	93.9 ⁸
1395	94.9 ⁸	1432	101.0 ⁸	1469	90.8 ¹⁰
1396	94.8 ⁸	1433	101.2 ⁸	1470	98.4 ⁸
1397	101.8 ⁸	1434	100.7 ⁸	1471	99.3 ¹⁰
1398	98.8 ⁸	1435	95.3 ⁷	1472	95.9 ⁸
1399	98.1 ⁴	1436	99.3 ¹⁰	1473	95.2 ⁸
1400	.....	1437	101.6 ⁸	1474	93.3 ⁸
1401	91.4 ⁸	1438	99.2 ⁸	1475	93.8 ⁸
1402	92.6 ⁸	1439	99.1 ⁸	1476	93.7 ⁴
1403	86.1 ⁴	1440	100.0 ⁸	1477	103.3 ⁸
1404	92.3 ⁷	1441	102.4 ⁸	1478	.....
1405	92.4 ⁷	1442	102.0 ⁸	1479	103.7 ⁴
1406	93.9 ⁸	1443	104.0 ⁸	1480	85.4 ⁷
1407	98.2 ⁸	1444	104.4 ⁸	1481	82.9 ⁸
1408	84.7 ⁸	1445	99.0 ⁷	1482	92.2 ⁸
1409	97.6 ⁸	1446	100.4 ⁸	1483	83.9 ²
1410	98.6 ⁷	1447	98.6 ⁸	1484	89.2 ⁸
1411	97.6 ⁸	1448	99.6 ⁷	1485	82.9 ⁸
1412	102.7 ⁷	1449	96.0 ⁷	1486	87.6 ⁸
1413	99.8 ⁸	1450	104.4 ⁸	1487	85.2 ⁸
1414	97.2 ⁸	1451	.....	1488	91.2 ⁸
1415	95.5 ⁷	1452	.....	1489	91.4 ⁸
1416	95.4 ⁷	1453	100.1 ⁷	1490	95.5 ⁸
1417	100.1 ⁸	1454	102.8 ¹⁰	1491	94.2 ⁸
1418	106.5 ⁸	1455	101.5 ⁸	1492	99.5 ⁴
1419	105.2 ⁷	1456	100.5 ⁸	1493	97.9 ⁸
1420	101.5 ⁷	1457	98.2 ⁷	1494	94.1 ⁸
1421	98.3 ⁸	1458	100.5 ⁸	1495	92.6 ⁷
1422	97.9 ⁸	1459	100.6 ¹⁰	1496	97.3 ⁷
1423	100.8 ⁸	1460	100.3 ¹⁰	1497	94.8 ⁸
1424	100.5 ⁷	1461	101.8 ⁷	1498	97.7 ⁷
1425	103.2 ⁷	1462	99.6 ⁸	1499	96.2 ⁸
1426	95.1 ⁸	1463	101.9 ⁸	1500	94.6 ⁴
1427	97.3 ⁸	1464	102.1 ⁴		

* To shift the base to 1451-1475, multiply by 1.00719 (*vide supra*, p. 51 n. 1).

gation was reached. In 1420 wages dropped to 101.5; and extraordinary stability characterized the indices during the next 45

CHART 6

INDEX NUMBERS OF MONEY WAGES AND COMMODITY PRICES IN VALENCIA



years, the maximum deviations from the base level being exactly 4.7 points above and 4.9 below. Despite violent upheavals in 1470 and 1477, wages moved sharply downward in 1466-1480. The collapse in 1480 reflected monetary deflation.¹ After oscillating around 86 for a quinquennium, the indices advanced 16.6 points in 1486-1492 but receded 6.9 points in 1493-1495. In the last quinquennium wages remained fairly stable, and in the end year the index stood only 5.4 points below the base level.

In examining the secular trend of money wages, the quinquennial averages (which smooth out the short-term fluctuations)

¹ *Vide supra*, p. 32.

presented in Table 8 and Chart 7 are more useful than the annual indices.

TABLE 8

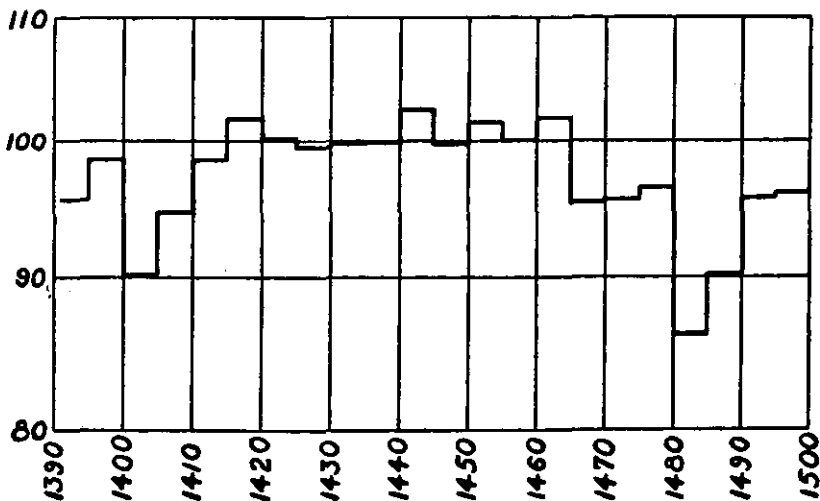
QUINQUENNIAL INDEX NUMBERS OF MONEY WAGES IN VALENCIA

Base = 1421-1430

Period	Indices	Period	Indices
1391-1395.....	95.5	1446-1450.....	99.8
1396-1400.....	98.6	1451-1455.....	101.5
1401-1405.....	90.2	1456-1460.....	100.0
1406-1410.....	94.6	1461-1465.....	101.8
1411-1415.....	98.6	1466-1470.....	95.4
1416-1420.....	101.7	1471-1475.....	95.5
1421-1425.....	100.1	1476-1480.....	96.5
1426-1430.....	99.5	1481-1485.....	86.2
1431-1435.....	99.8	1486-1490.....	90.2
1436-1440.....	99.8	1491-1495.....	95.7
1441-1445.....	102.5	1496-1500.....	96.1

CHART 7

QUINQUENNIAL INDEX NUMBERS OF MONEY WAGES IN VALENCIA



Beginning at 95.5 in 1391-1395, the index rose to 98.6 in 1396-1400 but fell to 90.2 in 1401-1405. Reacting in 1406-1410, wages continued upward through 1416-1420, when they reached a peak 11.5 points above the nadir in 1401-1405. From 1420 through 1465 the trend was virtually horizontal; and after a drop of 6.4 points in 1466-1470 a second plateau, extending through

1480, was reached. In 1481-1485 occurred the severest decline of wages during the period studied; but a rise in 1486-1490 restored about half the loss, and from 1491 to 1500 wages stood almost exactly at the 1465-1480 level. With a discrepancy of only 2.5 points, the average index for the closing quinquennium almost exactly duplicated its position of a hundred years before.

Especially noteworthy is the symmetrical pattern displayed by the curve of the quinquennial wage indices. Peaks of almost equal height at each end are separated from a long central plateau by valleys of similar depth.

The ground lost by labor in 1466-1470 was not regained; the quinquennial indices of money wages did not return to the level maintained in the preceding fifty years, and they averaged considerably less in 1451-1500 than in 1401-1450. It appears that augmented production of silver (particularly in Germany, Austria, and Hungary) failed to revolutionize Valencian wages, as well as prices, in the second half of the fifteenth century.¹

A precise measure of real wages presupposes an accurate gauge of the cost of living, which, in turn, can rest only upon index numbers of the prices of the commodities and services consumed by laborers weighted in accordance with the expenditures of the average working-class family. The absence of data concerning such major items as lodging, clothing, and personal services and ignorance of workers' budgets preclude the construction of such index numbers. But, inasmuch as the laboring class was not far above the minimum of subsistence, Engel's Law affords ground for assuming that the lion's share of their incomes was spent upon food. For the period 1413 (when the food prices first became available) to 1500 a special index including the articles of food in Appendix III has been constructed. Although weighting has proved impossible, the food index may be taken as a fairly reliable gauge of the cost of living; perhaps the chief defect is a tendency for food prices, the most variable element in working-class budgets, to exaggerate changes in living costs. Furthermore, the fixed-base indices preclude allowance for a diminution in the consumption of commodities suffering price increases and

¹ *Vide supra*, p. 62.

thus tend to overestimate the rise of living costs in dear years. To make rough indices of real wages, the five-year averages of the index numbers of money wages have been divided by the quinquennial food indices.

Table 9 and Chart 8 give quinquennial indices of real wages.

TABLE 9

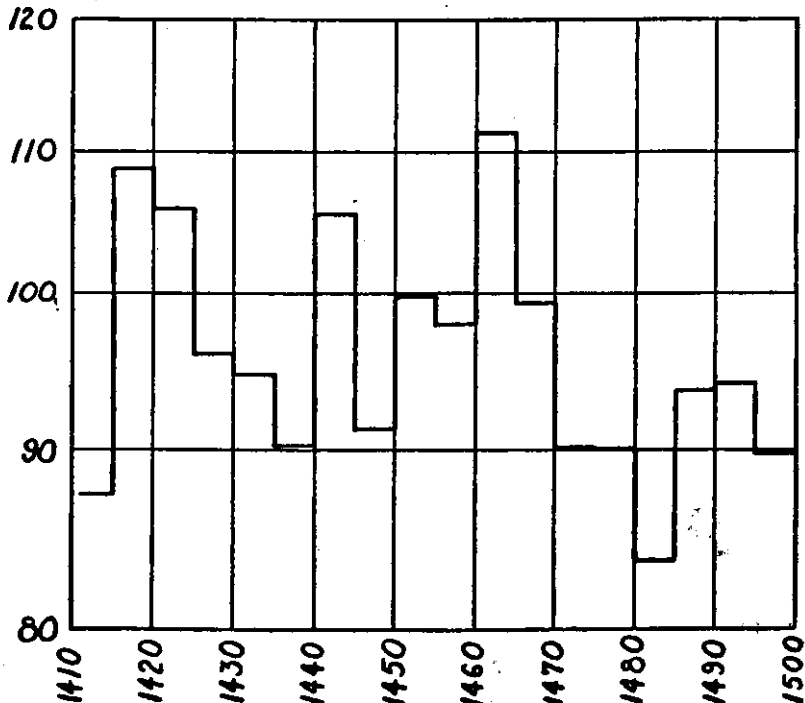
QUINQUENNIAL INDEX NUMBERS OF REAL WAGES IN VALENCIA

Base = 1421-1430

Period	Indices	Period	Indices
1413-1415.....	87.5	1456-1460.....	98.0
1416-1420.....	108.7	1461-1465.....	111.4
1421-1425.....	105.7	1466-1470.....	99.4
1426-1430.....	96.0	1471-1475.....	90.2
1431-1435.....	94.8	1476-1480.....	90.1
1436-1440.....	90.3	1481-1485.....	83.8
1441-1445.....	105.4	1486-1490.....	93.7
1446-1450.....	91.5	1491-1495.....	94.2
1451-1455.....	99.8	1496-1500.....	89.9

CHART 8

QUINQUENNIAL INDEX NUMBERS OF REAL WAGES IN VALENCIA



The low index for 1413-1415 reflected dear food prices, and the sharp advance in 1416-1420 resulted from a precipitate decline in living costs. Steadily mounting prices carried the index downward almost 17 per cent from 1416-1420 to 1436-1440. An inverse movement of money wages and living costs in 1441-1445 forced real wages sharply upward, but a counter movement in the following quinquennium absorbed the gain. After soaring 8.3 points in 1451-1455 and remaining stable in 1456-1460, the index rose to 111.4, the high-water mark for the entire fifteenth century, in 1461-1465. From this peak the curve fell to 83.8, the lowest point recorded during the period under investigation, in 1481-1485. Rising money wages and falling living costs improved real earnings about 12 per cent in 1486-1490, and in the ensuing quinquennium the index remained steady. But in 1496-1500 money wages lagged behind ascending living costs, and real wages dropped 4.3 points.

As a cursory glance at the curves of nominal and real wages in Charts 7 and 8 will reveal, the principal cause of major changes in real wages was fluctuations of prices rather than of money wages. All the peaks and, bating that of 1481-1485, all the valleys in the real wage curve resulted from inverse changes in the cost of living.

Particularly striking is the stability of real wages. Remarkably free from invasion, civil strife, catastrophic pestilences,¹ and flagrant monetary inflation or deflation, Valencia largely escaped violent alterations of either money wages or living costs. Only

¹ The extant information regarding pestilences must be employed with extreme caution. Since vital statistics are a modern phenomenon, contemporaries could only guess at the severity and even may have formed erroneous judgments as to the reality of epidemics. Many of the data now available can be traced either to arguments supporting requests for subsidies or to petitions for relief from taxation or from some other public burden; other accounts have been vitiated by the exaggerative proclivities of chroniclers. It appears that 6 pestilences occurred in the fifteenth century: in 1420, 1435, 1439, 1450, 1465, and 1489 (AR, *Real*, lib. 512, fols. 183-185; Hospital dels Innocents, *Llibres de Administració*, 1466, fol. 83; Biblioteca Universitaria de Valencia, Ms. 1206; Marcos Antonio de Orellana, *op. cit.*, I, 292). Only in 1450 and 1490 (the epidemic of 1489 broke out in November) did wages show a normal response to a pestilence; wages remained stable in 1439 and rose only 2.6 points in 1465. The index declined 5.4 points in 1435 and plunged downward 6.9 points in 1420-1421.

in 1461-1465, when 111.4 was reached, did the quinquennial index of real wages rise more than 10 per cent above the base level; and only in 1481-1485, with 83.8, did it fall as much as 15 per cent below. Complete absence of unemployment statistics precludes measurement of the total real incomes of laborers; but, if one accepts the common assumption that in that pre-capitalistic epoch the volume of employment was free from "fits and jerks," it appears that singular regularity marked labor's share in the national dividend.

PART II

ARAGON

CHAPTER IV

MONEY IN ARAGON

THE paucity of price and wage statistics in Aragon renders both impossible and unnecessary such an intensive study of money as has been undertaken for Valencia and Navarre. Furthermore, since the Aragonese florin, which constituted a large part of the media of circulation of Aragon proper, was minted indiscriminately in the different kingdoms of the Crown of Aragon,¹ it was regarded as a Valencian coin and discussed in Chapter I. Hence consideration of the florin can be largely confined to an investigation of its tariff in terms of money of account. Apparently silver coins were struck only prior to the thirteenth century and near the close of the fifteenth. So the mint price of silver and bimetallic ratios will require scant attention.

Documentary sources for the history of Aragonese money are glaringly discontinuous and incomplete. Particularly unfortunate is the utter lack of mint records, which precludes the compilation of statistics of coinage and deprives us of the instructions issued and the monetary decrees remitted by the Crown to the masters of the mints. The Archivo Municipal, at Saragossa, and the Archivo de la Corona de Aragón, at Barcelona, have supplied a modicum of monetary legislation; but the public, institutional, and ecclesiastic archives of Saragossa, Huesca, Jaca, and Barcelona² have yielded incomparably fewer ordinances than have come to light for Valencia or Navarre; and it has proved necessary to rely to a greater extent upon printed

¹ The Crown of Aragon was a federation of the kingdoms of Aragon, Catalonia, and Valencia, with appendages at various times in Languedoc, Sicily, Sardinia, and the Balearica. Unless otherwise specified, in Part II *Aragon* will signify Aragon proper.

² The only archives that supplied data pertaining to Aragonese money.

sources¹ for the weight and fineness of coins. Fortunately, however, the account-books of Nuestra Señora del Pilar at Saragossa and of the Cathedral at Huesca, the principal sources of price and wage statistics, have furnished satisfactory quotations of the florin in terms of money of account, thus permitting the construction of a reliable table for the conversion of data expressed in current money into terms of a fixed weight of gold.

Despite the great prestige enjoyed by Aragonese money (known as *moneda jaquesa*)² at home and abroad in the last four centuries of the Middle Ages, and notwithstanding the frequent references to it in both sacred and profane literature, "the primitive constitution of Aragonese money is the most abstruse and complex matter in the national economy. . . ."³ Assays of coins have disclosed their fineness and approximate weights in several periods, but ordinances fixing their denominations and tariffs are often lacking.⁴ Sufficient data are accessible, however, to refute the widely held opinion that the money of Aragon was extremely stable. It did not escape the ubiquitous medieval alterations.

In the twelfth and thirteenth centuries the money current in Aragon consisted of a conglomeration of domestic and foreign coins. The Aragonese penny (*dinero*) was the most prevalent type; but loans were made, and contracts drawn, in Moorish, *Tournois*, Béarnese, Catalan, and Valencian money.⁵ At least one royal tax was levied in terms of an alien coin.⁶

The origin of Aragonese money remains shrouded in mystery.

¹ Such as *Fueros y Observancias del Reyno de Aragón* (Zaragoza, ?) and the works of Ignacio de Asso (*Historia de la Economía Política de Aragón* [Zaragoza, 1798]), Joaquim Botet y Sisó (*Las Monedas Catalanes*, 3 vols. [Barcelona, 1908-1911]), José Salat (*Tratado de las Monedas en el Principado de Cataluña* [Barcelona, 1818]), Vincencio Juan Lastanosa (*Tratado de la Moneda Jaquesa* [Zaragoza, 1681]), Jerónimo de Zurita (*Anales de la Corona de Aragón* [ed. Zaragoza, 1610]), and Sebastián González de Castro (*Declaración del Valor . . . de las Monedas Antiguas de Plata Ligada de Castilla y Aragón* [Madrid, 1658]).

² Because it originated at Jaca and was coined there even after Saragossa had been wrested from the Moors.

³ Ignacio de Asso, *op. cit.*, pp. 429, 431.

⁴ *Ibid.*, pp. 429-430.

⁵ Archivo de Nuestra Señora del Pilar (hereafter AP), *Prepositura*, rep. 1º, lig. 5º; Archivo de la Corona de Aragón (hereafter ACA), registro 295, fol. 22; Ignacio de Asso, *op. cit.*, pp. 437-439, 442.

⁶ *Vide infra*, p. 84.

The earliest known accounting unit was the shilling (sueldo), but prior to the reign of Ferdinand the Catholic (1479-1516) apparently there was no such physical money. The first domestic coins were the silver three-pence and the vellon¹ penny. Before the thirteenth century the three-pence had disappeared from circulation, and from that time forward the penny and half-penny were the only fractional coins minted.²

Statutes governing the metallic content of Aragonese money before the thirteenth century have not been unearthed; but from assays (made by himself and others) of the earliest coins of which tolerable specimens have survived, Ignacio de Asso, the celebrated economic historian of Aragon,³ guessed at the weight and fineness of the pennies minted in the last third of the eleventh century and in the first third of the twelfth. According to Asso, Sancho Ramírez (1076-1094) struck approximately 20s. 2 1/2d.⁴ from a mark containing 3 dineros (25 per cent) of fine silver. Although the evidence is flimsy, there is some reason to believe that Peter I (1094-1104) may have raised the fineness of the penny to 3 dineros 4 grains (26.39 per cent) and lowered to 16s. the quantity coined from a mark. The pennies issued by Alfonso I (1104-1134) contained 3 dineros of silver, and the weights of extant samples suggest that a mark was coined into 21s. 4d.⁵ Asso failed to find monetary data for the last two-thirds of the twelfth century.⁶ But before the close of his reign Peter II (1196-1218) apparently coined 18s. in pennies and 20s. in half-pennies from a mark containing 3 dineros of fine silver.⁷

In the Cortes of Lérida, in 1218, James the Conqueror (1218-1276) promised to maintain the money issued by his father; and on May 13, 1221, he took an oath to coin no gold (sic), silver, or

¹ In the Middle Ages vellon money was an alloy of silver and copper, with the latter predominating.

² Ignacio de Asso, *op. cit.*, pp. 430-431, 444.

³ *Vide infra*, p. 96.

⁴ Since either abrasion or *de facto* mint tolerance on weight could easily have accounted for the discrepancy, exactly 20s. is the more plausible figure.

⁵ Ignacio de Asso, *op. cit.*, pp. 434-435.

⁶ *Ibid.*, p. 436.

⁷ At least when he reverted to the money of his father, James I minted coins of this type.

vellon during the following seven years.¹ But, forgetting this abjuration, he proceeded to authorize the mint at Jaca to strike base pennies,² possibly short as much as $16 \frac{2}{3}$ per cent in fineness and $28 \frac{1}{2}$ per cent in weight.³ The debasement instantly evoked a storm of protest; everyone was reluctant to accept the new coins. In response to a petition from the Cortes, on March 16, 1223,⁴ James I demonetized the new issue, restored the money of his father, and agreed to strike no more coins of any description during the ensuing ten years.⁵ In consideration of a septennial tax of a gold *maravedí* (rated at 7s.) upon every head of a family either occupying a house or possessing property worth 10 maravedís, voted by the Cortes of Monzón on October 15, 1236, James I confirmed in perpetuity the domestic money then current and promised never to alter its weight, fineness, or imprint.⁶ To raise funds for prosecuting the war "unjustly waged upon Aragon" by Alfonso the Wise of Castile, in 1254 the cities of the kingdom authorized James I to coin 11,000 marks of silver into pennies and 4000 marks into half-pennies. In accordance with the royal oath of 1236, James I decreed, on August 28, 1254, that 18s. in pennies or 20s. in half-pennies be struck from a mark 3 dineros fine.⁷ Five years later the municipalities authorized the Crown to coin 12,000 marks of silver into pennies and 3000 into half-pennies in order to subsidize a crusade to the Holy Land. The weight of the coins remained unchanged, but each mark was to contain 3 dineros of silver itself 11 dineros 12 grains

¹ Archivo Municipal de Zaragoza (hereafter AMZ), *Privilegios Reales*, 13 de Mayo de 1221.

The promise by a Christian monarch in Western Europe not to mint gold, 3 decades before Florence struck the first florin, reflects the coinage of gold by the Moors in Spain and (following them) by the Christian rulers of Castile. Presumably the coinage of gold in Aragon at this time was not regarded as impossible.

² Joaquim Botet, *op. cit.*, II, 43-44.

³ Sebastián González de Castro, *op. cit.*, fol. 5; Ignacio de Asso, *op. cit.*, p. 441.

⁴ The correct date may have been a year later (*vide*, for example, Joaquim Botet, *op. cit.*, III, 248-252).

⁵ *Ibid.*, II, 43-44; III, 248-252; Ignacio de Asso, *op. cit.*, pp. 439-440.

⁶ *Fueros y Observancias del Reyno de Aragón* (hereafter *Fueros*), fols. 171-172; Vincencio Juan Lastanosa, *op. cit.*, p. 6; Joaquim Botet, *op. cit.*, II, 44; III, 252-254.

⁷ AMZ, *Pergaminos*, armario 3, tabla 1^a, leg. 3, no. 21.

Assays of these coins led Asso to conclude that upon leaving the mint they were of standard weight and fineness (*op. cit.*, pp. 440-442).

fine (making a silver content of 23.96 per cent).¹ James I promised to terminate the coinage within eighteen months of its inception, and not to exceed the maximum limit upon the issue. If the heavy coinage authorized in 1254 and 1259 evoked complaints, they have apparently not survived. Records of further issues during the reign of James I have not been unearthed, but in 1267 "some important persons" were punished for counterfeiting Aragonese money and "circulating it in large quantities" throughout the kingdom.²

If one may rely upon González de Castro, Peter III (1276-1285) lowered the fineness of vellon coins to 2 dineros 10 grains (20.14 per cent) and increased to 25s. 8d. the quantity struck from a mark; while James II (1291-1327) restored the fineness to 3 dineros but continued to strike the light pennies introduced by his predecessor.³ Apparently traders were reluctant to accept the debased coins; for in 1300 James II established a fine of 5s. for the refusal of each genuine Aragonese penny or half-penny offered in exchange for bread, wine, or other goods.⁴ To alleviate the injuries resulting from the "great scarcity" of money, however, the Cortes of 1307 authorized James II to mint four million pennies and 500,000 half-pennies of the prevailing weight, fineness, and imprint within the following three years.⁵

Apparently no money was coined during the reign of Alfonso IV (1327-1336); but the fiscal difficulties arising from the forcible reincorporation of the Balearics into the Crown of Aragon, the suppression of the rebellious Aragonese and Valencian Unions of Municipalities, the preparation of an expedition against the

¹ Joaquim Botet, *op. cit.*, II, 45; III, 255-256; Vincencio Juan Lastanosa, *op. cit.*, pp. 14-20.

Whether this represented a genuine or only a nominal change in fineness is not clear. The silver used as an alloy before this time was certainly not chemically pure, and it may have contained as much as 22 grains of base metal. The royal decree of August 22, 1259, authorizing the coinage stated specifically that the fineness of the current money would be duplicated (Joaquim Botet, *op. cit.*, II, 45).

² Jerónimo de Zurita, *op. cit.*, I, lib. iii, cap. lxxii. The Castle of Santolalla, near Sangüesa (Navarre), was the headquarters of the counterfeiters.

³ *Op. cit.*, fol. 6-7.

Joaquim Botet (*op. cit.*, II, 85) doubted that Peter III had coined any money.

⁴ *Fueros*, fol. 177.

⁵ *Ibid.*, fols. 172-173; Vincencio Juan Lastanosa, *op. cit.*, p. 20; Joaquim Botet, *op. cit.*, II, 24-25.

Genoese and Pisans in Sardinia, and participation in the bloody Castilian civil war between Peter the Cruel and Henry of Trastamara led Peter IV (1336-1387) to wring from the Cortes on May 4, 1350, the privilege of coining four million pennies and 500,000 half-pennies within the next four years.¹ Despite his promise in the Cortes to strike money of the customary weight and fineness, Peter IV reduced the silver content of the penny to 1 dinero 18 grains (14.58 per cent) and increased the quantity struck from a mark to 29s. 6d.² According to Asso,³ the gross profit from seigniorage and brassage amounted to about 21s. 6d. per mark; so general discontent must have been responsible for the cessation of the coinage on May 4, 1353, exactly a year before the termination of the privilege.⁴

At least from August, 1367 until April, 1373 Peter IV openly coined Castilian money, presumably in copious quantities, in the royal mint at Saragossa.⁵ In fact, while negotiating with representatives of Castile in 1370, Aragonese diplomats were willing to renounce the princely counterfeiting of Castilian coins only in return for a heavy indemnity.⁶

As has been indicated,⁷ the Aragonese florin was first issued in the reign of Peter IV. Although sanctioned three years earlier, the coinage did not begin until 1349. At the outset the gold content exactly duplicated that of the Florentine original; but the chronic depletion of the royal exchequer by the perpetual wars of Peter IV led, in the Cortes of Tortosa, in 1365 to a reduction of the fineness to 18 carats (75 per cent) and of the weight to 1/68 of a Perpignan mark.⁸ Other gold coins were subsequently struck; but from 1365 on, the weight and fineness of the florin remained constant. To thwart the implacable hostility

¹ *Fueros*, fols. 173-175.

The alleged purpose of the issue was to remedy the great injuries to trade resulting from an acute scarcity of domestic money.

² Ignacio de Asso, *op. cit.*, p. 444; Sebastián González de Castro, *op. cit.*, fols. 8-9.

³ *Op. cit.*, p. 444.

⁴ Joaquim Botet, *op. cit.*, II, 114-115.

⁵ ACA, registro 1231, fols. 65-70; Joaquim Botet, *op. cit.*, II, 143-147; Vincencio Juan Lastanosa, *op. cit.*, p. 10.

⁶ *Vide supra*, p. 10.

⁷ *Vide supra*, pp. 12-13.

⁸ *Vide supra*, pp. 13-14.

(particularly in Valencia) to the introduction of gold money in the Crown of Aragon, Peter IV originally restricted the issue of florins to the mint at Perpignan. But, having been advised by experts that extension of the coinage of gold to other localities would double the royal revenue from seigniorage, in 1369, Peter IV authorized the mint farmers to strike florins at Barcelona, Valencia, and Saragossa.¹ All the successors of Peter IV minted florins, and they freely circulated in Aragon; but, with the possible exception of John II (1458-1479), it seems that no king prior to Ferdinand the Catholic exercised the privilege of striking these coins at Saragossa.²

To discourage the prevalent clipping and sweating of florins, the Crown provided in the Cortes of Saragossa in 1442 that they should circulate by weight, with a legal schedule of deductions for shortage.³ The purchase of "scales to weigh florins" in the same year by Nuestra Señora del Pilar⁴ suggests that the decree affected practice.

Conclusive data are lacking, but it appears that little or no money was coined in Aragon from 1353 to the reign of Ferdinand the Catholic. González de Castro identified a penny 1 dinero 12 grains fine (12.5 per cent) as belonging to the reign of Alfonso V (1416-1458), but the vigorous protest by the Cortes against pence of this fineness in the reign of the Catholic Kings casts doubt upon the existence of a precedent. In 1482 the Cortes argued that the money authorized by John II had not actually been minted.⁵

The protracted underissue of pence led to an acute scarcity of fractional money, and large quantities of petty foreign coins inevitably flowed into the kingdom. In the Cortes of Saragossa in 1372 Peter IV debarred from circulation all fractional coins (in-

¹ ACA, registro 1293, fols. 202-203.

² Ignacio de Asso, *op. cit.*, pp. 444-445. For example, the contract farming the privilege of minting florins for 5 years beginning on January 1, 1398, provided for coinage at Perpignan, Barcelona, Valencia, and Palma, but not at Saragossa (ACA, registro 2255, fols. 121-130; Joaquim Botet, *op. cit.*, III, 391-402).

³ Vincencio Juan Lastanosa, *op. cit.*, p. 11.

⁴ AP, *Preparitura*, rep. 1^o, lig. 10^o, fol. 67.

⁵ Ignacio de Asso, *op. cit.*, p. 449.

cluding counterfeit issues of Aragonese pence) minted abroad.¹ On June 1, 1398, Martin I (1396-1410) prohibited the circulation of "all foreign money whatsoever" at a tariff exceeding its intrinsic value as determined by assays in the Saragossa mint. The penalty for infraction was fixed at confiscation of the "overvalued" alien coins.² The preamble to a decree promulgated in 1428 affirmed that the money of Aragon consisted of pence and complained that certain cities and towns had established official tariffs for reals and other foreign silver pieces; that they were driving Aragonese coins out of circulation; that contracts were being drawn in terms of foreign money; and — what was worse — that royal officials were constraining creditors to accept it. All contracts in terms of alien coins were declared void, and a fine of 500s. was established for their certification by a notary.³ For "some time" prior to 1442 fractional Catalan and Valencian money, which, as early as 1350,⁴ had been officially rated at a discount of one-sixth, had begun to circulate at parity with Aragonese pence. In the Cortes of Saragossa, in 1442, Queen Mary provided a penalty of confiscation of the coins and a fine of equivalent value for the tender or the acceptance of Catalan or Valencian pence after the first of July. But to prevent injury to innocent holders of these coins, the Crown agreed to redeem them at par in royal tax offices until the end of August.⁵

In 1482 the Cortes delegated Fray Jorge de la Puerta to inform Ferdinand the Catholic that the utter lack of domestic silver and vellon money was stifling commerce and that (paradoxically) the florin had risen to 18s. 6d. north of the Ebro. Heeding this complaint, Ferdinand authorized an issue of pennies, with the fineness reduced to 1 dinero 12 grains and the quantity struck from a mark increased to 32s. Such debasement elicited a more vigorous protest from the Cortes than had the scarcity of money; apparently Ferdinand suspended the coinage before a large, or even

¹ *Fueros*, fol. 175; Vincencio Juan Lastanosa, *op. cit.*, p. 10.

² Josef Salat, *op. cit.*, II, "Pruebas," 46-47. A similar decree had been promulgated in Catalonia on March 8, 1398 (ACA, registro 2254, fols. 55-56).

³ *Fueros*, fol. 176; Vincencio Juan Lastanosa, *op. cit.*, p. 11.

⁴ *Fueros*, fols. 173-175; Sebastián González de Castro, *op. cit.*, fol. 7.

⁵ *Fueros*, fol. 176; Vincencio Juan Lastanosa, *op. cit.*, pp. 11, 22.

an adequate, quantity of pence had been struck.¹ The Cortes of 1482 instructed the municipalities north of the Ebro "to pay and receive" the Castilian real of standard weight at 2rd. and the Navarrese *carlin* at 14d.²

It appears that some time prior to October, 1496 Ferdinand instituted the coinage of silver. In response to the complaint by the senior councilor (*jurado primero*) that, "owing to the smelting of silver coins by silversmiths and others, silver money can scarcely be found, which greatly detracts from the common weal," the municipal council of Saragossa established a fine of 2000s. for the smelting of silver pieces.³ And a decree of March 4, 1497, provided for an issue of silver groats (called *aragoneses*) "like those previously struck."⁴ The lack of monetary ordinances in 1483-1497 suggests that the coinage of silver was authorized not later than 1482.

Having deliberated and consulted experts, on January 23, 1497, a monetary commission composed of royal officials and representatives of the Cortes proposed to the King and the royal treasurer remedies for "the great dearth of fractional money in the kingdom, especially in Saragossa." To end the insufferable diversity of petty coins in the Crown of Aragon, the commission urged Ferdinand to appoint representatives for Catalonia and Valencia to attend a conference at Saragossa for the purpose of adopting a uniform type of fractional money and, incidentally, to eradicate the discrepant tariffs of gold pieces in the different kingdoms. The Aragonese commissioners warned Ferdinand that the desperate plight of the peasants, craftsmen, and common laborers, "engendered by the great scarcity of fractional money," rendered immediate expansion of the coinage the sole preventive of social unrest. Although the monetary commission apparently expected Catalonia to cooperate and believed that Valencia, "the kingdom that suffers the most [from diversity], strongly desires

¹ Ignacio de Asso, *op. cit.*, pp. 447-450; Sebastián González de Castro, *op. cit.*, fol. 23.

² Ignacio de Asso, *op. cit.*, pp. 449-450.

³ AMZ, *Actas Comunes*, 26 de Octubre de 1496.

⁴ ACA, registro 3686, fols. 35-38.

to unify the fractional money," the projected reform never materialized.¹

In response to the complaint from the "recent" Cortes of Tarazona that "trade is languishing and my subjects are incessantly suffering great vexation and injury because of the intolerable dearth of fractional money, which can be found only in small quantities with the utmost difficulty," on March 4, 1497, Ferdinand the Catholic authorized issues of silver and vellon coins. The fineness of pence was raised to 1 dinero 15 grains (13.54 per cent),² and the quantity struck from a mark was reduced to 24s. From a mark of silver 11 dineros 6 grains (93.75 per cent) fine 66 groats,³ tariffed at 2s., or a proportional number of shillings and six-pence, were struck. The mint price of silver was fixed at 128s. a standard mark, and the remaining 4s. was collected as a fee for coinage. To avert clipping and sweating, which had been "freely practiced upon the coins then current," Ferdinand decreed that only groats, shillings, and six-pence of full weight might circulate. Realizing that fractional money would depreciate if the quantity exceeded the requirements for change and petty trade, Ferdinand limited the monetary yield of silver and vellon to £5000, of which not more than one-fifth might consist of pence. Furthermore, he confined the legal tender of vellon coins to debts not exceeding 5d.⁴ Arguing that base foreign pence were supplanting small domestic coins, Ferdinand debarred from circulation the fractional money of Valencia, Florence, and any other region issuing baser token coins than those of Aragon.⁵ The coinage of groats and pence did not begin immediately. On April 16, 1497, Crown officials and representa-

¹ Archivo de la Diputación Provincial de Zaragoza (hereafter ADZ), *Registro de Actos Comunes*, Ms. 85, fols. 31, 44.

² The Cortes had recommended 1 dinero 13 grains.

³ The Cortes had requested the coinage of groats 11 dineros fine, weighing 1/67 of a mark.

⁴ On February 13, 1498, the Valencian city council registered a strong complaint against the rumored intention of Ferdinand the Catholic to limit the legal tender of vellon coins to sums not exceeding £15; and on April 27, 1499, a limit of 50s. was actually established in the Mediterranean kingdom (*vide supra*, pp. 36-37).

⁵ ACA, registro 3686, fols. 35-38.

The fractional money of Navarre and that of Catalonia 3 dineros fine were explicitly allowed.

tives of the Saragossa mint urged Ferdinand and the royal exchequer to open the mint;¹ and on May 31 the Cortes instructed the farmer of the general taxes (el arrendador y administrador de las generalidades del reino) to deliver 2000s. to the officers of the mint in order to finance the preparations to coin money.² Recognizing that the authorized issue of groats and pence would quickly force up the price (and exhaust the small supply) of silver in the kingdom, the Crown and the Cortes decided to import bullion. On February 22, 1498, the general tax farmer received notice that 411 marks 2 5/8 ounces of silver had been imported by the royal treasury at a cost of 16s. 6d. an ounce, or 132s. a mark, as an experiment to determine the profitableness of such a policy. He was instructed to deliver the silver as required for coinage, to receive the mint price in the coins produced, and to render a strict account to the royal treasury of the profits won or the losses incurred.³

Data concerning gold money in Aragon during the second half of the fifteenth century are exceedingly meager. As early as 1477 John II struck gold pieces known as *juanines* at Saragossa, and a few years later this unit became the Aragonese ducat.⁴ In the last two decades of the fifteenth century a few ducats, commercially tarified at 22s., were current in Aragon; but no records of their coinage in this kingdom have been unearthed.⁵ Until the close of the Middle Ages the florin continued to be the most prevalent gold piece.

The money of account in Aragon consisted of shillings and pence. As early as 1266 the Crown endeavored to complete the Carolingian system by requiring the use of pounds along with

¹ ADZ, *Registros de Actos Comunes*, Ms. 85, fol. 44.

² ADZ, *Registros de Actos Comunes*, Ms. 85, fol. 53.

³ ADZ, *Registros de Actos Comunes*, Ms. 86, fol. 36.

If the Crown did not lose upon the coinage of silver pieces, either the silver must have been finer than the standard or the groats must have fallen below the regulation weight and/or fineness. For the price of the imported silver exactly equaled the monetary yield of standard bullion, and the officers and employees of the mint could hardly have remitted entirely their fees. Of course, any losses sustained upon groats may have been recouped from the coinage of pence.

⁴ *Vide supra*, pp. 33-34.

⁵ Aragonese ducats were struck in Valencia and Catalonia.

shillings and pence;¹ but the legislation had little or no effect upon practice. Prices and wages were frequently quoted in florins, but until the close of the Middle Ages the totals were almost invariably recorded in shillings and pence.²

Data concerning the composition of the media of circulation are scant; but, unless the accessible material is unrepresentative, florins formed a substantial portion of the current money in the second half of the fourteenth century and a vast majority throughout the fifteenth. In addition to making practically all large payments, they were employed to a surprising extent in petty transactions. For instance, a "Jew who repaired an oven" in 1402 was paid a florin;³ and in 1447 the Cathedral at Huesca gave an alms of one florin to "James the kneader" (el amasador). Miscellaneous expenses in a lawsuit in 1481 were two florins, and the following year a certain notarial fee was one florin.⁴ In 1483 a Moor was paid a florin for hauling two loads of lumber, and in 1499 workers were given a florin to buy wine.⁵ Even wages were frequently paid in these coins. For example, in 1469-1470 master Nicolau, the Prussian, who was writing choral books (libros del coro) for Nuestra Señora del Pilar, almost always received florins.⁶ Of fourteen wage payments selected at random from the account-books of the Cathedral at Huesca in 1402-1405, eleven were made in florins; and in 1406 the frequent outlays for carting stone invariably consisted of these coins.⁷

Inasmuch as silver money was an unimportant component of the media of circulation, comparisons of specie prices in Aragon with those of other countries must be made on a gold basis. Hence unusual importance attaches to the gold equivalence of money of account. Although the data are discontinuous and otherwise defective, the records of the Huesca Cathedral, Nuestra Señora del Pilar, the municipality of Saragossa, and the royal

¹ Ignacio de Asso, *op. cit.*, p. 442.

² For example, *vide* Archivo de la Catedral de Huesca (hereafter ACH), *Limosna*, lib. antiguo; AP, *Obras*, rep. 3^o, figs. 10¹¹-11.

³ ACH, *Mensa Canonical*, libs. 1-2.

⁴ AP, *Prepositura*, figs. 14², 14³.

⁵ AP, *Prepositura*, fig. 14⁴; ACH, *Fábrica*, fol. 174.

⁶ AP, *Obras*, rep. 3^o, fig. 10¹¹.

⁷ ACH, *Fábrica*, 1402-1406.

household of Navarre¹ furnish incomparably better material for reducing money of account to a fixed weight of fine gold than can be brought to bear upon any other aspect of Aragonese coinage.

Table 10 lists the commercial tariffs of florins from 1379 through 1500 in terms of money of account. All interpolations, which, unfortunately, are numerous in the second half of the fifteenth century, are written in italics.

TABLE 10

TARIFFS OF THE FLORIN IN ARAGONESE MONEY OF ACCOUNT

1379-1384.....	9s. od.	1440.....	10s. 11d.
1385.....	9s. 1d.	1441-1442.....	11s. od.
1386.....	9s. 2d.	1443-1446.....	10s. od.
1387-1390.....	9s. 4d.	1447-1448.....	10s. 6d.
1391.....	9s. 9d.	1449-1450.....	10s. 9d.
1392-1399.....	10s. od.	1451-1454.....	11s. od.
1400-1401.....	10s. 4d.	1455-1457.....	11s. 8d.
1402-1406.....	10s. 1d.	1458-1461.....	12s. 4d.
1407-1415.....	9s. 7d.	1462.....	12s. 6d.
1416-1417.....	10s. od.	1463.....	12s. 8d.
1418-1425.....	10s. 2d.	1464-1465.....	13s. 4d.
1426-1433.....	10s. 4d.	1466-1476.....	14s. od.
1434-1436.....	10s. 6d.	1477-1480.....	15s. od.
1437-1438.....	10s. 9d.	1481-1500.....	16s. od.
1439.....	10s. 10d.		

After rising steadily from 9s. in 1379 to 10s. 4d. in 1400-1401, the florin dropped to 9s. 7d. in 1407-1415, when the legal requirement of allowance for shortage in weight probably depressed the tariff. Resumed in 1416, the advance steadily continued until 1441. The high tariff of the florin in 1441-1442 evoked remedial legislation. In response to a petition from the Cortes of Alcañiz in 1442, a royal decree providing for the gradual reduction of the tale of the florin was promulgated. During the year beginning on September 1, 1442, the tariff might not exceed 10s. 8d.; for the following year the tale was set at 10s. 4d.; and after August 31, 1444, the definitive maximum of 10s. became effective.² In

¹ The suma due in Aragonese shillings and pence for large purchases of silks, spices, and other luxury products at Saragossa were often reduced to and paid in florins (*vide infra*, pp. 96, 138).

² *Fueros*, fol. 176-177; Ignacio de Asso, *op. cit.*, pp. 446-447; Vincencio Juan Lastanosa, *op. cit.*, fol. 11, 56-57.

this case political control over an economic phenomenon was conspicuously successful. Anticipation of the eventual rating had brought the commercial tariff to 10s. by not later than August 31, 1443,¹ when the legal maximum stood at 10s. 8d; and in the ensuing four years the florin invariably circulated at 10s. In 1447-1466 the tariff advanced 40 per cent; and, after remaining stable for a decade, it was driven upward an additional 20 per cent in 1477-1481 by issues of silver and vellon money and by the high mint price of gold intended for the coinage of ducats. In 1481-1500 the florin remained absolutely stable at 16s., the highest quotation reached during the period under investigation.

The data in Table 11 enable one to estimate the fine gold equivalence of the penny, in terms of which the annual prices in Appendix IV are given.

TABLE 11

EQUIVALENCE OF THE ARAGONESE PENNY IN FINE GOLD

1370-1384.....	.02444853 gram	1440.....	.02015604 gram
1385.....	.02422423 gram	1441-1442.....	.02000334 gram
1386.....	.02400401 gram	1443-1446.....	.02200368 gram
1387-1390.....	.02357537 gram	1447-1448.....	.02095588 gram
1391.....	.02256787 gram	1449-1450.....	.02046854 gram
1392-1399.....	.02200368 gram	1451-1454.....	.02000334 gram
1400-1401.....	.02129388 gram	1455-1457.....	.01886029 gram
1402-1406.....	.02182183 gram	1458-1461.....	.01784082 gram
1407-1415.....	.02296036 gram	1462.....	.01760294 gram
1416-1417.....	.02200368 gram	1463.....	.01737132 gram
1418-1425.....	.02164296 gram	1464-1465.....	.01650276 gram
1426-1433.....	.02129388 gram	1466-1476.....	.01571691 gram
1434-1436.....	.02095588 gram	1477-1480.....	.01466912 gram
1437-1438.....	.02046854 gram	1481-1500.....	.01375230 gram
1439.....	.02031109 gram		

Aragonese coins neither embodied nor represented fixed weights of the precious metals, but the kingdom escaped the cycles of wild monetary inflation and deflation which infested many European countries during the Middle Ages. Gold was debased at least twice, and the silver content of the penny was gradually cut in half; but debasement was never drastic enough to evoke

¹ The concurrent requirement that deductions be made for shortage in the weight of florins doubtless worked in the same direction (*vide supra*, p. 87).

a sharp restoration. In fact, with a single exception,¹ the monetary alterations steadily moved toward currency expansion and thus tended to mitigate the decline in prices which obstructed economic progress in the century preceding the discovery of the New World.

¹ That of the increase in the silver content of the penny in 1497.

CHAPTER V

PRICES IN ARAGON

DEFECTIVE as they are, the account-books of Nuestra Señora del Pilar (one of the two Cathedrals at Saragossa), deposited in the Archive of that institution, are the best source of medieval Aragonese prices yet unearthed. The financial records of the Cathedral at Huesca easily take second rank. Since Saragossa was an important entrepôt for the sugar, spices, silks, fine woollens, cotton, paper, and other luxury products imported from or through Barcelona as well as for the oranges, lemons, and figs brought from Valencia, the expense accounts of the royal household of Navarre have furnished considerable price statistics for Aragon in the second half of the fourteenth century and the first half of the fifteenth; but the infrequency and irregularity of the purchases and the heterogeneity of many of the commodities relegated these quotations to the rôles of filling gaps in other series and serving as controls. Ignacio de Asso,¹ the great economic historian of Aragon,² published a modicum of Aragonese price material during the Middle Ages. Owing to the discontinuity of the quotations, the usual omission of the locality of the purchase, the lack of description of the articles, the neglect to indicate the quantities bought, and the inconstancy of the metrological units, Asso's data could not be included in the price tables or index numbers; but they proved highly important as controls. Furthermore, Asso was the first to use the expense accounts of Nuestra Señora del Pilar; and the fact that he had listed a few prices for Huesca³ animated the search for material

¹ *Historia de la Economía Política de Aragón* (Zaragoza, 1798), pp. 467-473.

² In critical methods, strong penchant for gathering facts from manuscript sources, and scholarly interpretation of data he was far ahead of his time. In the modern sense of the term he *contributed* to knowledge.

³ Without indicating the source.

among the completely uncatalogued and unclassified documents in the Cathedral Archive of that city. The proceedings of the Municipal Council of Saragossa,¹ deposited in the Municipal Archive, have furnished a few prices (particularly in the last decade of the fifteenth century) for wine, grains, wax, tallow candles, paper, and building materials. For nine of the years between 1440 and 1496 the weekly reports of the inspectors of weights and measures (*almutazafes*) to the city council on the prices of wheat, barley, and oats in the public granary on the preceding Thursday have survived.² Although too scattered for other use, these data rendered valuable service as controls.

Quotations for only eight commodities — barley, large nails, oats, olive oil, paper, plaster of Paris, rye, and wheat — have occurred with sufficient regularity to warrant their tabulation or inclusion in the general index numbers for 1381-1500.³ Data are wanting for 35 of the 120 years, and gaps of 9 and 7 years respectively in 1388-1396 and 1472-1478 further vitiate the index numbers. There are 5 hiatuses of 2 years, and 9, of a single year. Furthermore, the index numbers for 10 years contain only 3 price relatives; all 8 articles enter into but 7 indices, and only 46 of the 85 index numbers comprise 6 or more articles. The average number of price relatives included in each index number is 5.48.

An utter lack of balance also vitiates the statistics. The data have been largely derived from the sales of surplus produce in good years and purchases in lean years and from the acquisitions of materials by Nuestra Señora del Pilar and the Huesca Cathedral for the erection and maintenance of buildings. Hence the price tables and index numbers contain only olive oil, paper, two building materials, and four grains. Such important groups of commodities as spices, fruits and nuts, poultry products, animal products, and fish — often found in historical price studies — are not represented.

¹ Catalogued as *Actos Comunes* in the Archivo Municipal de Zaragoza (hereafter AMZ).

² AMZ, *Actos Comunes*, 1440, 1442, 1468, 1472, 1489, 1490, 1492, 1494, and 1496.

³ Crude index numbers of prices have been constructed for 22 years between 1276 and 1380 (*vide infra*, pp. 189-190); but during this early period the commodities were few and variable, and the lacunae numerous and long. Hence the study of prices in this chapter begins with 1381.

To supplement the index numbers of general prices and to test their reliability I have constructed index numbers of "miscellaneous prices," which include such heterogeneous articles as the luxury products occasionally purchased in Saragossa by the Navarrese royal household; the provisions bought for the canons of Nuestra Señora del Pilar and the Huesca Cathedral;¹ and the wine, tallow, and wax candles purchased by these institutions and the municipality of Saragossa respectively for sacramental and ceremonial purposes. All of the commodities for which a base price can be established enter into the index numbers whenever quotations are available. Consequently the miscellaneous indices include a fairly large quantity and a wide variety of articles, and they are available for almost a third of the years lacking general index numbers.

As in other regions, an effort was made to eliminate distortion of the annual prices through seasonal variations. When the data permitted chronological separation of the purchases, the first four quotations encountered in each quarter were transcribed; but it was usually impossible to ascertain even the month in which transactions took place. Compilation of the annual prices exclusively from the quarterly averages available would have greatly reduced the components of the index numbers. In fact, such a method probably would have ruled out the construction of indices. Furthermore, the quarterly prices were too scarce to permit satisfactory calculations of seasonal fluctuations. Since five of the eight articles were agricultural commodities, frustration of the endeavor to eliminate the effects of seasonal variations further weakens the index numbers. If we assume, however, that quarterly fluctuations were no greater than in Valencia or Navarre,² the margin of error introduced by this factor is not wide. Certainly it does not vitiate the indices as a gauge of price trends.

All of the price statistics represent either Saragossa or Huesca quotations. These cities were separated by approximately seventy-five kilometers of unlevel road, and all of the commo-

¹ Unfortunately, only incomplete and widely scattered records of these purchases have survived.

² *Vide supra*, p. 45 and *infra*, p. 157.

ties except paper and large nails were coarse and bulky. Nevertheless, mathematical comparisons of the prices of the different commodities in Saragossa and Huesca for the purpose of determining average ratios disclosed that in no case would a crude combination of the data from these localities in compiling average annual prices sacrifice homogeneity. Neither were discrepancies encountered among the prices of commodities purchased at Saragossa by the municipality, the Navarrese royal household, and Nuestra Señora del Pilar.

The account-books contain no formal descriptions of the commodities and little information concerning their quality. With the limited material available, the best guesses seem to be that the annual prices in Appendix IV represent average milling wheat; barley, oats, and rye for domestic animals; writing paper; very large nails; and olive oil for illumination.¹ Only in the case of paper is there a significant possibility that heterogeneity may have impaired a price series. The dimensions were never given, but the behavior of paper prices strongly suggests substantial uniformity in size and quality.

Olive oil was bought by the liquid pound, the *arroba* (which contained twenty-four pounds), and the quintal of four arrobas. The arroba, in terms of which the annual prices are listed, was equivalent to about 13.93 liters. Large nails were invariably purchased by the pound of twelve ounces. The pound was approximately equivalent to 350 grams.² The sole metrological unit for paper was the quire (*mano*) of twenty-five sheets. The usual measure for barley, oats, rye, and wheat was the *cahiz*, roughly equivalent to 179.52 liters.³ This unit has been employed in the tabulation of grain prices. Prior to the middle of the fifteenth century, when its use was virtually discontinued, the *robo* ($\frac{1}{4}$ of a *cahiz*) frequently occurred; and the *fanega* was often encoun-

¹ Presumably the same grade of olive oil was used for culinary purposes. This was the case in Valencia in the Middle Ages (*vide supra*, p. 50) and in Castile as late as the sixteenth century (Earl J. Hamilton, *American Treasure and the Price Revolution in Spain, 1501-1650* [Cambridge, Massachusetts, 1934], p. 150).

² According to metrological tables, the pound of Huesca was equivalent to 351 grams.

³ The Huescan *cahiz* may have been 0.18 per cent larger than the Saragoesan.

tered. Possibly because of its confusion with the robo, the contemporaneous accountants usually considered the fanega as $\frac{1}{4}$ of a cahiz until 1446; but occasionally before, and invariably after, this date it was reckoned as $\frac{1}{8}$ of a cahiz. Plaster of Paris was bought by the *almodí* containing six cahices. The almodí was roughly equivalent to 1077.12 liters.

The average ratios of the prices rather than metrological tables have been employed in reducing quotations in other weights or measures into terms of the units adopted for the annual prices. For instance, pound prices for olive oil were multiplied by 20.17 to convert them into arroba prices.

The average annual prices are listed in Appendix IV.¹ The exponents indicate the number of quotations averaged or used as controls.²

Unweighted arithmetic index numbers constructed on 1421-1430 as a base are given in Table 12. The exponents represent the number of price relatives included in each index number.

Chart 9 presents the data in Table 12 together with unweighted arithmetic index numbers³ of the shifting list of miscellaneous articles for which discontinuous prices have been found.⁴

Following an advance of 10.9 points in 1382-1383, extremely poor grain crops in 1384 forced prices upward 20.1 points the following year; but normal harvests in 1386-1387 brought the index slightly below the 1381 level. After the long gap in 1388-1396 the index stood at 66.8, the lowest point reached in the period under investigation, in 1397, when only paper, olive oil, and grain prices were available, and harvests were bountiful. Following a hiatus in 1398-1399, the index rose to 96.6 in 1400. Extremely dear barley, rye, and wheat caused an advance of

¹ The data in Table 11 enable one to reduce these prices, listed in money of account, to terms of a fixed weight of fine gold.

² The grain prices at Saragossa reported by the inspectors of weights and measures and the data published by Asso have not been counted (*vide supra*, pp. 96-97).

³ Because of difficulty in obtaining base quotations, the indices in 1381-1400 were constructed on 1371-1380, and those for 1451-1500, on 1471-1480, and then shifted to 1421-1430.

⁴ *Vide supra*, p. 98.

These prices are too scattered to warrant their tabulation.

TABLE 12

INDEX NUMBERS OF COMMODITY PRICES IN ARAGON

Base = 1421-1430*

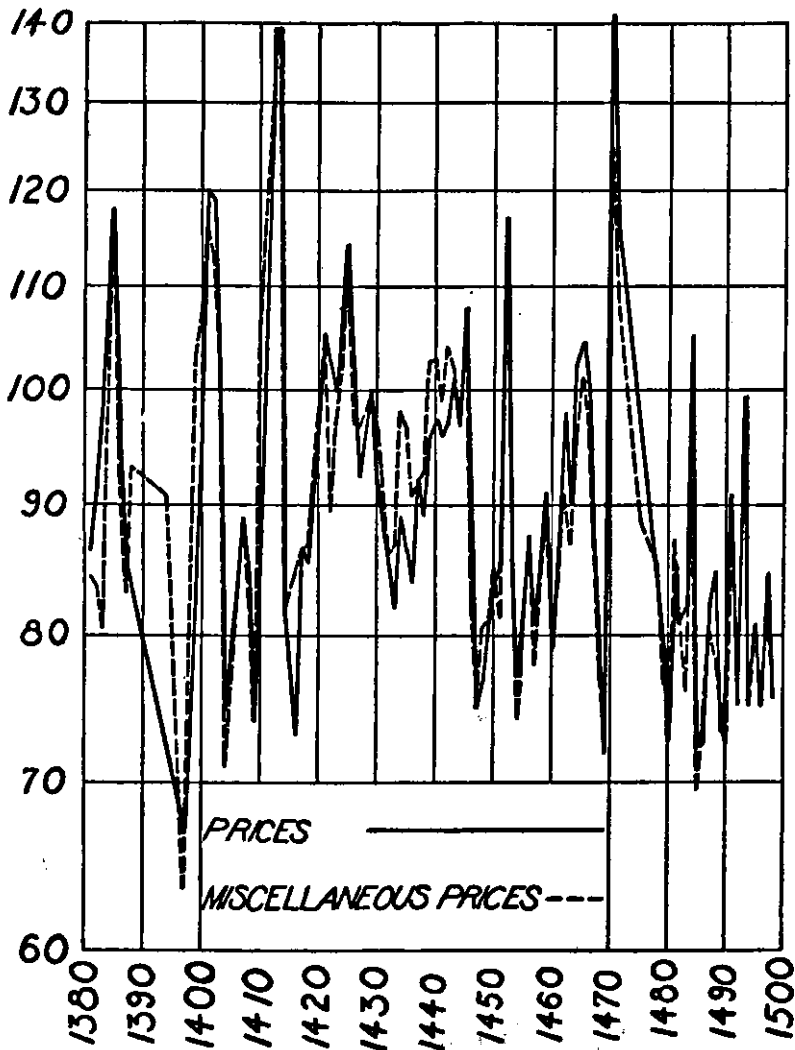
Year	Indices	Year	Indices	Year	Indices
1381.....	86.6 ⁸	1421.....	105.4 ⁴	1461.....	.....
1382.....	91.0 ⁶	1422.....	.....	1462.....	98.1 ²
1383.....	97.5 ³	1423.....	99.9 ⁰	1463.....	90.3 ⁸
1384.....	.....	1424.....	103.1 ⁴	1464.....	102.7 ⁷
1385.....	117.6 ⁵	1425.....	114.5 ⁴	1465.....	104.6 ⁷
1386.....	95.8 ⁰	1426.....	.....	1466.....	99.8 ⁸
1387.....	85.8 ⁵	1427.....	92.5 ³	1467.....	88.4 ⁸
1388.....	.....	1428.....	.....	1468.....	79.7 ⁶
1389.....	.....	1429.....	100.3 ⁵	1469.....	72.1 ⁵
1390.....	.....	1430.....	91.7 ⁸	1470.....	140.9 ⁵
1391.....	.....	1431.....	.....	1471.....	116.5 ⁷
1392.....	.....	1432.....	84.7 ⁶	1472.....	.....
1393.....	.....	1433.....	82.3 ⁶	1473.....	.....
1394.....	.....	1434.....	89.4 ⁶	1474.....	.....
1395.....	.....	1435.....	86.6 ⁶	1475.....	.....
1396.....	.....	1436.....	84.0 ⁶	1476.....	.....
1397.....	66.8 ⁵	1437.....	92.4 ⁶	1477.....	.....
1398.....	.....	1438.....	89.3 ⁵	1478.....	.....
1399.....	.....	1439.....	95.9 ⁴	1479.....	79.8 ⁷
1400.....	96.6 ⁴	1440.....	97.5 ⁷	1480.....	72.8 ⁷
1401.....	120.1 ⁵	1441.....	96.0 ⁴	1481.....	85.4 ⁹
1402.....	119.2 ⁶	1442.....	97.2 ²	1482.....	81.0 ⁶
1403.....	104.2 ⁸	1443.....	101.2 ⁶	1483.....	82.3 ⁶
1404.....	75.1 ²	1444.....	97.0 ⁶	1484.....	105.1 ⁰
1405.....	.....	1445.....	107.7 ⁷	1485.....	72.8 ⁶
1406.....	.....	1446.....	81.7 ⁶	1486.....	72.5 ⁴
1407.....	89.1 ⁴	1447.....	75.1 ⁷	1487.....	82.7 ⁷
1408.....	85.0 ⁶	1448.....	76.9 ⁷	1488.....	84.8 ⁶
1409.....	74.9 ⁶	1449.....	80.9 ⁸	1489.....	73.5 ⁷
1410.....	.....	1450.....	83.9 ⁸	1490.....	74.8 ⁶
1411.....	.....	1451.....	85.4 ⁴	1491.....	91.0 ⁶
1412.....	128.6 ⁴	1452.....	116.8 ⁵	1492.....	75.3 ⁷
1413.....	165.6 ⁵	1453.....	85.9 ⁴	1493.....	99.5 ⁶
1414.....	82.0 ⁴	1454.....	77.0 ⁸	1494.....	75.5 ⁶
1415.....	.....	1455.....	.....	1495.....	80.9 ⁶
1416.....	73.3 ⁷	1456.....	87.5 ²	1496.....	75.1 ²
1417.....	86.7 ⁷	1457.....	80.9 ⁶	1497.....	84.7 ⁵
1418.....	85.6 ⁷	1458.....	.....	1498.....	75.7 ⁴
1419.....	.....	1459.....	91.2 ⁴	1499.....	.....
1420.....	.....	1460.....	79.1 ²	1500.....	.....

* To shift the base to 1451-1475, multiply by 1.07449 (vide supra, p. 51 n. 1)

93.5 points in 1401 and held the index near this level the next year. Interrupted by an upturn in 1407, the prices declined 44.3 points in 1403-1409. After a gap of two years, exorbitant quo-

CHART 9

INDEX NUMBERS OF COMMODITY PRICES IN ARAGON



tations of barley, oats, and wheat in 1412 pushed the index upward 71.7 per cent; and still dearer grain the following year carried prices to 165.6, the highest peak of the entire period 1381-1500 and more than double the index for 1409. A bountiful grain harvest reduced prices by 50.5 per cent in 1414; and the decline continued in 1416, when the index fell to 73.3. Checked

by recessions in 1418 and 1423, prices advanced 41.2 points in 1417-1425; but the uneven decline in 1427-1436 swept away a large part of the gain. An advance of 28.2 per cent in 1437-1445 gave way to a precipitate decline in 1446, when a collapse of grain prices reduced the index by 24.1 per cent. After a further recession of 6.6 points in 1447, prices pushed forward 41.7 points in 1448-1452; but most of the gain was lost in 1453-1454. A broken upswing in 1456-1465, which carried prices 35.8 per cent above the 1454 level, was followed by a decline of 31.1 per cent in 1466-1469. A calamitous scarcity of all four of the grains forced prices upward 95.4 per cent in 1470; and, owing to the continuation of famine,¹ about two-thirds of the rise was retained the following year. After the long hiatus in 1472-1478, the index rose from 79.8 in 1479 to 105.1 in 1484, when grain quotations were again extremely high. Good crops reduced prices 30.7 per cent in 1485, but about three-fourths of the loss was regained in 1486-1493. Abundant supplies of grain lowered the index to 75.5 in 1494; and, following upturns in 1495 and 1497, the indices returned to near this level in 1496 and in the end year of 1498.

The inclusion of a larger number of articles in the miscellaneous indices tended to mitigate their fluctuations in certain years, but the striking agreement in the movements of the two curves suggests that the general indices containing only eight commodities are reliable gauges of the trend of prices.

The price relatives for barley, oats, rye, wheat, and olive oil have been combined to form index numbers of agricultural commodities; and those for paper, large nails, and plaster of Paris, to provide non-agricultural indices. Although a few earlier data are available, it is not feasible to push the study of group prices back into the fourteenth century. Since agricultural index numbers have been made for all years having two or more relatives and non-agricultural for all having one or more, the year-to-year fluctuations are extremely wide; and the indices are probably not trustworthy indicators of the short-term movements of prices. But there is reason to believe that the index numbers satisfactorily limn the trends of prices.

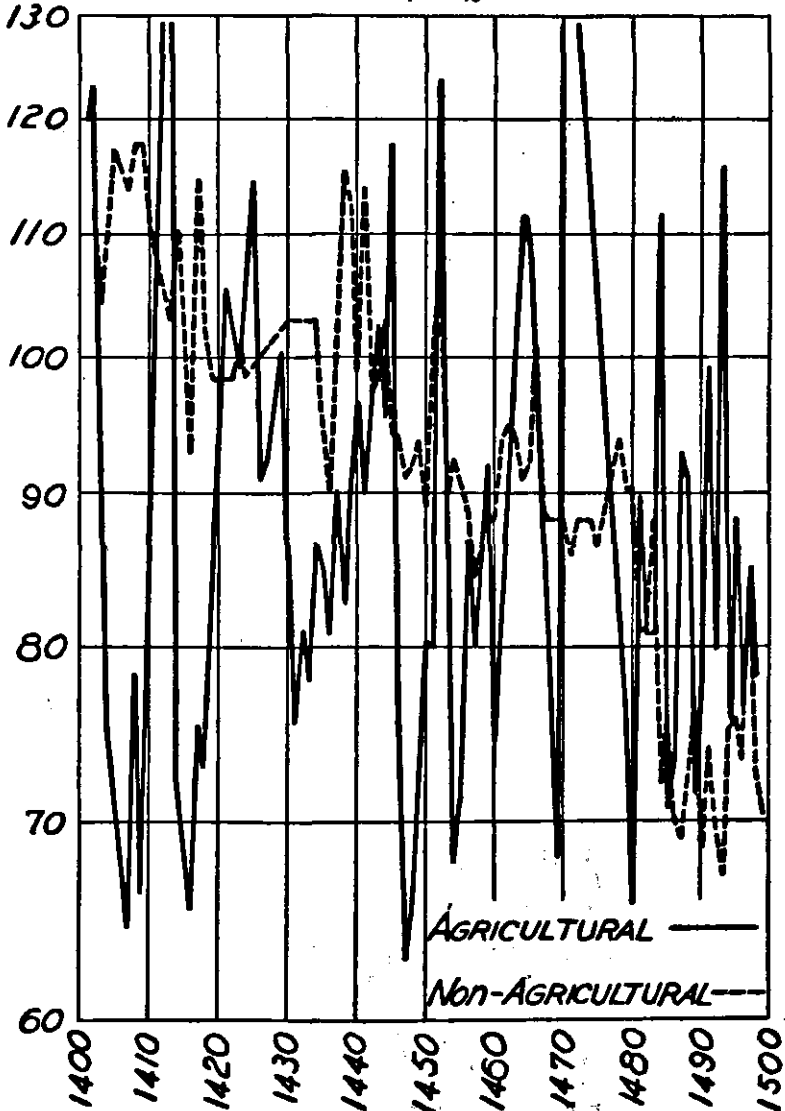
¹ *Vide infra*, pp. 198-199.

The index numbers of agricultural and non-agricultural commodities are listed in Appendix VII and given pictorially in Chart 10.

CHART 10

INDEX NUMBERS OF THE PRICES OF AGRICULTURAL AND
NON-AGRICULTURAL COMMODITIES IN ARAGON

Base = 1421-1430



The wide variations of the supplies of the agricultural products resulting from the vagaries of the crop year, in conjunction with the extreme inelasticity of the demand for these articles, caused the agricultural indices to fluctuate much more violently than did the non-agricultural; but, with the exception of the last two decades of the fifteenth century, when the non-agricultural indices fell more rapidly, there were no significant differences between the price trends of the two groups. In fact, throughout most of its length the non-agricultural curve closely resembles a line of trend for the agricultural prices.

In most historical price studies quinquennial averages of the index numbers, in which the short-run fluctuations merge, are valuable measures of the trend of prices; but, owing to the small number of commodities and to the preponderance of the agricultural group, characterized by extremely unstable quotations, this is particularly true in the present case. To facilitate comparison with price movements in other regions or countries, the quinquennial index numbers have been reduced to terms of a fixed weight of fine gold.¹

Table 13 gives quinquennial index numbers in terms of money of account and a fixed weight of gold. Averages have been made for every quinquennium having two or more indices.

TABLE 13
QUINQUENNIAL INDEX NUMBERS OF PRICES IN ARAGON (IN MONEY OF ACCOUNT AND A FIXED WEIGHT OF FINE GOLD)

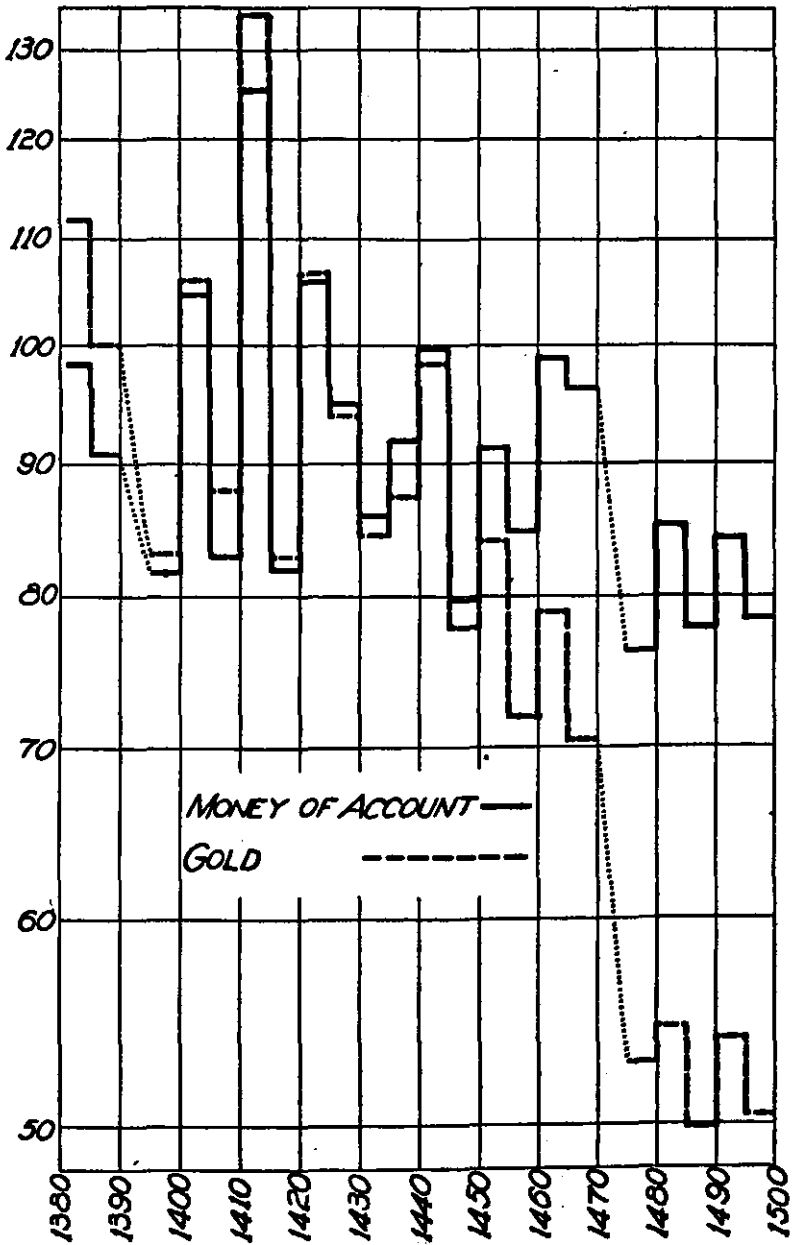
Base = 1421-1430					
Period	Money of		Period	Money of	
	Account	Gold		Account	Gold
1381-1385.....	98.4	111.9	1441-1445.....	99.8	98.4
1386-1390.....	90.8	100.1	1446-1450.....	79.7	77.8
1391-1395.....	....	....	1451-1455.....	91.3	84.1
1396-1400.....	81.7	83.2	1456-1460.....	84.7	72.0
1401-1405.....	104.7	105.9	1461-1465.....	98.9	79.0
1406-1410.....	83.0	87.9	1466-1470.....	96.2	70.4
1411-1415.....	125.4	134.1	1471-1475.....	....	....
1416-1420.....	81.9	83.1	1476-1480.....	76.3	52.8
1421-1425.....	105.7	106.6	1481-1485.....	85.3	54.7
1426-1430.....	94.8	94.0	1486-1490.....	77.7	49.8
1431-1435.....	85.8	84.6	1491-1495.....	84.4	54.1
1436-1440.....	91.8	87.5	1496-1500.....	78.5	50.3

Chart 11 portrays graphically the data in Table 13.

¹ The data in Table 11 enable one to make the conversions.

CHART 11

QUINQUENNIAL INDEX NUMBERS OF PRICES IN ARAGON (IN MONEY OF ACCOUNT AND A FIXED WEIGHT OF FINE GOLD)



CHAPTER VI

WAGES IN ARAGON

THE records of Nuestra Señora del Pilar, the municipality of Saragossa, and the Huesca Cathedral — the principal sources of price statistics¹ — have supplied all the data for wages. Additional criticism of these sources² is unnecessary. For the erection, enlargement, and maintenance of buildings Nuestra Señora del Pilar, the municipality of Saragossa, and the Huesca Cathedral employed craftsmen and common laborers; and, possibly because the outlays were generally large, relatively accurate and complete accounts were kept of these operations. The wages of numerous artisans appear in the records from time to time; but the only tolerably continuous quotations are for master masons, masons' helpers, and common laborers. Although Nuestra Señora del Pilar and the Huesca Cathedral owned and exploited several vineyards, the surviving wage rates of agricultural laborers are entirely too few and scattered for tabulation or inclusion in the index numbers. No continuous wages of domestic servants are available; and, owing to the evident discontinuity of the series and to the *a priori* expectation of non-economic determination, the fees and salaries of ecclesiastical and municipal employees were not even transcribed.

Numerous miscellaneous quotations serve as controls and enable one to ascertain roughly the comparative rates of pay in several different employments; but the only wage rates sufficiently continuous and reliable to warrant tabulation or inclusion in the index numbers are those for master masons, masons'

¹ The Navarrese royal household frequently purchased commodities but never employed labor in Aragon (*vide supra*, p. 96).

² *Vide supra*, pp. 96-99.

century gold prices were 49.5 per cent lower than in the opening quarter.

One can hardly escape the conclusion that the steady increase in the tariff of the florin, tantamount to a decrease in the gold "content" of the penny, mitigated the decline of prices in the fifteenth century which seriously obstructed the rise of modern capitalism.

CHAPTER VI

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¹ The Navarrese royal household frequently purchased commodities but never employed labor in Aragon (*vide supra*, p. 96).

² *Vide supra*, pp. 96-99.

helpers, and common laborers.¹ Hence the wage statistics cover only a portion of the building trades. But sufficient data are available for other workers in this group to demonstrate that the wage rates of masons, masons' helpers, and common laborers were typical for the building trades. Moreover, construction was the largest industry carried on by free laborers in the Middle Ages; and there is reason to believe that variations in the remuneration of these workers roughly gauged the movements of general wages.²

Like commodity prices in Aragon, the wage series are incomparably weaker than those for Valencia and Navarre. As has been indicated, the index numbers comprise only three grades of labor. There is a gap from 1382 to 1396, and another, from 1425 to 1435. For 39 years of the fifteenth century wage data are lacking, and 15 of the "indices" are in reality only wage relatives for a single type of labor. Wage rates for all 3 grades of workers are available in only 17 years of the fifteenth century, and the index numbers for the remaining 29 years contain 2 wage relatives.

Inadequacy of the data frustrated efforts to avert distortion of the annual wage averages by seasonal variations. The first four quotations for the different grades of labor in each quarter were transcribed, and the yearly averages were compiled from the quarterly figures. But sufficient material was not available to permit reliable determination of the percentages of seasonal fluctuations. Consequently adjustments could not be made when quarters were missing, and crude combination of the seasonal figures to form annual averages proved inevitable. Fortunately, however, the probable margin of error on this account is not wide.³ A majority of the wage data represent Saragossa quotations, but there is considerable material from Huesca. Strictly

¹ The scarcity of wage rates for carpenters, roof-tilers, adobe masons, and stone-cutters is perplexing. When the operations were on a small scale, the lack of quotations for these artisans was particularly striking. Perhaps the masons performed other types of labor while on small jobs and when work in their trade was slack. The high degree of interchangeability among the crafts in the neighboring kingdom of Navarre lends support to this hypothesis (*vide infra*, p. 177).

² *Vide supra*, pp. 64-65 and *infra*, p. 171.

³ *Cf. supra*, p. 67 and *infra*, pp. 172-173.

comparable ratios of wages in these two localities are not numerous; but all the available figures indicate that the wage rates of master masons, masons' helpers, and common laborers were uniform in Saragossa and Huesca. Hence the data from these cities have been used indiscriminately in the compilation of averages.

The annual wages in Appendix XI represent money wages. Workers occasionally received wine, bread, one or more meals, board and room, or other payments in kind. Complete board or other substantial payments could readily be detected, and the account-books generally furnished a basis for estimating the prices of the goods or services in order to add these sums to the monetary remuneration. But one cannot be sure that the workers obtained no small allowances such as wine or bread for the noon meal in addition to their pecuniary rewards.

On the average, master masons (*albañiles maestros*) received about 77 per cent more than their helpers; and helpers were paid approximately 108 per cent more than apprentices (*mocetes*). Women employed in construction earned about two-thirds as much as common laborers. The wages of master carpenters (*carpinteros maestros*), master adobe masons (*tapiadores maestros*), and master coopers (*cuperos maestros*) averaged the same as those of master masons; but, despite the hazards to health involved in the work, master stonecutters (*pedrapiqueres maestros*) received 10 per cent less.

Although the data are insufficient to establish exact relationships, rough comparisons may throw some light upon the relative earnings of several other grades of workers. For example, master roof-tilers earned about 4 per cent less than master masons. Tailors (*sastres*) were paid roughly 5 per cent more than masons' helpers; kneaders (*amasadores*) and transvasators (*trasvasadores*) received about 10 per cent more. Hoe hands (*cavadores*) and wine pressers (*pisadores*) earned approximately 12 per cent less than masons' helpers; grape pickers (*vendimiadores*), about 40 per cent less; pruners (*podadores*), roughly 23 per cent less; and vine planters (*sarmentadores*), around 60 per cent less.

The annual average wage rates for master masons, masons' helpers, and common laborers are listed in Appendix XI. The

exponents indicate the number of wage quotations included in each average. Table 14 gives unweighted arithmetic index numbers constructed from these data on 1421-1430 as a base. The exponents disclose the number of grades of labor represented in each index.

TABLE 14

INDEX NUMBERS OF MONEY WAGES IN ARAGON

Base = 1421-1430 ^a					
Year	Indices	Year	Indices	Year	Indices
1381.....	87.2 ²	1439.....	102.0 ¹	1469.....	86.3 ¹
1397.....	94.8 ³	1440.....	97.3 ³	1471.....	92.9 ³
1398.....	86.9 ²	1442.....	95.8 ³	1475.....	97.7 ³
1402.....	90.2 ²	1445.....	94.3 ³	1478.....	94.3 ³
1405.....	96.7 ²	1446.....	98.3 ³	1479.....	94.3 ²
1406.....	90.8 ²	1447.....	98.9 ³	1480.....	100.9 ³
1409.....	78.4 ¹	1448.....	99.4 ³	1481.....	90.2 ³
1410.....	78.4 ¹	1449.....	94.6 ³	1482.....	88.7 ³
1412.....	92.2 ¹	1450.....	99.3 ³	1485.....	92.9 ³
1413.....	86.3 ¹	1452.....	94.1 ¹	1486.....	90.3 ³
1414.....	86.3 ¹	1453.....	95.9 ³	1487.....	91.6 ³
1416.....	98.0 ¹	1454.....	97.8 ³	1489.....	110.8 ³
1417.....	84.2 ³	1456.....	94.9 ³	1490.....	94.3 ³
1418.....	87.4 ³	1460.....	102.0 ¹	1491.....	87.5 ¹
1419.....	92.2 ²	1461.....	98.3 ²	1492.....	96.9 ³
1421.....	92.2 ¹	1462.....	91.7 ¹	1494.....	92.2 ³
1422.....	103.4 ³	1463.....	94.3 ²	1495.....	94.2 ³
1423.....	97.1 ²	1464.....	94.3 ²	1496.....	93.7 ³
1424.....	103.7 ³	1465.....	100.9 ³	1497.....	92.4 ³
1436.....	99.6 ³	1466.....	98.7 ³	1498.....	90.4 ³
1438.....	102.0 ¹	1467.....	99.3 ³	1499.....	93.4 ³
		1468.....	86.3 ¹		

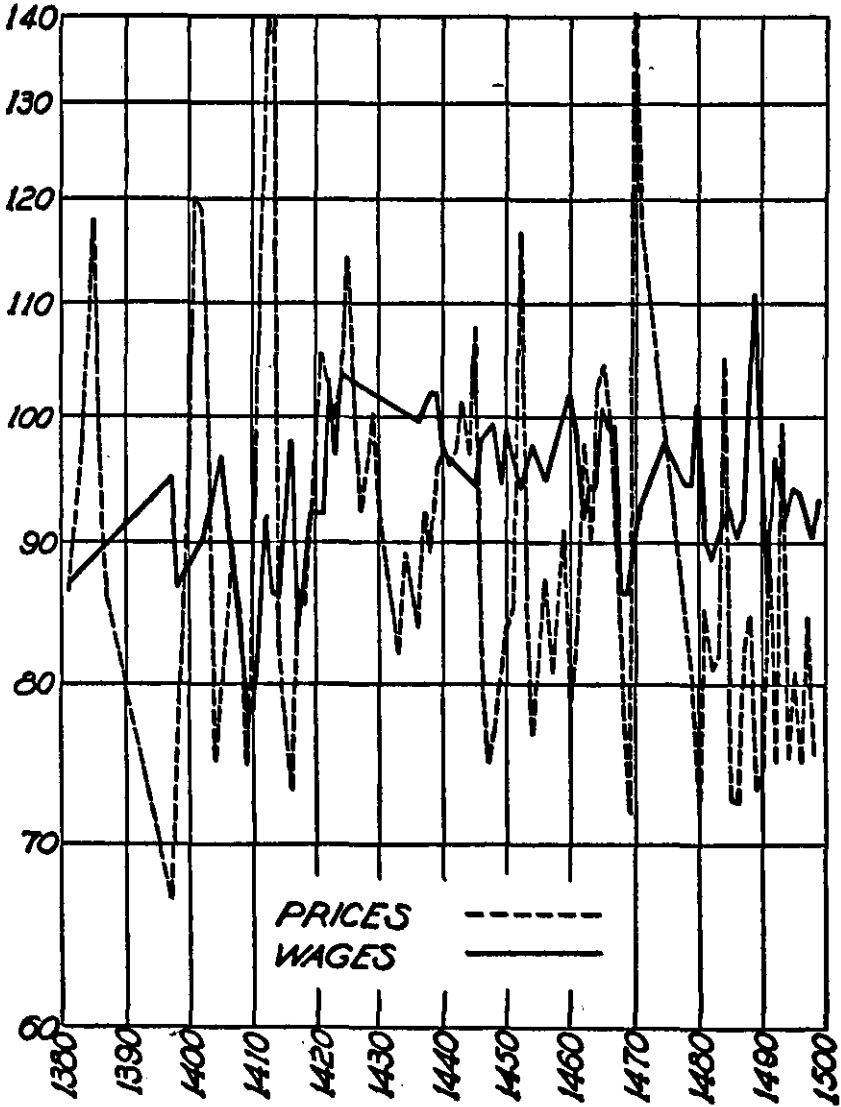
^a To shift the base to 1451-1475, multiply by 1.02572 (*vide supra*, p. 51 n. 1).

Chart 12 portrays the data in Table 14 along with index numbers of commodity prices to facilitate comparison.

Interrupted by precipitate declines in 1398, 1406-1409, and 1417 as well as by several minor recessions, money wages rose about 18.9 per cent from 1381 to 1424. After the long hiatus from 1425 to 1435, wages moved irregularly downward until 1468-1469, when the index stood 13.4 per cent below the 1436 level. This loss was regained in 1471-1480, but a sharp drop in 1481 reduced the wage index 10.6 per cent. Aside from the peak in 1489, the highest point reached during the period under in-

CHART 12

INDEX NUMBERS OF MONEY WAGES AND COMMODITY PRICES IN ARAGON



vestigation, money wages moved horizontally in the last two decades of the fifteenth century; the variations ranged from 87.5 to 96.9.

Although the wage indices have only three components, their fluctuations were considerably narrower than those of the price indices. The trends were strikingly similar until 1445. In the last three quarters of the fifteenth century the cant of both prices and wages was downward; but from 1445 on, the decline of prices was notably greater.

A reliable index of real wages presupposes dependable indices of the money incomes and of the cost of living of laborers.¹ If one assumes that the volume of employment was regular, the indices of money wages may be regarded as fairly satisfactory (but far from perfect) gauges of money incomes. But the accessible price data will not suffice for the construction of accurate index numbers of the cost of living. As perhaps the best measure of living costs that can be contrived from the scant material available, quinquennial indices of the prices of wheat, barley, oats, rye, and olive oil² have been computed; but these indices leave much to be desired. It seems that oats and barley and perhaps rye affected the cost of living only indirectly through their influence upon the values of animal products, and wheat quotations certainly fluctuated more violently than did the price of bread. For instance, there is not the slightest reason to believe that, as the index numbers indicate, living expenses doubled between 1409 and 1413 or fell by half in 1414. To obtain the indices of real wages in Table 15, quinquennial averages of the index numbers of money wages have been divided by the quinquennial indices of living costs. One must not forget that these index numbers are crude affairs that cannot be used without extreme caution. Many of the quinquennial indices are patently misleading; and, at best, they can only limn the trend of real wages.

¹ Cf. *supra*, pp. 75-76.

² Since their prices moved in consonance with wheat quotations, the inclusion of barley, rye, and oats produces the effect of indirect weighting of wheat.

TABLE 15

QUINQUENNIAL INDEX NUMBERS OF REAL WAGES IN ARAGON

Base = 1421-1430

Period	Indices	Period	Indices
1396-1400.....	129.8	1451-1455.....	120.5
1401-1405.....	95.0	1456-1460.....	127.2
1406-1410.....	127.3	1461-1465.....	93.4
1411-1415.....	74.6	1466-1470.....	102.4
1416-1420.....	136.7	1471-1475.....	.....
1421-1425.....	100.0	1476-1480.....	147.0
1426-1430.....	.....	1481-1485.....	112.4
1431-1435.....	.....	1486-1490.....	128.0
1436-1440.....	122.3	1491-1495.....	108.7
1441-1445.....	101.0	1496-1500.....	124.7
1446-1450.....	147.7		

Aside from 1456-1465, when considerable ground was lost, the trend of real wages was upward in the fifteenth century. If one may rely upon the averages of the quinquennial index numbers, real incomes rose about 16.4 per cent from the first to the final quarter of the century.

The obstruction to economic progress imposed by declining prices in the last three quarters of the fifteenth century was accentuated in Aragon by the pronounced lag of wages. Unless technological progress (more revolutionary than anyone has supposed to have occurred) offset the adverse effect of relatively stationary wages upon the price-cost ratio, business profits, at once the chief source of capital and virtually the only incentive to entrepreneurs, must have fallen disastrously.

PART III

NAVARRÉ

CHAPTER VII

MONEY IN NAVARRE

AFTER the death of Sancho the Great (1035), who succeeded in uniting virtually all of the Iberian peninsula and considerable territory in southwestern France under his scepter, the political independence of the Pyrenean kingdom of Navarre — surrounded by Aragon, Castile, and France and lying near the English possessions in the Aquitaine — was at best tenuous and was often lost to one of its powerful neighbors. The fervent desire alternately to maintain its autonomy and to end protracted periods of foreign (particularly French) suzerainty or dominion led Navarre to negotiate numerous international alliances and frequently to carry on intrigues in foreign countries; while the Herculean efforts of nascent states to augment and round out their territories, intensified by the strategic position of the saddlebag kingdom with its Pyrenean passes vital to empire, evoked interminable scheming and meddling by foreign princes in Navarrese affairs. Owing to the mountainous topography, limited territory, climatic homogeneity, and dearth of resources, commercial intercourse with foreign nations, particularly France (from which pork, fish, textiles, and luxury products were steadily imported) and Aragon (a leading source for dried and fresh fruits and for textiles, spices, wax, and other Italian and Oriental goods), was no less transcendent than were the international political relations.

In the absence of significant organized dealings in bills of exchange, the heavy foreign remittances for commodity imports and for political (including military) purposes necessitated the utilization of highly accredited coins, which the small and economically unimportant kingdom was manifestly unable to issue; and the economic and political expenditures of other nations in Navarre introduced and popularized several types of alien money.

Navarrese coinage to its beginning. The earliest references to indigenous money speak of *sanchetes*, a term obviously commemorative of one of the Sancho kings. While it is not possible to determine the weight, fineness, or tariff, it appears that sanchetes were vellon¹ coins. Following the system of Charlemagne, Navarrese money of account consisted of pounds, shillings, and pence; and it seems that the actual coins were simple and multiple pennies. It is highly improbable that any piece larger than a shilling was struck before the fourteenth century. *Sanchetes negros*, or *chicos*, possibly denote base vellon money in small denominations; and by implication the term suggests that sanchetes *blancos*, containing a high percentage of silver, and probably tariffed at a shilling, may have been minted.

After 1234, when Theobald I, Count of Champagne, was elected King of Navarre by the Estates General upon the extinction of the native dynasty, the livre tournois was employed with increasing frequency in Navarre. In 1276 the Estates General granted the petition of the Governor of Navarre to make the livre tournois legal tender at parity with Navarrese money while the troops defending French interests against Aragonese and Castilian attacks remained in the mountain kingdom.² If actually established, this artificial parity proved evanescent. In 1283-1286 the discount on tournois in terms of sanchetes ranged from 10 per cent on French groats to about 25 per cent on pennies.³ In 1291 the Estates General granted the petition of Philip the Fair, King of France and Navarre, to make tournois *noirs* legal tender at par with sanchetes and to tariff the groat tournois at 13d. in Navarre for two years beginning the following Christmas.⁴ On July 12, 1293 (with the consent of the Estates General), these regulations were extended for four years; and a fine of 2s. per pound — with a minimum of 2s. — was provided for the rejection of tournois.⁵ The data available for the first quarter of the fourteenth century suggest that the union of

¹ A silver-copper alloy.

² Archivo Municipal de Pamplona (hereafter AMP), *Purgemios*, caj. A.

³ Bibliothèque Nationale, *Section des Manuscrits, N. Latins*, Ms. 10,150.

⁴ ACC, caj. 4, no. 84.

⁵ ACC, caj. 4, no. 96.

France and Navarre under a common sovereign included monetary amalgamation, that Navarrese and tournois coins and money of account were freely interchangeable.¹

In spite of the separation from France in 1328, when the Évreux dynasty was enthroned in Navarre, the monetary uniformity apparently persisted until about the middle of the century;² but it seems that tournois were overrated in the Pyrenean kingdom. In 1341 the Crown preconized in cities, towns, and villages that a penalty of 6d. a penny had been fixed for refusal to accept tournois at par; and the imposition of numerous fines ensued.³

Although many questions must remain unanswered, contemporaneous documents throw a fairly strong light upon the important monetary events of the turbulent reign of Charles the Bad (1349-1387), particularly during the pregnant decade of 1377-1386. Perpetually embroiled in military struggles to defend Évreux and Normandy against French and English aggression, to support claims upon Angoulême and Champagne, and to maintain pretension to the French throne, Charles sought escape from acute fiscal difficulties through chronic debasement of the coinage. During the reign of Charles the Bad *carlimes* displaced *sanchetes* as the standard term for Navarrese money.

Only meager information concerning the earliest coinage of Charles II is available. In 1350, the year of his coronation, he employed silversmiths to manufacture monetary dies⁴ and apparently made other preparations for an issue of vellon money. The following year he repaired the mint at Saint-Palais⁵ and preconized a monetary decree in at least one city.⁶ The ordinance

¹ ACC, cajs. 5-6.

On June 11, 1319, Philip II swore "to maintain for twelve years the money now circulating, that is, *sanchetes* and *tournois*" (ACC, caj. 5, no. 98); and on December 2, 1323, Charles I repeated this oath (ACC, caj. 6, no. 15).

² On September 10, 1350, Charles the Bad contracted a debt to a money changer of Estella in terms of French crowns and agreed that any interest accruing after maturity would be paid in "tournois noirs or some other money current in Navarre" (ACC, *Comptos del Tesorero*, t. 64).

³ ACC, *Comptos del Tesorero*, t. 44, fols. 7, 21, 66; t. 48, fol. 22.

⁴ ACC, *Comptos del Tesorero*, t. 61.

⁵ ACC, caj. 11, no. 102.

⁶ ACC, *Comptos del Tesorero*, t. 65.

determining the weight, fineness, and tariff has not been unearthed; but a detailed report on the assay of 3000 marks of coins sent to Saragossa in 1355 to buy gold money indicates that 225 *carlines prietos*, or dark pennies, were struck from a mark 2 dineros 6 grains (18.75 per cent) fine.¹ For the want of relevant mint records it is now impossible to determine the volume of coinage, but the issue seems to have been excessive. After failing to obtain at the usual legal tale gold coins to finance an expedition of two hundred foot soldiers and seventy horsemen from Álava and Guipuscoa into France, on October 25, 1353, Charles instructed treasury officials to "buy at the market." It proved necessary to pay for crowns almost 50 per cent more than the prevailing rate in 1351, when the overissue of carlines apparently began.²

Although Charles the Bad had already taken the customary coronal oath³ to refrain from debasing the coinage, by April, 1355 vociferous clamors against his monetary policy forced him to promise the kingdom in the Estates General to coin (1) pennies "as sound and strong as the tournois pennies formerly current in our kingdom"; (2) groats and half-groats tournois, justly tariffed in terms of the new pence; and (3) gold money, not hitherto minted in Navarre. The King also gave a solemn pledge "not to alter our coinage in all of our life" nor to levy taxes or exact a tribute from his subjects as a consideration for maintaining sound money. Charles revoked the legal-tender status of the base coins recently issued and provided that (like foreign gold and silver pieces) they should circulate at their intrinsic value. Henceforth all financial contracts had to be drawn, and sales effected, in terms of the new carlines. Truly remarkable was the antimercantilist provision that "in order that goods of all kinds may come into our kingdom more abundantly, native and alien merchants of all classes may import and export all kinds of money upon payment of the usual portage and customs duties."⁴

¹ ACC, *Comptes del Tesorero*, t. 76^a, fol. 173.

² ACC, caj. 12, no. 22.

³ *Vide*, for instance, ACC, caj. 5, no. 98; caj. 6, no. 15.

⁴ AMP, *Pergaminos*, caj. B, no. 8; ACC, *Monedas, Pesos, y Medidas*, leg. 1, ca. 1.

The projected monetary reform in 1355 proved abortive. Even the royal treasury disregarded the injunction to transact all business in terms of white, or strong, money. It appears, however, that the ratio of strong to weak money, which had stood at 1 to 2 in 1355, fell to 12 to 22 in 1356 and remained at this figure until 1362, when the old relationship was restored.¹ Florins bearing the effigy of Saint John and clearly modeled after the Florentine original were minted in 1355; but apparently only seventy-five pieces, all of two-florins, were struck. The retention of these coins in the chests of the royal treasury until they were stolen shortly before November 12, 1358, indicates that the issue was experimental.² In April, 1363 the King brought a mint technician (monedero) from Morlaàs to Pamplona to coin "a sample of florins"; but the expert returned to France the following June,³ and again the coinage of gold failed to pass the trial stage. Records concerning Navarrese silver and vellon in the highly important score of years following the promised reform have not been discovered. The upheaval of prices and the ever mounting quotations of Aragonese florins afford presumptive evidence that Navarre was flooded with money.⁴

In 1375-1376 Charles the Bad minted silver *coronas* 9 dineros 12 grains (79.17 per cent) fine, weighing $\frac{1}{126}$ of a mark, and tariffed at 14d. The coinage of coronas was suspended on September 15, 1376; and on March 1, 1377, their tariff was reduced to 12d.⁵ Vellon was also struck at this time; but the weight, fineness, and tariff of the coins are not known. Since seigniorage yielded the Crown £1543 8s. from October 29, 1375, to March 14, 1376,⁶ the monetary output must have been large.

On December 2, 1377, the Crown authorized the first issue of gold coins minted in Navarre for commercial use. A mark of gold 23 carats (95.83 per cent) fine was coined into 65 coronas,

¹ *Vide*, for example, ACC, *Comptos del Tesorero*, t. 99.

² ACC, caj. 13, no. 190; *Comptos del Tesorero*, t. 99.

The two-florin piece was rated at 34s. 8d. in weak money.

³ ACC, caj. 21, no. 14; *Comptos del Tesorero*, t. 118, fol. 118 (sic).

⁴ *Vide infra*, Table 17.

⁵ ACC, *Comptos del Tesorero*, t. 156, fol. 28; caj. 32, no. 31; caj. 33, no. 114.

⁶ ACC, *Comptos del Tesorero*, t. 153, fol. 17.

tariffed at 30s.¹ The mint tolerance was fixed at 1/8 of a carat on fineness, and merchants were paid 64 coronas per mark of pure gold delivered for coinage.² Charles also provided for an emission of silver coronas of the identical type struck in 1375-1376, with the mint tolerance at 3 grains on fineness and 2 pieces per mark on weight. The mint price of fine silver was fixed at £7 4s. a mark.³

Captivity of the Crown Prince by the King of France and the penetration by Castilian invaders to the outskirts of Pamplona evoked a willing response from individuals, municipalities, and ecclesiastical institutions to the royal appeal for plate to cope with the resultant fiscal emergency. From December 25, 1377, to July 9, 1379, 1486.8 standard marks of silver, largely derived from the smelting of private and ecclesiastical plate "loaned" to the Crown,⁴ were coined into groats.⁵

Notwithstanding the royal pledge of 1355, progressive debasement of the coinage marked the closing years of the reign of Charles the Bad. On March 29, 1380, the fineness of the silver corona was reduced to 6 dineros (50 per cent). The weight and tariff remained constant; but the tolerance on fineness rose to 4 grains and on weight, to 3 coronas a standard mark. The mint price mounted to £9 4s. per mark of pure silver. At the same time the fineness of the gold corona fell to 22 carats, with the weight and tariff unchanged; the tolerance rose to 1/4 of a carat on fineness, and 1/2 corona per mark was allowed on weight. The mint price increased to 65 coronas a mark of pure gold.⁶

"In order that the coinage of our money may not cease," on May 1, 1380, Charles raised the mint price of silver intended for groats to £9 10s. a mark.⁷ "To promote coinage," there was a

¹ José Yanguas y Miranda, the celebrated Navarrese archivist and historian, erroneously stated that the gold coins were not tariffed until 1481 (*Diccionario de Antigüedades del Reino de Navarra* [Pamplona, 1840], II, 344, 349).

² The master of the mint was instructed to consider old Castilian doubloons (doblas) and other similar coins as pure gold.

³ ACC, caj. 38, no. 114.

⁴ In October, 1379 the Crown began to indemnify the owners of plate at the rate of £8 per mark of fine silver (*vide*, for instance, ACC, caj. 40, nos. 45, 62).

⁵ ACC, *Comptes del Tesorer*, t. 161, fol. 69.

⁶ ACC, caj. 42, no. 29; caj. 46, no. 6.

⁷ ACC, caj. 42, no. 35.

further increase to £9 16s. on July 15¹ and to £10 on August 1 of that year.² Since the successive increases in the quotation of silver trenched upon seigniorage badly needed by a depleted treasury, on December 29, 1380, the King diminished the fineness of the groat to 5 dineros 18 grains (47.92 per cent), without altering it in other respects.³

Because of "the great scarcity" of fractional money, on May 1, 1380, Charles the Bad authorized an issue of pennies. From a mark of vellon containing 1 dinero 8 grains (11.11 per cent) of silver, 300 pennies were coined. The mint tolerance was fixed at 4 grains on fineness and 6d. a standard mark on weight. Merchants received £9 10s. per mark of pure silver delivered for coinage.⁴ Alleging that fractional money was needed for alms, change, and petty transactions, on March 10, 1381, the Crown reduced the fineness of black pennies to 1 dinero (8.33 per cent) and the weight to 1/306 of a mark. The tolerance on weight was not altered, but the permissible deviation of fineness was lowered to 3 grains. White pennies 2 dineros fine, weighing 1/216 of a mark, and tarified at 3d., were also authorized. The tolerance on black and white pennies was 3 grains on fineness and 6d. per standard mark on weight. The mint price was £11 10s. a mark of fine silver.⁵ To foment the coinage of black pennies, of which "there is a great dearth at present," on January 24, 1384, Charles the Bad decreased the fineness to 12 grains (4.17 per cent) and raised the mint price of pure silver to £15 10s. a mark. The weight of the penny was increased imperceptibly — from 1/306 to 1/300 of a mark; and the tolerance remained constant.⁶ No further alterations in the penny occurred for almost half a century.

To avert the "heavy daily exportation of specie, which materially injures us and the merchants of our kingdom," and to induce the holders of foreign money to carry it to a Navarrese

¹ ACC, caj. 42, no. 48.

² ACC, caj. 42, no. 49.

³ ACC, caj. 42, nos. 18, 80.

⁴ ACC, caj. 42, no. 35.

⁵ ACC, caj. 43, no. 19; caj. 46, no. 6.

⁶ ACC, caj. 48, no. 11.

mint, on August 6, 1383, Charles the Bad resorted to drastic silver inflation. The fineness of the groat rose to 10 dineros (83.33 per cent), and the weight jumped to $1/72$ of a mark; but the tariff, augmented to 4s., quadrupled. Half-groats were also authorized. The tolerance on fineness was fixed at 3 grains, and on weight at 1 groat or two half-groats a standard mark. The mint price of a mark of pure silver soared to £14.¹

Declaring that monetary debasement afforded the only means of securing funds, "without very great injury and scandal,"² to celebrate the return of the Crown Prince from French captivity³ and to meet other "very heavy extraordinary expenses," on November 28, 1383, Charles the Bad reduced the fineness of the groat to 8 dineros (66.67 per cent) and fixed the price of pure silver at £15 10s. a mark. The tale and the mint tolerance remained constant.⁴ After successive elevations of the price of silver⁵ had failed to attract to the mints a sufficient quantity of foreign coins for the seigniorage to relieve the chronically overburdened treasury, on May 8, 1385, Charles again sought funds to meet "very heavy outlays in France and Castile"⁶ through debasement of the coinage, the sole means of securing adequate revenue "without great murmuring, unrest, and scandal." The

¹ ACC, caj. 47, nos. 53, 61, 87.

² Cf. A. Dieudonné, "Changes et Monnaies au Moyen Âge," *Revue des Deux Mondes*, 97^e Année (1927), p. 933.

³ The Prince was liberated in 1382, but he spent several months at the Castilian court before returning to Navarre.

⁴ ACC, caj. 47, no. 87.

On January 24, 1384, Charles repeated the provision of November 28, 1383, for the coinage of groats; but he fixed the mint price at £16 8s. a mark. At the same time he authorized an issue of groats economically identical except for a mint price of 80 groats (or £16), seigniorage of £4 7s. (instead of £4), and mint fees of 25s. (instead of 24s.). The statement — missing in the first description — that 108 groats should be struck from a mark of pure silver (that is, 7s from a standard mark) led Yanguas into the erroneous conclusion that a second type of groat "worth a groat and a half" was struck (*op. cit.*, II, 343-344). Neither the confusing language nor the discrepancy in mint price should excite wonder, for medieval monetary legislation was often vague and occasionally contradictory. On the same day a third mint price of silver was established. Fine bullion for the coinage of pennies was rated at £15 10s. a mark (ACC, caj. 48, no. 11).

⁵ ACC, caj. 47, no. 28; caj. 49, no. 58.

⁶ Navarre dispatched troops under the command of Crown Prince Charles to support the pretension of his brother-in-law, John I of Castile, to the throne of Portugal.

fineness of the groat was reduced to 6 dineros (50 per cent), and the tolerance on weight, increased to 7 pieces a standard mark. The mint price was fixed at £16 per mark of pure silver, and the tolerance on fineness remained unaltered.¹

Convinced that inflation had been carried too far, on June 9, 1386, Charles the Bad lowered the tariff of the groat as an effective coin from 4s. in weak money to 1s. 3d. in strong money. In other words (since 1d. in strong money was equivalent to 2d. in weak money), the tale of the groat fell from 24d. to 15d. in strong money.² On June 1 the King had directed the royal accountants to record his living expenses in strong money, counting the groat as 2s. and the Aragonese florin as 22s; and on June 10 the same system was adopted for the living expenses of the Princesses.³ The actual groats held in the public treasury when the money was cried down were disbursed at 15d;⁴ but, as money of account, the groat continued at 2s. in the records of royal expenses through 1451, the last year for which the accounts are available.⁵ Adequate information is lacking, but it appears that in practice the groat as an effective coin soon rose to 24d. in strong money; and when their coinage was resumed in 1428 they were tarified at this figure.⁶

The deflation of 1386 was apparently nullified by the increased quantity of money in circulation resulting from the copious coinage of groats and pence in 1384-1386, largely concentrated in the mint at Saint Jean Pied de Port.

In the third year of the reign of Charles the Noble (1387-1425), a moderate quantity of silver and vellon coins, presumably of the last types authorized by Charles the Bad, was minted; but strong public opposition to the continuous debasement which marked

¹ ACC, caj. 49, no. 26.

² ACC, caj. 52, no. 59.

³ ACC, *Compto de las Espensas del Hostel del Rey*, t. 188; *Compto de la Condessa de Foix y de las Infantas*, t. 187.

⁴ ACC, caj. 52, no. 59.

⁵ The records of receipts of royal revenue are rendered confusing by the presence of white money and black (negro or prieto) money — with 12d. of the former rated as equivalent to 15d. of the latter, thus exactly duplicating the relationship of the *tournois-parisis* dichotomy in France.

⁶ *Vide infra*, pp. 129-130.

the closing decade of the reign of Charles the Bad led the Estates General, assembled in Pamplona in 1390 for the coronation of the King, to offer, and Charles the Noble to accept, thirty thousand florins in consideration of a pledge to abstain from minting money of any description during the remainder of his reign.¹

Placing major emphasis upon domestic affairs and internal improvements, the beneficent and pacific administration of Charles the Noble afforded the public treasury a respite from the intolerable burden of foreign intrigues which characterized the annals of Navarre; but prodigal domestic expenditures, especially upon royal palaces, strained the public finances. On more than one occasion the Crown was forced to patronize Jewish money lenders of Saragossa at 30 per cent or even higher interest;² but in spite of grave fiscal difficulties the Noble King, in striking contrast with the policy of his predecessor, not only refused to debase the coinage, but (observing his coronal pledge) kept the Navarrese mints inactive during the remaining thirty-five years of his reign.

In 1425 Blanche and the King Consort, later to become John II of Aragon, acceded to the throne of Navarre. The ambition, intelligence, and restless activity of the Aragonese Prince again plunged the mountain kingdom into the mad whirl of European politics. The lively participation of the Navarrese King in the schemes against Álvaro de Luna, favorite of John II of Castile, soon involved the Pyrenean state in a bloody and costly war with her powerful western neighbor. To secure means to prosecute this conflict, the Navarrese monarchs resorted to monetary inflation.

On May 10, 1428, John and Blanche authorized an issue of 10,000 marks of silver and vellon³ "to promote the public welfare" and to provide money for the traditional distribution among the populace during their coronation the following year. From a mark containing 5 dineros 12 grains of silver, itself 11

¹ ACC, caj. 60, no. 53.

² ACC, caj. 86, no. 47; caj. 88, no. 13.

³ As Appendix II indicates, 10,000 marks would have been an enormous issue, certainly not justifiable for the declared purposes.

dineros 12 grains fine, making the silver content 43.92 per cent,¹ 80 groats, tarified at 2s., were struck. Half-groats were also coined. The mint tolerance on weight was fixed at 2 groats or 4 half-groats per standard mark. Cornados 1 dinero 8 grains (11.11 per cent) fine, weighing $1/216$ of a mark, and tarified at 2d. — with tolerance on weight at 6 pieces a standard mark — and pennies 15 grains fine, weighing $1/300$ of a mark — with 9d. of tolerance on weight — were authorized. The tolerance on fineness was fixed at 3 grains for all the foregoing coins, and the mint price of silver 11 dineros 12 grains fine was uniform at £15 a mark. The Crown prohibited the exportation of silver and vellon and promised to lower the tariffs of foreign money while the coinage was taking place. The minting of groats began on July 31, 1428, and continued until November 30, 1429. Vellon was coined from September, 1428 through February of the following year.²

The outbreak of hostilities with Castile in 1429 brought dire consequences to the Navarrese treasury. As early as May 27 the Queen was obliged to sell "jewels of gold, silver, pearls, and precious stones" and to hypothecate property in order to raise fifteen thousand florins.³ With the consent of the Estates General, on July 16 John and Blanche called upon all individuals (whether lay or ecclesiastical, noble or plebeian, Christian or infidel) and institutions of the kingdom to lend plate to the Crown for the payment of native and mercenary troops engaged "in the war which Castile is unjustly waging against us."⁴ Apparently the original plan was to pawn the plate to merchants of Pamplona as security for advances; but, upon receipt by the Crown, it was delivered to the master of the mint for coinage.⁵ On account of

¹ As was the case in Valencia (*vide supra*, Chapter I), John and Blanche invariably expressed fineness in terms of bullion $23/24$ fine until November 30, 1429; but after this date the Navarrese monarchs reverted to *argent-le-roi*, or pure silver.

² ACC, caj. 127, no. 5.

³ ACC, caj. 104, no. 26; José de Moret, *Anales del Reino de Navarra* (Tolosa, 1891), VI, 296.

⁴ ACC, caj. 190, no. 24.

The Bishop of Pamplona ordered the vicars, rectors, and clergymen of Sangüesa (and presumably of other districts as well) to cooperate with the royal agent dispatched to collect the plate (ACC, caj. 128, no. 19).

⁵ ACC, caj. 127, no. 11.

the invasion of Navarre and the capture of several fortified towns by Castilian forces, the Navarrese subjects and institutions, ranging from the Bishop of Pamplona to the Ghetto (*aljama de los Judfos*) of the Val de Funes,¹ readily responded to the appeal for plate. From December 2, 1429, to July 21, 1430, 2010 marks of silver were supplied the Crown.²

To increase the seigniorage from the plate collected for the war against Castile, on December 1, 1429, John and Blanche provided for the coinage of *blancas* 3 dineros (25 per cent) fine but equal in all other respects to the groats authorized in 1428.³ On February 12, 1430, the fineness of the *blanca* (with the weight and tariff unchanged) was reduced to 2 dineros (16.67 per cent);⁴ and on June 1 it was lowered to 1 dinero 18 grains (14.58 per cent), and the weight, to 1/84 of a mark. The Crown contracted with 6 business men to furnish 1600 marks of silver for coinage into *blancas* and instructed the master of the mint to pay £22 10s. for all other bullion offered.⁵ Purportedly in order to alleviate a scarcity of fractional money, on September 2, John and Blanche authorized the coinage of half-*blancas* and provided for an issue of pennies of almost pure copper. A mark of bullion containing only 5 grains (1.74 per cent) of silver was coined into 300 pennies.⁶ The mint price of silver remained at £22 10s. a mark. Between October 17, 1430, and August 8, 1431, John and Blanche smelted and minted Crown plate yielding 312.6 marks of pure silver;⁷ and on February 1, 1431, the price was raised to £27 in order to stimulate coinage.⁸

Shortly before September 12, 1431, the articulate discontent resulting from the continuous monetary debasement during the

¹ A tribute of 300 marks of silver had been levied upon the Jews of the kingdom in 1380. Most of this sum was paid in plate and coined in the mint at Pamplona, but a part of the obligation was commuted to money at the rate of £10 a mark (ACC, caj. 42, no. 76).

² ACC, caj. 127, no. 28.

³ ACC, caj. 127, nos. 20, 28; caj. 128, no. 41.

⁴ ACC, caj. 127, no. 28; caj. 129, no. 7.

⁵ ACC, caj. 127, no. 28; caj. 129, no. 23.

⁶ ACC, caj. 127, no. 28; caj. 129, no. 30.

⁷ ACC, caj. 127, no. 21.

⁸ ACC, caj. 131, nos. 6, 9, 10.

preceding four years led John and Blanche to decrease the tariff of the blanca from 2s. to 9d.¹

On September 24, 1431, the coinage of *carlines de Navarra*, or groats, began. From a mark of silver 5 dineros 18 grains (47.92 per cent) fine 80 carlines, tarified at 2s., were struck. Half-carlines were also minted. On January 10, 1432, John and Blanche sanctioned their last issue of money. Cornados 1 dinero 8 grains (11.11 per cent) fine, weighing 1/240 of a mark, and rated at 2d. and half-cornados, or pennies, 18 grains (6.25 per cent) fine, weighing 1/300 of a mark, were authorized. The mint price of pure silver was fixed at £15 a mark.²

In 1430-1431 John and Blanche assigned to several creditors of the Crown and apparently also conceded to a few court favorites all or a part of the seigniorage on specified quantities of bullion,³ but the coinage was invariably confined to a royal mint. During the third of a century of chaos, factional strife, and civil war⁴ between the death of Blanche, in 1445, and that of John II, in 1479, no national money was minted; and Navarre apparently escaped the curse of feudal coinage and suffered little from counterfeiting.

The lack of satisfactory price and wage statistics⁵ and the scarcity of financial records detract from the importance and obstruct the study of Navarrese money during the last two decades of the fifteenth century; but a brief exposition of the salient aspects of the coinage during this period, as revealed by mint records and primary monetary ordinances, appears feasible and desirable.

¹ ACC, caj. 131, no. 46.

² ACC, caj. 132, no. 1.

The decree of January 10, 1432, authorized carlines de Navarra as if they were a new issue; but the mint records unequivocally show that their coinage had commenced the preceding September.

³ ACC, caj. 127, no. 28; caj. 130, nos. 3-4.

By providing, in 1368, 1378, and 1385, that certain silver merchants should receive a portion of the seigniorage in addition to the mint price of bullion, Charles the Bad had established a precedent for this policy (ACC, caj. 35, no. 50; caj. 49, no. 74; *Comptos del Tesorero*, t. 161, fol. 22).

⁴ *Vide infra*, pp. 144-145.

⁵ *Vide infra*, Chapters VIII-IX.

Petitioned by the Estates General, assembled in Olite, to mint money to distribute in Saint Mary's of Pamplona during his coronation and to alleviate the insufferable dearth of large and small coins, on November 11, 1481, Francis Phoebus (1479-1483) provided for issues of (1) gold reals 23 carats (95.83 per cent) fine, weighing $\frac{1}{72}$ of a mark, and rated at £4 12s; (2) groats¹ 4 dineros 3 grains (34.38 per cent) fine, weighing $\frac{1}{88}$ of a mark, and rated at 32d; (3) cornados 15 grains (5.21 per cent) fine, weighing $\frac{1}{256}$ of a mark, and tarified at 2d; and (4) pennies 8 grains (2.78 per cent) fine, weighing $\frac{1}{352}$ of a mark. The mint price of silver was set at £28, and that of gold, at 70 reals a fine mark. No deviation of reals from standard weight or fineness was allowed. The mint tolerance on fineness was fixed at 3 grains for groats and 1 grain for cornados and pennies; a weight-shortage of 1 groat, 16 cornados, or 32 pennies per mark was permitted.² The coinage began on December 21, 1481, and continued until 1486 — three years after the death of Francis Phoebus and the accession of Catherine II (1483-1512); but the total output was moderate.

Without assigning a cause for the change, on January 24, 1484, the master of the mint began to count the gold real as £4 14s. in reckoning seigniorage; and on January 17, 1486, he raised the tale to £4 16s.³

In a report dated April 7, 1482, a monetary commission⁴ advised the Crown to lower the fineness of cornados to 11 grains, of pennies to 6 grains, of groats to 3 dineros 16 grains, and of gold reals to 21 carats, and to institute a silver real 11 dineros 3 grains (92.71 per cent) fine, weighing $\frac{1}{300}$ of a mark, and tarified at 8s.⁵ After having been pigeon-holed for several years these recommendations profoundly influenced subsequent monetary legislation.

Informed by the Estates General, in session at Pamplona, that

¹ Half-groats were also authorized.

² ACC, caj. 164, no. 21.

³ ACC, caj. 164, no. 21.

⁴ Consisting of Martín de Aoiz, Pedro Marzilla de Caparroza, and Martín Cruzat, all officers of the mint at Pamplona.

⁵ ACC, caj. 164, no. 28.

"the kingdom and its inhabitants are suffering great injury on account of the complete lack of fractional money" and petitioned "to coin some gold," on February 1, 1487, John III (1486-1512)¹ and Catherine II, after having consulted monetary experts and the Royal Council, provided for the coinage of *navarros*, cornados, and pennies. In accordance with the proposals of the monetary commission in 1482, the fineness of the cornado was lowered to 11 grains (3.82 per cent) and that of the penny, to 6 grains (2.08 per cent). The gold content of the navarro was reduced to 22 1/2 carats rather than to 21, but an augmentation of the tariff from £4 16s. to £5 6s. more than compensated for the extra 1 1/2 carats of fineness.² In other respects the navarro, cornado, and penny remained as in 1481-1486; and, without alteration, their issue continued through 1493.³

In response to the complaint by the Estates General, assembled in Estella, that copious quantities of foreign coins were circulating in Navarre at rates considerably above their intrinsic worth, on April 10, 1492, John III and Catherine II placed a legal maximum tariff of 8os. on the Aragonese florin, along with proportional ratings on French and Castilian gold pieces, and interdicted the acceptance of "the base new tarjas of Brittany . . . recently introduced into the kingdom in distressing abundance . . . at any price."⁴

A nostrum for monetary reform presented to the Crown by "some persons from Béarn" shortly before May, 1495 was referred to and haughtily disapproved by a committee of mint officials and monetary experts from Spanish Navarre; and counter proposals by this commission failed to win royal favor. But after consulting a committee appointed by the Estates General, the Royal Council, business men, and mint technicians, on May 21, 1495, John III and Catherine II sanctioned emissions of gold, silver, and vellon coins to combat the great harm arising from the insufferable scarcity and diversity of money and to attenuate

¹ Jean de Labrit, who married the Queen in 1486.

² ACC, caj. 164, no. 22.

³ ACC, caj. 164, no. 23.

⁴ ACC, caj. 164, no. 28.

the losses resulting from the circulation of grossly overrated coins from neighboring kingdoms. The following issues were authorized: gold reals¹ 22 1/4 carats (92.71 per cent) fine, weighing 1/72 of a mark, and tarified at £5 6s. 8d., with no mint tolerance on weight and a quarter-carat on fineness; silver reals 11 dineros 2 grains (92.36 per cent) fine, weighing 1/96 of a mark, and tarified at 8s., with no tolerance on weight and 2 grains on fineness; and *seisenes*, or groats, 3 dineros 16 grains (30.56 per cent) fine, weighing 1/100 of a mark, and tarified at 32d., with no tolerance on weight and 1 grain on fineness. The mint price of gold was fixed at 70 reals a standard mark and that of silver, at £37 10s. a fine mark. Sales above the mint price and the smelting of domestic or foreign money outside a mint were forbidden. Half-reals were authorized; and gold was to be minted in denominations of 1/4-, 1/2-, 1-, and 2-real pieces.²

Documentary evidence of monetary alterations posterior to May 21, 1495, has not been discovered and apparently has not survived. The want of extant legislation suggests (but does not prove) that there were no further monetary changes before the close of the Middle Ages. It is true, however, that in response to a complaint from the Estates General against the "gold ducats of such little value and so highly tarified that in no kingdom are they acceptable," on November 16, 1498, John III instructed the master of the mint to discontinue their coinage.³ Inasmuch as no gold money officially bearing this title had been issued in Navarre, the identity of the *ducat* is not clear. The Crown may possibly have engaged in counterfeiting, and a new gold coin may have been instituted after 1495; but, since the tariff of the real was excessive, and since *ducat* was a common appellation for divers gold pieces, the coin in question was probably the gold real.

Unfortunately, mint records for 1494-1500 have not been located. Hence I am unable to state either when the coinage of the new gold and silver pieces began or how long it continued. In the autumn of 1495 a grave scandal arose in the mint at

¹ Obviously *navarros* under a new title.

² ACC, caj. 164, no. 28; caj. 166, no. 2.

³ ACC, caj. 166, no. 54.

Pamplona. On December 17, John III and Catherine II instructed the President of the Royal Council and the Master of Finance to apprehend the individuals guilty of counterfeiting in the royal mint, to confiscate their goods, and to send the culprits to their Majesties for condign punishment.¹

Owing to the meager and infrequent coinage of gold,² Navarrese bimetallic ratios are unimportant; and the extreme scarcity of the tariffs of domestic gold pieces afforded by extant contemporary account-books and financial records obstructs the compilation of satisfactory commercial ratios.³ Furthermore, the calculable ratios were distorted by the extremely high percentage of alloy in the silver coins. At no time posterior to December 29, 1380, was the silver money more than half pure; and from November 19, 1481, through December 28, 1493 (when the data end), it was only 34.38 per cent fine. Hence the ratios computed in terms of pure metal tend to underestimate the rating of gold. The following table lists the legal bimetallic ratios established when new gold coins were instituted or when the master of the mint altered his rating of gold or silver money.

TABLE 16

BIMETALLIC RATIOS IN NAVARRE

Dec. 2, 1377-Mar. 28, 1380.....	12.78 to 1
Mar. 29, 1380-Dec. 28, 1380.....	8.44 to 1
Dec. 29, 1380-Aug. 6, 1383.....	8.09 to 1
May 8, 1385-June 9, 1386.....	3.69 to 1
June 10, 1386.....	7.39 to 1
May 10, 1428-Dec. 1, 1429.....	5.84 to 1
Sept. 7, 1431.....	6.37 to 1
Nov. 19, 1481-Jan. 23, 1484.....	10.13 to 1
Jan. 24, 1484-Jan. 16, 1486.....	10.35 to 1
Jan. 17, 1486-Jan. 31, 1487.....	10.57 to 1
Feb. 1, 1487.....	11.93 to 1

From December 2, 1377, to March 29, 1380, silver was undervalued at the Navarrese mints. But no reasonable allowance for

¹ ACC, caj. 193, no. 37.

² Except during the brief period from March 24, 1487, to December 28, 1493.

³ The attempt of Yanguas (*op. cit.*, II, 1489-1494) to compute bimetallic ratios from the prices paid by the Crown for gold and silver bullion of unspecified fineness for the manufacture of jewelry and plate obviously could not have yielded trustworthy results.

the large percentage of alloy in silver coins could alter the conclusion that the complete lack of gold coinage from 1385 through 1480 resulted from the abnormally low bimetallic ratios. The heavy output of navarros in 1487-1493 undoubtedly reflected the high rating of gold during these years.

A diminutive kingdom surrounded by powerful states and unusually dependent upon foreign trade, Navarre suffered to an extraordinary degree from the perplexing monetary diversity which characterized the closing centuries of the Middle Ages. Coined for alms-giving, petty transactions, and change for Aragonese florins and various types of French crowns, domestic money served largely as fractional currency. When the royal treasury collected large sums, dozens of monetary units — ranging from Greek, Bohemian, and Portuguese florins to Genoese ducats, English nobles, and Burgundian crowns — were represented.¹ But fortunately the predominance of an exotic coin, the Aragonese florin,² provided an element of unity and order.

In the fifteenth century the marriage contracts of Navarrese princesses generally fixed the dowries in terms of Aragonese florins,³ and even in the few exceptions to this rule florins comprised the lion's share of the transfers. From about 1365 on, the florin of Aragon incontestably surpassed all other coins in foreign remittances;⁴ while the bulk of wholesale trade and of large domestic payments was undoubtedly effected through this coin.

As has been stated, Navarrese money of account consisted of pounds, shillings, and pence. Frequently before 1300, and occasionally thereafter, prices were quoted, and obligations made, in

¹ On September 14, 1393, Charles the Noble " earmarked " for expenditure " upon amusement " a collection of gold coins of 46 distinct types then deposited in the royal treasure chests (ACC, caj. 60, no. 23).

² In 1392 Aragonese florins comprised 44.73 per cent of the large sum of money held by Charles III on the eve of his departure for France (ACC, caj. 66, no. 12).

³ It was natural for the dowry of Blanche of Navarre, who married John II of Aragon in 1419 (ACC, caj. 118, no. 58), to be fixed in florins; but the agreements to pay dowries to the Count de la Marche about 1406 (ACC, caj. 105, no. 8), to the Duke of Gandia about 1413 (ACC, caj. 103, no. 65), to the Count of Armagnac about 1421 (ACC, caj. 119, no. 47), and to Gaston de Foix about 1434 (ACC, caj. 104, no. 41; caj. 150, no. 22) in Aragonese florins indicate that, of all the internationally acceptable monetary units, the florin was the most prevalent in Navarre.

⁴ *Vide*, for instance, ACC, caj. 91, no. 14.

Castilian money;¹ and from 1386 through 1500 the groat, rated at 2s., was often employed as a "reckoning unit." But the totals were recorded in pounds, shillings, and pence. In large transactions prices were often quoted,² and the salaries of the upper stratum of the royal servants were occasionally fixed,³ in Aragonese florins; but the sums involved were converted into, and recorded in, the conventional units. Particularly in the second third of the fourteenth century Florentine florins copiously circulated; but they never gained acceptance as money of account.

Owing to the amazingly frequent advances of florins to the king to shoot dice⁴ and to their common use in large purchases of cloth, fish, spice, and other imported commodities, from 1351 through 1451 the account-books of the royal household supply abundant and continuous tariffs of florins in terms of Navarrese money. But the circulation of many different types of florins, the frequent neglect of royal accountants to identify the coins recorded, the dual rôle of Aragonese florins as effective money and accounting units (occasionally with widely divergent tariffs),⁵

¹ A royal order preconized throughout the judicial district (*merindad*) of Pamplona on July 14, 1341, complained of the transaction of business in La Guardia, San Vicente, Viana, and other places near the Castilian border in terms of Castilian money, "with no little detriment and injury to the King and kingdom," and ordered the inhabitants of frontier municipalities to trade and draw contracts exclusively in Navarrese money (ACC, *Comptos del Tesorero*, t. 44, fol. 66). Yet in April, 1382 a court in Pamplona fined a man 667 Castilian *maravedis* (ACC, caj. 45, no. 12); and on September 21, 1444, John II issued an order for the disbursement of 406 Castilian doubloons (ACC, caj. 151, no. 16).

² Fresh and dried fish imported from Biscayan ports were usually sold at wholesale in Pamplona in terms of Aragonese florins (*vide*, for example, ACC, *Compto de la Condesa de Foix*, t. 187; *Comptos del Tesorero*, t. 247). In the fair at Estella, on November 16, 1400, the Treasurer of Navarre bought large quantities of cloth in terms of florins (ACC, caj. 88, no. 10).

³ On June 1, 1363, Charles the Bad fixed the salary of his physician and that of his surgeon at 200 florins a year (ACC, caj. 17, no. 15); and on December 3, 1390, Charles the Noble employed a chaplain with a salary of 20 florins a year (ACC, t. 213). In 1428-1431 John II and Blanche fixed the compensation of certain mint officers in Aragonese florins (ACC, caj. 126, no. 73; caj. 128, no. 41; caj. 131, no. 46), and in 1433 salaries of many royal servants were placed on this basis (ACC, caj. 135, no. 24).

⁴ Virtually all of the account-books listed as sources of price and wage statistics present dozens of cases.

⁵ For instance, on April 10, 1492, John III and Catherine II placed a legal maximum tale of 80s. on Aragonese florins (ACC, caj. 164, no. 28); yet on May 21, 1495, they reckoned the florin at 30s. in fixing the mint price of silver (ACC, caj. 166, no. 2).

and the strong tendency of the public treasury to observe legal maximum ratings render difficult the compilation of a reliable series of commercial tariffs. Although found only at irregular intervals, numerous quotations of various French gold pieces (particularly the *écu d'or*, *mouton d'or*, and *écu à la couronne*) have proved useful as controls in doubtful cases. To avoid distortion by other florins with quotations similar to those of Aragon and by the normal premiums and discounts on over- and under-weight pieces,¹ in compiling the annual averages in Table 17 the mode rather than the median has been employed.

Unfortunately, it has not proved feasible to compile a series of florin tariffs without recourse to judgment. The absence of data has necessitated occasional interpolation, and the straight-line method has been adopted. In 1383, 1384, 1386, 1398, and 1406,² the prices paid for actual florins in Navarrese money markets did not exceed the annual averages for the respective years by more than a normal banking commission; but on December 31, 1431, the Crown was forced to pay 44s. 6d. each for florins to be expended in Tarazona by the commission negotiating peace with Castile.³ Arbitrarily assuming that the conventional ratings listed by the royal accountants did not represent the true commercial tale in 1431, I have employed 44s. 6d. — the only market tariff available — as the annual average.

Although a heavy issue of vellon apparently began in 1350, the quotation of the florin remained stable until 1353, when the King bought large quantities of alien gold pieces to defray the cost of sending a detachment of Álavese and Guipuscoan troops into France.⁴ Reflecting the renovation of coinage by Charles the Bad in 1355, the tariff of the florin declined by one-third in 1356-1359. The closing quotation of the florin in 1366 was only sd. above the opening tariff in 1351.

The sharp advance of the florin in 1366-1375 apparently re-

¹ Gold coins of abnormal weight freely circulated, with appropriate adjustments for excess or shortage (*vide*, for instance, ACC, caj. 94, no. 56). On August 31, 1406, the royal household bought "scales to weigh money" (ACC, *Comptes del Tesorero*, t. 293).

² ACC, caj. 47, no. 60; caj. 48, no. 68; caj. 49, no. 72; caj. 74, no. 18; caj. 174, no. 27; *Comptes del Tesorero*, t. 183; *Compte de la Condesse de Foix*, t. 187.

³ ACC, caj. 131, no. 60.

⁴ ACC, caj. 12, no. 22.

TABLE 17

TARIFFS OF THE ARAGONESE FLORIN IN NAVARRESE MONEY OF ACCOUNT

1351.....	13s. od.	1380.....	20s. od.
1352.....	14s. 3d.	1381.....	24s. od.
1353.....	15s. 6d.	1382-1383.....	27s. od.
1354.....	16s. 9d.	1384-1385.....	31s. od.
1355.....	18s. od.	1386.....	22s. od.
1356.....	17s. 3d.	1387-1390.....	24s. od.
1357.....	14s. 8d.	1391.....	25s. od.
1358.....	14s. od.	1392-1395.....	26s. od.
1359-1360.....	12s. od.	1396-1398.....	26s. 6d.
1361-1365.....	13s. od.	1399-1402.....	26s. 8d.
1366-1368.....	13s. 2d.	1403-1408.....	28s. od.
1369.....	13s. 6d.	1409-1417.....	29s. od.
1370.....	14s. od.	1418-1429.....	30s. od.
1371.....	15s. 6d.	1430.....	34s. od.
1372-1373.....	16s. 8d.	1431.....	44s. 6d.
1374-1375.....	16s. 6d.	1432-1438.....	37s. od.
1376.....	19s. od.	1439-1440.....	36s. od.
1377-1379.....	16s. od.	1441-1450.....	37s. od.

flected Navarrese inflation, but the lack of monetary ordinances and mint records impedes substantiation of this hypothesis. The purchase of foreign coins by noblemen who fled from Navarre after the discovery of the abortive conspiracy of Don Rodrigo de Uriz, Governor of Tudela, to deliver to the King of Castile the fortresses of Caparrosa and Tudela¹ and the default of Castile upon the major portion of the dowry of Eleanor, wed to the Crown Prince Charles, may have raised the tale of the florin in 1376; but, inasmuch as the gain was more than lost the following year, the most plausible guess seems to be that Navarrese money of account was deflated and that speculative anticipation of the monetary devaluation raised the tale of florins several months in advance. Despite the activity of the Navarrese mints, the florin remained stable in 1377-1379; but the continuation of heavy coinage in 1380-1386 forced up its tariff 37.5 per cent in strong money. Drastic deflation of the groat in 1386 brought the florin precipitately downward the following year. Appreciation of gold and the progressive abrasion of domestic coins were probably factors in the steady rise of the tariff from 24s. to 30s. in 1390-1418, while the Navarrese mints were closed. Apparently the rating at 30s. was maintained for more than a decade,

¹ José de Moret, *op. cit.*, VI, 72-73.

but the commercial quotations were obscured by the persistent use of the florin at this tariff for accounting purposes. The monetary inflation which began in 1428 had no effect upon the florin until 1430, when the tale rose 13.3 per cent; by 1431 debasement had gone so far that reform became imperative; and the rapid turnover of groats induced by the fear of devaluation was largely responsible for the sharp depreciation of money of account. The florin fell to 37s. in 1432 and, bating 1439-1440 (when the legal tariff of 36s. governed the rating by the royal household), remained at this figure through 1451, when reliable and continuous quotations end. As an accounting unit the florin remained constant at 30s. from 1418 through 1500. In 1453-1454, 1462, and 1475 effective Aragonese florins were received and disbursed by the royal household at 37s; but money struck by Francis Phoebus and by John III and Catherine II after 1481 doubtless forced the florin sharply upward, for in 1492 the legal maximum tariff was fixed at 80s.¹

Table 18 gives the estimated fine gold equivalence of the Navarrese penny in terms of which the annual commodity prices in Appendix V are listed.

TABLE 18
EQUIVALENCE OF THE NAVARRESE PENNY IN FINE GOLD

1351.....	.02256787 gram	1377-1379.....	.01375230 gram
1352.....	.01951593 gram	1380.....	.01100184 gram
1353.....	.01794207 gram	1381.....	.00916820 gram
1354.....	.01660311 gram	1382-1383.....	.00814951 gram
1355.....	.01545011 gram	1384-1385.....	.00709796 gram
1356.....	.01612186 gram	1386.....	.01000167 gram
1357.....	.01806150 gram	1387-1390.....	.00916820 gram
1358.....	.01986443 gram	1391.....	.00880147 gram
1359-1360.....	.0217517 gram	1392-1395.....	.00846295 gram
1361.....	.02139246 gram	1396-1398.....	.00830327 gram
1362-1364.....	.02068722 gram	1399-1402.....	.00825138 gram
1365.....	.01692590 gram	1403-1408.....	.00785846 gram
1366-1368.....	.01671165 gram	1409-1417.....	.00758748 gram
1369.....	.01629902 gram	1418-1420.....	.00733456 gram
1370.....	.01571691 gram	1430.....	.00647167 gram
1371.....	.01419592 gram	1431.....	.00494465 gram
1372-1373.....	.01330221 gram	1432-1438.....	.00594694 gram
1374-1375.....	.01333556 gram	1439-1440.....	.00611213 gram
1376.....	.01138088 gram	1441-1450.....	.00594694 gram

¹ *Vide supra*, p. 134.

Even in the darkest days of the bitter and protracted successional struggle between the factions of John II and the Prince of Viana, Navarre fortunately escaped feudal issues of base money and was virtually free from counterfeiting — twin evils that bred confusion and obstructed the orderly progress of economic processes in many countries during the closing centuries of the Middle Ages. But the kingdom did not enjoy a sound currency. The upheaval of prices and wages from 1375 to 1390¹ was partially due to monetary inflation, and the colossal upswing in 1431 largely resulted from the excessive coinage in the two preceding years along with speculative anticipation of the remedial deflation which occurred in September of that year.

Fortunately, most of the monetary alterations moved in a single direction — toward currency expansion. Drastic deflation occurred only twice; and in each instance countervailing inflation (or “reflation”) averted, or at least alleviated, the evil consequences. Owing to the diminutive size of the Pyrenean kingdom, to its extraordinary dependence upon foreign trade, to its control of mountain passes vital to empire, and to its location in the midst of strong imperialistic states, the influx of foreign coins injected a diversity into Navarrese currency unusual even for an epoch characterized by monetary heterogeneity.

¹ *Vide infra*, pp. 159, 180.

CHAPTER VIII

PRICES IN NAVARRE

ALTHOUGH the sources are practically limited to the financial records, particularly the expense accounts, of the royal household — deposited in the Archivo de la Cámara de Comptos (Chamber of Accounts) at Pamplona — and to unimportant documents of the Pamplona Cathedral, in many respects the Navarrese price series surpass all others available for any Spanish region in the Middle Ages. No account-books of eleemosynary institutions, private families, or municipalities have been unearthed; but an extraordinary quantity of financial records was a *sine qua non* of the traditional efficiency of public administration in the Pyrenean kingdom. If one may judge by surviving fragments, even in the twelfth and thirteenth centuries Navarre surpassed other Spanish kingdoms in systematic public book-keeping; and the centralization of auditing in the Cámara de Comptos, established by Charles the Bad about 1364, probably increased the volume and promoted the preservation of the royal account-books.

Quotations have been obtained for a short list of commodities in 1282-1286 and 1294 from the Bibliothèque Nationale at Paris¹ and for a few articles in widely scattered years of the first half of the fourteenth century from the Archivo de la Cámara de Comptos;² but no extant documents prior to 1351 furnish satisfactory prices for a tolerable number of commodities. The records of the receipts of royal revenues (listed as *Comptos del Tesorero* in the manuscript inventories of the Archivo de la Cámara de Comptos), which begin about 1195 and continue without many long lacunae until the conquest of Navarre by

¹ *N. Latins*, Ms. 20,150.

² Discontinuous index numbers for the period 1283-1350 are presented in Chapter X.

Ferdinand the Catholic in 1512, contain prices of grain and of a few luxuries such as fine silks and woolens. But the unwarranted stability of the grain quotations (along with corroborative descriptive data in the account-books) indicates that the prices represent either fictitious sales tantamount to commutations of produce rents into money at fixed rates or exchanges at purely conventional figures; while the heterogeneous qualities, uncertain metrological units, and irregular purchases of luxury products render their quotations worthless to the historian of prices.

The Navarrese monarchs frequently resided abroad for considerable periods;¹ but, inasmuch as other members of the royal family seldom accompanied the king, the strict separation of the expense accounts of the king and the queen and the independent records occasionally kept for princes and princesses have rendered it possible to collect adequate commodity prices and to construct trustworthy general index numbers for most of the ninety-four years from 1351 through 1444. Owing to the unfortunate scarcity of data, the general indices are extraordinarily weak in 1351-1355; but in only four years between 1356 and 1444 are prices for less than ten articles available. In 1386-1444 over 91 per cent of the indices comprise forty or more price relatives.² For only eleven years are statistics lacking, and no hiatuses save those of 1370-1371 and 1381-1382 extend beyond a single year.

The greatest weakness of the price series is the virtual lack of data posterior to the death of Queen Blanche in 1445. For only one subsequent year — 1451, when the expense accounts of the Prince of Viana are available — could records of the maintenance of a member of the royal household be located. The long and bitter successional struggle between John II and the Prince of Viana, precipitated by the death of Blanche, was not conducive

¹ Charles the Bad was often absent from Navarre while residing in his Norman dominions and intriguing at Paris; Charles the Noble, while pressing claims to lost possessions in France (particularly in Evreux, Normandy, Champagne, and Brie); and John II, while governing Aragon as the lieutenant of Alfonso the Magnanimous (who fixed his abode in Naples and Sicily) and while scheming against Álvaro de Luna in Castile. Eleanor of Castile, whose marriage with Charles the Noble was never happy, spent a good deal of time in her native land.

² The destruction of the archives in the Royal Palace at Tiebas by fire in 1378 may have contributed to the relative dearth of material before this date.

to the keeping or the preservation of financial records. The accession of John II to the Aragonese throne in 1458, the death of the Prince of Viana in 1461, and the political captivity of Princess Blanche by her sister, Eleanor de Foix,¹ the following year took away from the mountain kingdom the last representative of the royal family. In 1479 Francis Phoebus, the son of Eleanor and Gaston IV de Foix, ascended the Navarrese throne; and Pau became the capital. From this date until the loss of Navarrese independence French monarchs reigned, and Spanish Navarre was seldom honored by royal visits. In addition to the provincial and municipal archives of Lower Navarre the Archives des Basses-Pyrénées, the Archives Nationales, and the Archives Municipales at Pau have been searched in vain for the expense accounts of the French dynasties. The price statistics for 1452-1487 are confined to a few quotations for barley, wheat, wine, paper, and sheepskins obtained from documents in the Archive of the Pamplona Cathedral and the Archive of the Cámara de Comptos. The data are so scant and widely scattered that they serve only as a fairly reliable indicator of the trend of prices.

The royal expenses were recorded in books and on long parchment rolls, the latter being substitutes for, rather than duplicates of, the former. Virtually all of the rolls are in good condition, and most of the account-books have been bound in vellum and well preserved. As a rule only the few loose fragments of books, which apparently escaped notice when the binding occurred and which have otherwise lacked adequate protection against moisture and insects, are in poor condition. In the course of centuries ink-fading has inevitably impaired the legibility of many documents; but, unlike that used in Spain during the sixteenth century, the ink was of good quality and seldom proved corrosive. With well-formed letters of French style, the books and rolls are delightfully easy to read; few of the manuscripts could offer the slightest paleographical difficulty to an experienced worker.² Roman numerals, easier to comprehend than primitive Arabic

¹ Acting in concert with John II.

² Cf. J. A. Brutails, *Documents des Archives de la Chambre des Comptes de Navarre* (Paris, 1890), pp. iv-v.

notation, were used throughout the period of this study. Abbreviations of the names of commodities, weights and measures, and the like often occurred; but, once their meaning had been deciphered, the abbreviations (by shortening the space covered) actually facilitated the transcription of data.

The expenditures of the royal household were recorded daily; and the frequently-recurring purchases of perishable commodities were not separated from the extraordinary outlays for durable goods, which were stored and consumed as required. Although bought whenever a suitable opportunity arose, sugar, spices, sheepskins, paper, ink, sealing wax, bran, firewood, shoes, and straw were not ordinarily entered until the last day of the month.

Despite the lack of paleographical problems, the collection of the price statistics proved extremely tedious and laborious. Until early in the fourteenth century most of the accounts were written in French, and thereafter, in Spanish. But occasionally the two languages were indiscriminately mixed,¹ with or without a few Latin phrases for good measure; while French words were sometimes Hispanicized so as to be hardly recognizable, and vice versa. Furthermore, numerous Catalan terms such as *olio* (olive oil), *taronjes* (oranges), *ous* (eggs), *pebre* (pepper), and *codonys* (quinces) were encountered. Since both French and Spanish were in a formative stage, orthographical variations retarded the archive work.²

But the most serious obstacle encountered in the whole investigation was the utter lack of separation of the items recorded as well as of marginal extensions of the total values of purchases. The expenditures were divided into five categories: *paneteria* (granary), *botilleria* (wine cellar or storeroom), *cocina* (kitchen),

¹ *Vide*, for example, the expense accounts of the King in November, 1401 (Archivo de la Cámara de Comptos [hereafter ACC], *Escroas del Hostal del Rey*, t. 266).

² For instance, olive oil (*aceite* in modern Spanish and *huile* in French) was written as *olif*, *huile*, *d'uylle*, *de huylle*, *duille*, *d'uile*, *doly*, *dohit*, *holif*, and *d'uilef*; eggs (*huevos* in Spanish and *oeufs* in French), as *uefs*, *ous*, *uea*, *oux*, *de uz*, *deux*, *dues*, and *hues*; and candle-wicks (*meta para velas* in Spanish and *fil à torches* in French), as *babil*, *bavil*, *vabil*, *savil*, *pabil*, *pavil*, *fil pour faire torches*, *fil de babil*, *limignon*, and *limaignon*.

fruteria (fruitery), and *escuder'a* (civil list);¹ but the transactions in each group were listed in compact unbroken lines. Indentation of each entry, extension of the total value, and elimination of extraneous material would probably have reduced the labor of transcription by at least two-thirds.²

Second only to the unbroken inscription of the accounts stood careless and inaccurate bookkeeping, which, as Werner Sombart and others have pointed out, characterized the Middle Ages. For instance, the records for September 12, 1398, show half a dolphin bought the preceding February 20 "and not counted the said day because the price was not known";³ and on June 9, 1414, the following item occurs: "To Johan de la Braca for six hundred eggs obtained from him in the year 1409 and not recorded, 1d. each, 5os."⁴ The constant repetition of *pour-peu-compté* entries to correct understatements of prices occasioned much confusion and waste of time. For example, the accounts of the Queen for January 25, 1400, list 8 1/2 pounds of pepper at 5s. 6d. a pound; since this was the first pepper price encountered in that quarter, it was transcribed and marked *sic*. But, in the records for March 10, I found the following entry: "Pour peu compté pour VIII l. e demie de pebre le deboit estre compté pour lui le XXV^e jour de Janvier le quel dit pebre le deboit estre compté a Xs. VI^d. pour l. e ne le fust compté q ab Vs. VI^d."⁵ In this case correction of the transcription blanks proved feasible, but emendation was not always possible. For instance, on October 31, 1396, one finds: "pour peu compté le IV^{mes} jour de ce

¹ This classification of expenses was maintained by the kings of Navarre throughout the period under investigation and employed by Henry IV, the first Navarrese King of France (*vide*, for example, Archives des Basses-Pyrénées, B 130).

² The average time required for a skilled paleographer to transcribe the prices from one account-book for a single year was about 9 hours. Prices from the *Compte del Gasto Hecho por la Infanta Da. Beatris* (ACC, t. 293) for 12 months beginning on June 1, 1406, the only extant royal expense accounts written "in verso," were extracted by my least experienced assistant in 2 1/2 hours. Bating the indentations and marginal extensions, this account-book was of average difficulty.

³ ACC, *Diario del Gasto del Hostel de la Reyna*, t. 247.

The price of half a dolphin consumed on April 8, 1389, was not recorded until March 28, 1391 (ACC, *Expenses del Hostel de la Infanta Da. Juana*, t. 213).

⁴ ACC, *Obras en el Palacio de Olite*, t. 331.

⁵ ACC, *Expenses de la Reyna*, t. 255.

On the outer cover of this account-book the year is erroneously stamped 1399.

mois IIIs. VIId.,”¹ without any means of knowing which price or quantity listed on that day was in error; and — still worse — on February 15, 1386, £8 6s. 8d. was entered in the King’s accounts “pour peu compté de poissons l’an IIII e III [1383].”²

Most of the records available for the twelfth and thirteenth centuries are dated by the Era of the Caesars (convertible into present chronology by subtracting thirty-eight), but prior to 1350 A.D.-dating had superseded this practice. In the second half of the fourteenth century a modified form of incarnation year, beginning on April 1,³ was used by the Crown; but in the first decade of the fifteenth century the calendar year was often employed, and after about 1410 its use became general. Patient investigation enables one to determine the type of year used in the royal expense accounts. Inability to ascertain the correct dates of documents eliminated few price quotations, and undated material was rarely encountered.

The devices and methods employed in transcribing Valencian prices were adopted in Navarre.⁴ Owing to the *a priori* expectation of divergences in market conditions and metrological units, special care was taken to maintain the identity of the price series obtained for Olite, Sangüesa, Pamplona, Tudela, Estella, and Viana — the principal royal residences. While traveling, members of the royal family often stopped overnight and occasionally remained longer in small towns along their routes.⁵ Obviously it was not feasible to compile independent price series from the irregular purchases of provisions in any of the villages used to break journeys. Whenever a town lay not over fifteen or twenty kilometers from a principal seat of residence, and when a comparison of the statistics revealed no discrepancies, the data from

¹ ACC, *Libro del Gasto Hecho por la Reyna*, t. 232.

² ACC, *Cuentas del Hostal del Rey*, t. 188.

³ The true incarnation year commenced on March 26 (for example, *vide* ACC, caj. 183, no. 7).

⁴ *Vide supra*, p. 43 ff.

⁵ There is never any question as to location, for the accounts invariably indicate where each meal was eaten.

the village were combined with those from the metropolis. Price quotations from distant or inaccessible places were either omitted in transcription or cast out in the computation of averages.

From the earliest times for which records are available systematic municipal inspection of weights and measures obtained in Navarre, and before the middle of the fourteenth century the Crown established national standards and assiduously endeavored to extirpate local units.¹ As in most other countries during the Middle Ages, the force of local custom largely defeated the attempted metrological unification; but the perdurable regional differences have not materially hindered the compilation of homogeneous price statistics from the extant manuscripts. Hundreds of price comparisons have demonstrated that only in Tudela, where Aragonese influences were strong, did the royal family purchase commodities in terms of local weights and measures; in all other cities and towns of the kingdom the agents of the Crown bought provisions solely in terms of the royal, or Pamplona, units. At present the price historian need consider only the royal and the Tudela standards, with special emphasis upon the former.

The utter lack of reliable cereal quotations² rendered arid measures unimportant. Only bran and garden peas, or 3 per cent of the commodities comprised in the general index numbers, were exchanged by dry units. The prices of salt and horse beans have been tabulated; but salt was eliminated from the index numbers by suspicious behavior presumably resulting either from capricious monopolistic price control or heterogeneous quality, and horse beans were cast out on account of the frequent necessity of guessing whether they were dry or green, shelled or in the hull.

Table 19 gives the multiples and fractions of the royal *robo*, the only dry unit in terms of which annual prices have been computed.

¹ "For weighing cheese with a standard other than the royal one in the fair at Marcilla" on Saint Bartholomew's day in 1333 a Jew was fined 60s. The next penalty recorded was one of 20s. imposed upon a man "for whipping his father" (ACC, caj. 7, no. 41).

² *Vide supra*, p. 144 and *infra*, pp. 154-155.

TABLE 19

ARID MEASURES IN NAVARRE

4 almudes	=	1 cuartal or cuarto
4 cuartales	=	1 robo
4 robos	=	1 cahiz

Quotations in terms of all four of the above units frequently appeared in medieval account-books, but the robo was used considerably more often than the remaining three measures combined.

In compiling the annual prices of bran, interpolations of Tudela quotations were used to fill lacunae; but fifteen comparable ratios between Tudela statistics and those from other cities indicate that the Crown purchased bran everywhere in terms of royal standards. No Tudela prices entered into the annual averages for horse beans, salt, or garden peas.

The purchase of "a robo and a ruler to measure grain" by the Crown in 1360¹ suggests that stricken units were standard.

Metrological tables list the equivalence of the royal robo at 28.13 liters and the remaining units accordingly. The "old dry measures of Tudela,"² often encountered in account-books from about 1380 through 1415,³ were approximately 2.17 times larger than the corresponding royal standards.

Since olive oil was sold by weight, only vinegar, red wine, and white wine, or 5 per cent of the commodities in the general index numbers, were measured by liquid units. But the heavy consumption of wine raised the liquid group far above its relative numerical level.

Table 20 gives the fractions and multiples of the *carapito*, the unit in terms of which wine and vinegar were almost invariably exchanged.

Although largely used in the twelfth and thirteenth centuries, the *gailleta*, *coca*, and *nietro* fell into desuetude before the middle of the fourteenth century. Purchases by the *cuarterón* were not common, and the *carga* was rarely employed. In fact, the annual

¹ ACC, *Comptos del Tesorero*, t. 98.

² By implication there were also "new measures of Tudela," but I have found no evidence of their use and am unable to estimate their volume.

³ *Vide*, for example, ACC, caj. 105, no. 6; *Comptos del Tesorero*, t. 165.

TABLE 20

LIQUID MEASURES IN NAVARRE

4 cuarterones ¹	= 1 carapito
3½ galletas	= 1 carapito
12 carapitos	= 1 carga
15 carapitos	= 1 coca
16 carapitos	= 1 nietro

prices of all three liquids were calculated in terms of carapitos without any conversions of quotations representing other units.

According to metrological tables, the royal carapito contained approximately 11.77 liters.

No Tudela quotations entered into the annual prices of white or red wine, but a few Tudela prices were used in calculating vinegar averages. I have found no means of directly comparing the royal and the Tudela standards, but vinegar prices in Tudela averaged only 71 per cent of those in the cities using royal measures; and adjustments have been made for this deviation before combining the different vinegar series.

Fine linen (*bretaña*), serge (*estameña*), and woolen cloth (*paño*) were measured by lineal units; but, owing to the impossibility of determining either the width or the quality of the fabrics, their prices have not been included in the index numbers.

The *codo*, in terms of which textile prices are given in Appendix V, was equivalent to approximately 78.5 centimeters.

Fortunately, 30 per cent of the commodities in the general index numbers were exchanged by tale. Inasmuch as no freak notation existed in Navarre, the unit, pair, dozen, hundred, and gross showed no variation with time or place.

Accounting for 57 per cent of the commodities in the general index numbers, weights were far more important than any other type of metrological unit.

Table 21 lists the weights in terms of which prices were recorded in the medieval account-books.

The royal pound was equivalent to approximately 372 grams, and the remaining weights varied accordingly. The Crown at-

¹ The *cuarterón* should not be confused with the *cuarte*, which was identical with the carapito.

TABLE 21

WEIGHTS IN NAVARRE

12 ounces	= 1 pound
18 ounces	= 1 fish pound
36 ounces	= 1 meat pound
12 pounds	= 1 docena chica
12 carnicera (meat) pounds	= 1 docena grande
1 roa	= 30 pounds ¹

tempted to compel the municipal councils throughout the kingdom to obtain royal, or Pamplona, standards of weight to supersede local units;² but, owing to the heavy importation of many commodities from the Aragonese capital, Tudela used Saragossan weights throughout the period under investigation. The collector of revenue (receptor de las rentas) at Tudela purchased a considerable portion of the wax and spices consumed by the royal household. Some of the articles were bought at Saragossa,³ the entrepôt for most of the oriental goods brought into Navarre; and the remainder were obtained at Tudela from Jews who had imported them from Saragossa. Consequently wax and many, but not all, of the spices bought by the collector of revenue at Tudela were generally quoted in terms of local standards; and it proved necessary to interpolate Tudela prices in compiling the annual averages for these commodities. The average deviation for each article, as shown by numerous comparable ratios, was used in combining the Tudela series and those from other places. According to metrological tables, the Pamplona pound was 6.3 per cent heavier than the Saragossan, used at Tudela; and the average excess of the prices in other markets over those in Tudela ranged from 6 per cent for pepper to 8 per cent for cloves.

Paper was bought by the quire and the ream. Twenty of the former made one of the latter.

Purchases of ink by the bottle for the use of the royal accountants were recorded at frequent intervals; but extreme price fluctuation was not observed.

¹ According to José Yanguas y Miranda (*Diccionario de Antigüedades del Reino de Navarra* [Pamplona, 1840], II, 709), there were 36 pounds in a roa. This unit rarely occurred, but in the few cases I have found the roa contained 30 pounds.

² *Vide*, for example, ACC, *Cartulario de Carlos II*, pp. 109-110.

³ The prices paid in Saragossa have not been used in Navarre.

tuations cast such a strong suspicion upon the stability of the measure that ink was eliminated from the general index numbers.¹

Prices of charcoal have also been tabulated but left out of the general index numbers because of apparent variations in the size of a "load." Five ratios of load prices to robo prices suggest that a load averaged about three robos.

The most questionable measures represented in the general index numbers are a string (*cuerda*) of grapes and a load of firewood. Sufficient data for a reliable estimate of the metrical equivalent of a string are not available; the best guess from the accessible documents is that the string weighed about a kilogram. The load of firewood seems to have represented the carrying capacity of a pack mule, but one cannot even be certain as to this rough estimate.² I readily confess that it might have been preferable to exclude firewood from the general index numbers.

Since the quantity purchased tended to affect the price, in many cases interpolations of crude conversions of large or small weights or measures according to metrological tables would have distorted the price series. Hence conversions have been made by applying the average ratios between quotations in terms of the different units. For example, the annual prices of paper run in terms of quires. It frequently proved desirable to interpolate ream prices, and they were divided by 18.09 (the average ratio of ream to quire quotations) rather than by twenty.

A large part of the price statistics represent quotations for Olite, where the royal family resided most of the time,³ and Tafalla, only six kilometers distant, the seat of a secondary palace. As the map on page 5 demonstrates, Olite lay near the

¹ Many quotations have been arbitrarily excluded in computing the annual ink prices listed in Appendix V.

² Hundreds of prices of firewood by the mule-load and the donkey-load have been transcribed but cast out because absolute price stability for periods as long as a quarter-century clearly indicated that the price was controlled by the authority of the Crown. The firewood may have been supplied at a nominal price under feudal obligation, and it may have been acquired through compulsory deliveries at fixed prices. The prices that have been tabulated represent genuine purchases in free markets.

³ Even before the construction of the monumental Gothic Palace by Charles the Noble.

center of a quasi circle with Pamplona, Tudela, Estella, and Sangüesa (listed in the order of their importance), the remaining cities that supplied a significant portion of the price data, along radii that ranged in length from 41 to 54 kilometers and averaged about 46. Thousands of comparisons have demonstrated that (aside from the adjustments necessitated by the differences between the Tudela and the royal metrological standards) prices from the five leading seats of residence could be crudely combined in computing the annual averages. On account of the infrequency and the extremely short duration of the royal visits to Upper Navarre, the uncertainty as to the metrological units, and the great difficulty of trans-Pyrenean trade in bulky commodities, the modicum of prices encountered for French Navarre (usually representing purchases at Saint Jean Pied de Port and Saint-Palais) was not even transcribed. Price data for Roncesvalles, on the crest of the Pyrenees, and Viana, about seventy-nine kilometers from Olite and practically on the Castilian border, have been collected but excluded from the annual averages. Castilian measures were frequently employed in Viana; and, owing to the great expense of transportation over mountain roads, all commodities except those embodying great value in small bulk were considerably dearer at Roncesvalles than in the principal markets of the realm.

With forty-six commodities in 1351-1400 and sixty in 1401-1451, the Navarrese price indices are among the best now available for any small region on the continent of Europe in the Middle Ages.¹ As has been indicated, few long lacunae mar the statistics; and grains, building materials, and poultry products are the only important groups of commodities ordinarily found in medieval account-books² for which trustworthy index numbers cannot be

¹ A superficial examination of the convent and hospital records (particularly the former) in the Archivio di Stato, at Florence, and of the account-books of Francesco Marco Datini, at Prato, has convinced me that one can probably obtain much better price and wage statistics for Florence than I present for Navarre. It is easily possible that more than one of the distinguished scholars now engaged in research in various European countries under the auspices of the International Committee on Price History will present more extensive, complete, and continuous material than the Navarrese archives afford.

² Of course, textiles and metals were important; but satisfactory price series for either group rarely appear in historical price studies.

constructed. A few genuine purchases of grain at market prices appeared in the royal expense accounts; but they were too scattered in time and place to supply either continuous or homogeneous series. Owing to the heavy (actual or purported) receipts of grain from the royal demesne and from taxes in kind, grain "sales" provided a considerable portion of the royal revenue recorded in the *Comptos del Tesorero*; but either these "sales" were fictitious, or the prices were arbitrarily determined by royal fiat.¹ Quotations for building materials are available for many years, but no continuous data for a particular locality have been found. Local metrological variations have caused considerable price divergence between different places, and apparently heterogeneous quality and heavy and uneven transportation costs worked in the same direction. Through cancellation of errors the building-material prices have produced a seemingly reliable group index number; but, since the individual quotations would prove not only useless but positively misleading, they have not been tabulated. Abundant quotations for eggs, hens, spring chickens, capons, and geese have been transcribed and tabulated. But the absolute uniformity of prices over long periods regardless of seasons, buying instructions to royal servants,² and the rates at which purchases were effected in the open market (generally labeled "acheté dans la ville" or "comprado en la villa") indicate that poultry products were expropriated at tariffs fixed by the Crown.³ Poultry prices have been tabulated, and a special index number has been constructed for the group; but squabs (whose quotations alone were determined by the free play of economic forces) are the sole representatives of this group in the general index numbers.

Although the medieval Navarrese accountants habitually recorded prolix discussions of the provenance and the consumption

¹ *Vide supra*, p. 144.

² *Vide*, for example, ACC, caj. 93, no. 4.

³ The same policy was pursued in Castile in the sixteenth century. In a pragmatic of May 15, 1560, Philip II recognized that the "royal hunters" were taking fowls at the prices fixed by the Catholic Kings and the Emperor "to the great injury of his subjects" and raised the tariffs (Biblioteca Nacional, *Rovos*, 15,431).

On the average, the market prices of poultry in Navarre were approximately double the expropriation prices.

of articles, they almost never described the commodities purchased and seldom furnished clues for their classification. Distortion of the price series by major variations in quality has doubtless been averted by the simple expedients of eliminating dubious quotations and casting out entirely the commodities whose price behavior suggested considerable heterogeneity; but slight variations in quality may have escaped detection and correspondingly impaired the validity of my results. The grades of many commodities such as fresh conger eels and large nails are set forth in the price tables, and in many other cases there can be little doubt as to the classification of the articles; but, even if a possible error is involved, certain goods require description.

Chestnuts, filberts, almonds, dates, and figs were dried; garden peas and horse beans were dried and shelled. Eggs, butter, barbel, salmon, trout, porpoise, ray, sea bream, peaches, pears, and cherries were fresh; and calves, capons, spring chickens, squabs, hares, hens, hogs, lambs, and pigs were live. The price series run in terms of dressed kids, white sugar, large sheepskins, white hulled rice, table salt, yellow wax, yellow sealing wax, salted geese, fresh pork, new horseshoes, and milk cheese. Beef consisted indiscriminately of cuts from the fore and hind quarters.¹ On the average the tallow candles, which were used for illumination, weighed about 1/18 of a Navarrese pound, or 20.67 grams. The prices of red and white wine are for new, or common, varieties.² All spices were ready for consumption without further seasoning or processing. Since lard furnished a cheaper fat, olive oil was used for table purposes rather than for cooking.

As in Valencia, I have adopted the calendar year and transcribed the first four quotations occurring in each quarter. Only when the data were too meager to permit a better method and when there was also a strong *a priori* expectation of unusual stability, have quarterly averages been crudely combined to obtain prices for incomplete years without first ascertaining that the quotations were not subject to marked seasonal variations.

¹ Since beef was ordinarily either stewed or roasted, tenderness was not an important factor.

² The royal family consumed a good deal of old wine; but, inasmuch as the quality varied widely according to the producing region and the year of vintage, a homogeneous price series could not be compiled.

Whenever quarterly ratios of the prices of an article indicated a deviation in any season of as much as 5 per cent from the mean, adjustments were made for seasonal fluctuations in compiling averages for the years with missing quarters. A few perishable commodities were not quoted throughout the year. For instance, purchases of sea bream were mostly confined to the first quarter and the fourth;¹ while cherries were bought only at the close of the second quarter and early in the third. The annual prices of such goods obviously could represent only the periods of purchase. In some cases the omission of one or more seasons having sporadic quotations conduced to accurate results. For instance, the second- and the third-quarter prices of salmon and the third-quarter quotations of dates have not been utilized.

Table 22 lists the seasonal fluctuations of twenty-four selected commodities.

TABLE 22

PERCENTAGE DEVIATIONS OF QUARTERLY FROM ANNUAL PRICES IN NAVARRE

	1st quarter	2nd quarter	3rd quarter	4th quarter
1 Almonds.....	-6.9	-2.9	+6.8	+3.0
2 Beef.....	+3.2	+4.5	-2.9	-4.8
3 Cheese.....	+6.1	-0.9	-6.9	+1.7
4 Conger eel, dried.....	+3.3	+0.8	-3.2	-0.9
5 Conger eel, fresh.....	+4.9	-8.5	+0.3	+3.3
6 Cuminseed.....	-7.7	+0.7	+3.6	+3.4
7 Dates.....	+26.3	+19.8	-53.0	+6.9
8 Figs.....	-5.1	-3.1	+14.7	-6.5
9 Filberts.....	+6.1	+5.4	-20.7	+9.2
10 Hake, fresh.....	+3.6	-1.2	-2.9	+0.5
11 Hares.....	-6.8	+11.9	-8.6	+3.5
12 Herring.....	+5.5	-14.6	+9.1	.....
13 Olive oil.....	+1.3	-2.0	-2.7	+3.4
14 Pears.....	+4.9	-48.6	-13.2	+56.9
15 Peas, garden.....	-1.8	-2.5	+2.9	+1.4
16 Pork.....	+2.5	-1.0	-5.8	+4.3
17 Porpoise.....	+4.1	-1.3	-6.7	+3.9
18 Rice.....	-0.8	-4.1	+4.8	+0.1
19 Sardines, fresh.....	+35.5	-26.5	-16.6	+7.6
20 Sugar.....	+0.4	-1.2	+0.2	+0.6
21 Trout.....	+15.4	-7.5	-3.1	-4.8
22 Vinegar.....	-7.6	+1.2	+4.5	+1.9
23 Wine, red.....	-10.7	-6.8	+3.6	+13.9
24 Wine, white.....	-12.3	-2.9	+8.4	+6.8

¹ In fact, the consumption of this article was limited largely to the festive occasions in the last week of December and the first week of January.

The commodities showing the greatest seasonal fluctuations were fruits, nuts, fish, and wine. Since olive oil was purchased in small quantities, the prices exhibited only slight movements from quarter to quarter.

The annual prices of commodities are listed in Appendix V.¹ As has been indicated, several articles, which (because of heterogeneity, variable measures, inadequate quotations, and the like) have been excluded from the general index numbers, have been tabulated. Even imperfect price data may possibly be of service to political and social historians in the future, and metrologists may find the quotations useful in studying medieval weights and measures. If scholars familiar with the histories of the production of particular commodities in Navarre ever trace their prices over long periods, the questionable series in Appendix V may serve as points of departure; and it is even conceivable (though certainly not probable) that such studies might reveal sources of error and permit correction of the major defects of the series. For want of better data some of the dubious series have been incorporated in group index numbers. The exponent of each price indicates the number of quotations included in the average or used as controls.²

Unweighted arithmetic index numbers constructed on 1421-1430 as a base are presented in Table 23.

Chart 13 presents graphically the data in Table 23.

No data are available for 1353, and in the remaining years of the quinquennium 1351-1355 the number of price relatives ranges from 4 to 7 and averages less than 6. Hence implicit faith should not be placed in the index numbers for this period. The available data suggest that, following the lowest point reached during the period under investigation, in 1351, the index number practically doubled in 1352. Two years later prices stood 6.5 points lower than in 1352, but in 1355 the loss was more than regained. A tax

¹ The data in Table 18 may be used in converting the annual prices, which are in money of account, into terms of a fixed weight of fine gold.

² The annual prices comprised no more than four quotations per quarter, making a total of sixteen; but in some cases additional data were transcribed and employed in adjustments for metrological and regional differences.

TABLE 23

INDEX NUMBERS OF COMMODITY PRICES IN NAVARRE

Base = 1421-1430

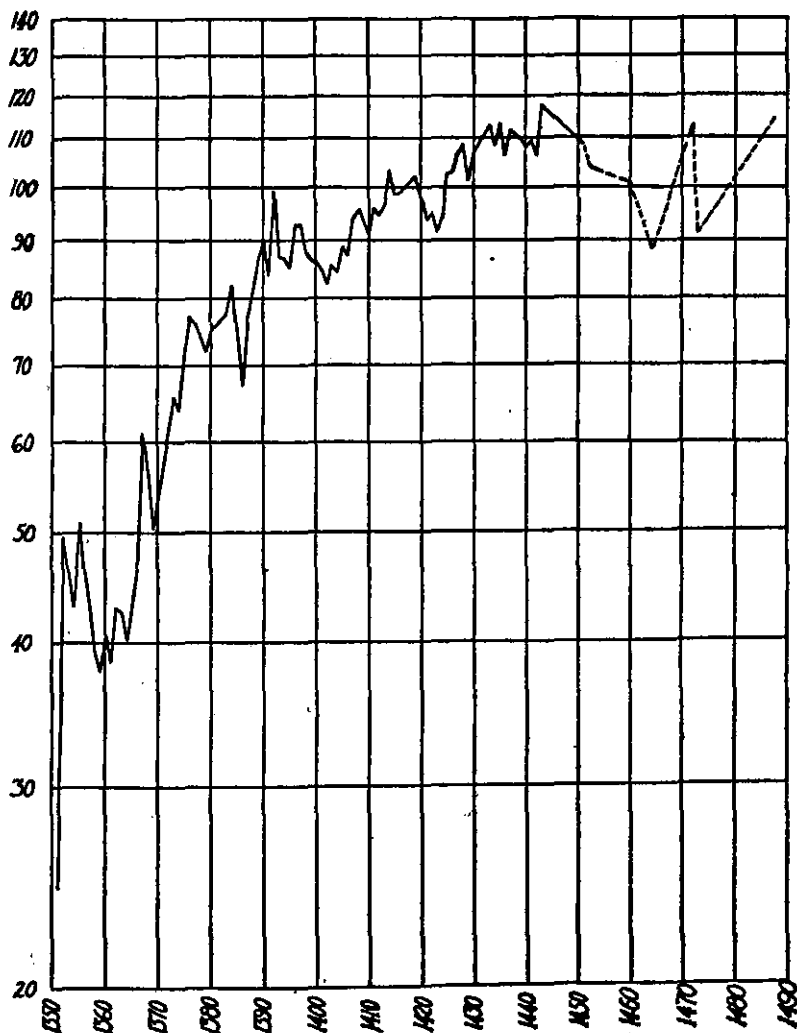
Year	Indices	Year	Indices	Year	Indices
1351.....	24.5 ⁷	1387.....	76.8 ⁴⁵	1423.....	91.6 ⁵²
1352.....	49.7 ⁵	1388.....	81.1 ⁴⁴	1424.....	94.0 ⁴⁸
1353.....	.....	1389.....	86.7 ⁴⁵	1425.....	102.8 ⁵¹
1354.....	43.2 ⁴	1390.....	90.0 ⁴⁴	1426.....	103.3 ⁵⁰
1355.....	51.2 ⁴	1391.....	83.9 ⁴³	1427.....	107.1 ⁴³
1356.....	46.1 ¹²	1392.....	99.5 ⁴²	1428.....	109.0 ²⁴
1357.....	43.0 ¹⁰	1393.....	86.9 ⁴¹	1429.....	101.2 ⁵³
1358.....	39.5 ²¹	1394.....	86.8 ⁴⁴	1430.....	107.2 ⁴⁹
1359.....	38.0 ⁶	1395.....	85.2 ⁴²	1431.....	144.2 ⁵⁴
1360.....	40.8 ¹⁴	1396.....	92.8 ⁴⁰	1432.....	.....
1361.....	38.7 ²²	1397.....	92.7 ⁴⁴	1433.....	113.3 ⁵¹
1362.....	43.0 ²²	1398.....	88.3 ⁴⁴	1434.....	108.6 ¹⁷
1363.....	42.6 ²⁴	1399.....	86.5 ⁴⁵	1435.....	113.8 ¹⁷
1364.....	40.3 ²¹	1400.....	85.9 ⁴⁵	1436.....	106.7 ⁵²
1365.....	.....	1401.....	84.9 ⁴⁷	1437.....	112.5 ⁵⁴
1366.....	47.3 ²²	1402.....	82.4 ⁵²	1438.....	111.2 ⁵⁴
1367.....	61.1 ²²	1403.....	85.6 ⁵⁵	1439.....	110.0 ⁵³
1368.....	56.2 ²²	1404.....	84.4 ²	1440.....	108.3 ⁵⁴
1369.....	50.5 ⁴⁰	1405.....	89.2 ⁵⁵	1441.....	109.5 ⁵⁵
1370.....	.....	1406.....	87.6 ²²	1442.....	106.9 ⁵³
1371.....	.....	1407.....	94.0 ⁵⁵	1443.....	118.2 ⁵³
1372.....	61.7 ²²	1408.....	95.6 ⁵⁴	1444.....	116.9 ⁵⁰
1373.....	65.8 ¹⁹	1409.....	93.4 ⁵²	1445.....	.....
1374.....	64.0 ²²	1410.....	91.2 ⁵⁵	1446.....	.....
1375.....	71.6 ⁴¹	1411.....	96.1 ⁵⁹	1447.....	.....
1376.....	77.2 ²⁷	1412.....	94.5 ⁵⁶	1448.....	.....
1377.....	76.1 ²⁵	1413.....	96.6 ²	1449.....	.....
1378.....	.....	1414.....	103.7 ⁵²	1450.....	.....
1379.....	72.0 ²²	1415.....	98.7 ⁴⁴	1451.....	108.8 ⁴⁵
1380.....	75.2 ²	1416.....	98.8 ⁵⁴	1452.....	104.3 ²
1381.....	.....	1417.....	.....	1460.....	100.6 ²
1382.....	.....	1418.....	101.2 ⁵²	1464.....	88.7 ²
1383.....	77.7 ²²	1419.....	102.3 ⁵⁷	1472.....	112.7 ²
1384.....	82.2 ⁴¹	1420.....	.....	1473.....	91.1 ²
1385.....	.....	1421.....	93.7 ²²	1487.....	114.4 ²
1386.....	67.3 ⁴⁴	1422.....	94.8 ⁵⁰		

ranging from 6d. in the £, or 2.5 per cent, upon sales by natives to 9d., or 3.75 per cent, upon exchanges by aliens¹ (levied about 1352) obviously could have played only an insignificant rôle in the price increase. Decimation of the population by the Black Death, scarcity of live stock, and monetary inflation seem to have been more potent factors.

¹ J. A. Brutails, *op. cit.*, p. xix.

CHART 13

INDEX NUMBERS OF COMMODITY PRICES IN NAVARRE



From 1356 to 1359 the index numbers dropped about 17.6 per cent. The removal of the sales tax imposed three years earlier and the abjuration of debasement by Charles the Bad, both occurring in 1355, appear to have been important elements in initiating the decline. In 1360-1364 prices turned moderately upward, the total advance being a little over 6 per cent; and in

1366-1376 commodities soared. In the short space of twelve years prices rose about 91.6 per cent. In 1367 alone, when the ravages of the Black Prince's troops (while returning from Castile to the Aquitaine through Navarre) coincided with poor harvests, prices¹ surged upward 29.2 per cent. The index number dropped slightly in 1377; unfortunately no data are available for 1378. Despite the occupation of a large part of Navarre by Castilian troops in 1378-1379 and regardless of the heavy coinage of money, prices were 5.4 per cent lower in 1379 than in 1377. After a slight advance in 1380-1383, the index rose 4.5 points in 1384, when fruits and nuts were particularly dear. An index number could not be constructed for 1385; but most, if not all, of the drop of 14.9 points from 1384 to 1386 doubtless occurred in the latter year, when the tariff of the groat was drastically reduced.² The groat was deflated on June 9, and the greater part of the price decline occurred in the second half of the year. Hence it appears that the abortive uprising in Pamplona at the end of 1386 in protest against the high legal maximum prices (*tasas*) then in force was poorly timed. Interrupted only by the recession in 1391, prices rose sharply and fairly uniformly in 1387-1392; the peak in 1392 (when fruits, nuts, spices, and animal products were high) stood 47.8 per cent above the nadir in 1386. A recession in the quotation of spices, fruits, nuts, and animal products in 1393 brought the index number downward about 12.7 per cent; but a reaction of these groups, along with dear fish prices, in 1396 restored more than half the loss. The index fell continuously but gradually from 1397 to 1402, the total decline being 1.04 points. With every peak and trough above the preceding one, prices zigzagged steadily upward in 1403-1414, registering an advance of 21.3 points; but a reverse movement in 1415-1423 swept away more than half the gain. Checked only by a relapse in 1429, prices rose 17.0 per cent in 1424-1430; and in 1431 speculative anticipation of monetary deflation affecting all groups of commodities forced the index upward 37.0 points to the highest crest reached during the period

¹ Fruits and nuts were extraordinarily high.

² *Vide supra*, p. 128.

under consideration. There is a lacuna in 1432; but in 1433 prices fell almost to the 1430 level, and the drastic reduction in the tariff of the groat on September 12, 1431, was apparently responsible. In 1434-1442 the indices fell gradually, the loss over the period being 6.4 points. Unusually high quotations of fruits, nuts, animal products, and spices lifted the index 10.6 per cent in 1443; but it receded negligibly in 1444, and in 1451, the last year for which tolerable data are accessible, reverted to the average level of 1433-1442.

Posterior to 1451 the data are too meager to throw light upon short term movements of prices. Since the scattered indices for 1452-1487 largely rest upon very incomplete and otherwise unsatisfactory quotations of barley, wheat, wine, paper, and sheepskins, positive generalization concerning the course of prices in the second half of the fifteenth century is not possible. But Chart 13 furnishes some basis for the guess that — in spite of the dynastic and baronial strife which ravaged Navarre—the trend of prices was downward until 1464 and slightly upward thereafter.

Table 24 lists the quinquennial averages of the general index numbers in terms of (1) money of account and (2) a fixed weight of fine gold.¹

TABLE 24

QUINQUENNIAL INDEX NUMBERS OF PRICES IN NAVARRE (IN MONEY OF ACCOUNT AND A FIXED WEIGHT OF FINE GOLD)

Base = 1421-1430

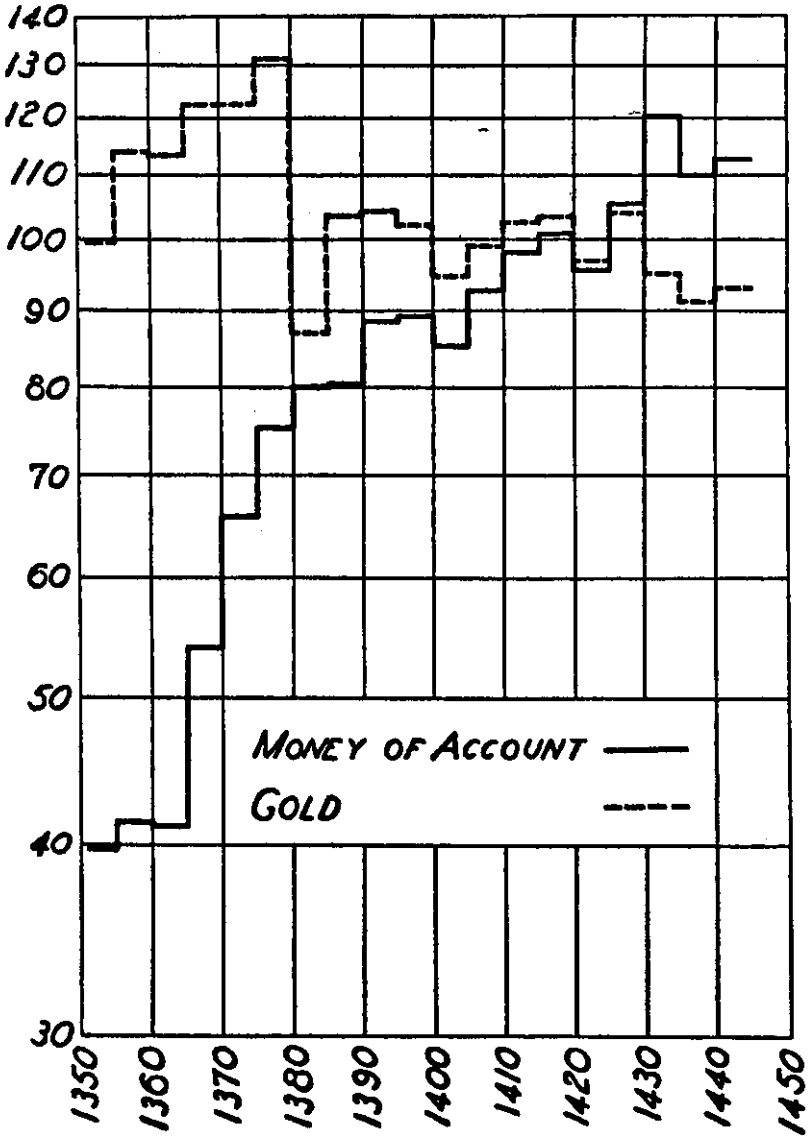
Period	Money of		Period	Money of	
	Account	Gold		Account	Gold
1351-1355.....	39.7	99.3	1401-1405.....	85.3	94.4
1356-1360.....	41.5	114.0	1406-1410.....	92.4	98.9
1361-1365.....	41.2	113.5	1411-1415.....	97.9	102.6
1366-1370.....	53.8	122.2	1416-1420.....	100.8	103.5
1371-1375.....	65.8	122.2	1421-1425.....	95.4	96.7
1376-1380.....	75.1	131.2	1426-1430.....	105.6	104.2
1381-1385.....	80.0	86.9	1431-1435.....	120.0	94.8
1386-1390.....	80.4	103.6	1436-1440.....	109.7	91.1
1391-1395.....	88.5	104.3	1441-1445.....	112.9	92.8
1396-1400.....	89.2	102.1			

Chart 14 portrays the data in Table 24.

¹ The data in Table 18 have been used in reducing the original index numbers to terms of a constant weight of fine gold.

CHART 14

QUINQUENNIAL INDEX NUMBERS OF PRICES IN NAVARRE (IN MONEY OF ACCOUNT AND A FIXED WEIGHT OF FINE GOLD)



Let us consider first the prices in terms of the original monetary units.

After remaining stable in 1351-1365, the averages turned sharply upward in 1366-1370 and in the short space of two decades almost doubled. A plateau was reached in 1381-1390, but the indices jumped a further 10.1 per cent in 1391-1395 and rose slightly in the next quinquennium. The index for 1396-1400 was about 2.25 times that of 1351-1355. Hence the forward surge of prices in the second part of the fourteenth century surpassed the average advance in Spain during either half of the sixteenth century, while Mexican and Peruvian silver was inundating the motherland. The indices dropped 3.9 points in 1401-1405; but the following decade witnessed an increase which, broken only by a recession in 1421-1425, continued through 1431-1435, when prices stood 40.7 per cent above the 1401-1405 level and three times higher than in 1351-1355. But this threefold gain was not maintained. The index declined 10.3 points in 1436-1440; and in 1441-1445, the last quinquennium for which data are available, only a third of the loss was regained.

The gold index rose 14.7 points in 1356-1360 and, after remaining stable in the following quinquennium, advanced 8.7 points in 1366-1370, when large quantities of Aragonese florins and of other recently coined gold pieces began to circulate in Navarre. In 1371-1375 the gain was maintained, and in 1376-1380 gold prices rose 9 points to 131.2, the highest peak attained; but, swinging to the opposite extreme, the index for the following quinquennium fell to 86.9, the lowest level reached after the first quinquennium. An advance of 16.7 points in 1386-1390 ended the sharp oscillations of the quinquennial gold indices. From 1386-1445 the quinquennial averages ranged between 91.1 and 104.3. During the 55 years 1391-1445 the secular trend registered a decline of approximately 10 per cent.

Not only the course of prices in general, which has hitherto engaged our attention, but the relative movements of different groups of commodities were of paramount importance to contemporaries. Whenever significant disparities not caused or accompanied by countervailing changes in the expenses of produc-

tion arose, the producers of the commodities affected either incurred blighting hardship or enjoyed unexpected and undeserved prosperity.

Chart 15 presents index numbers of the agricultural and non-agricultural commodities listed in Appendix VIII.¹ Olive oil, wine, vinegar, and other rural products processed on farms have been placed in the agricultural category; in spite of their agricultural provenance all spices not produced either in Navarre or in contiguous territory, where weather conditions were presumably similar to those of the Pyrenean kingdom, have been classified as non-agricultural.

The agricultural index presented the more pronounced short-term fluctuations; but, owing to the absence of trustworthy cereal quotations and to the extreme instability of fish prices, the discrepancy disclosed by Chart 15 is unusually small. The trends of agricultural and non-agricultural prices were virtually parallel in the second half of the fourteenth century, but in the first half of the fifteenth the advance of agricultural prices was more than three times greater than that of the non-agricultural. Although vital statistics to support this theory are lacking, the disproportional upswing of agricultural prices must have reflected a phenomenal growth of population.

Special index numbers have been constructed for animal products, building materials, fish, fruits and nuts, poultry products, and spices. In Appendix VIII the commodities included in each group are listed along with the index numbers. Many articles excluded from the general commodity indices because of the scarcity or the unreliability of the quotations and several commodities even omitted from the price tables have entered into the group index numbers.²

Fourteen components in each half-century and few hiatuses give the index numbers for animal products first rank. With quotations for nine varieties in the second half of the fourteenth century and eleven in the first half of the fifteenth, the fish in-

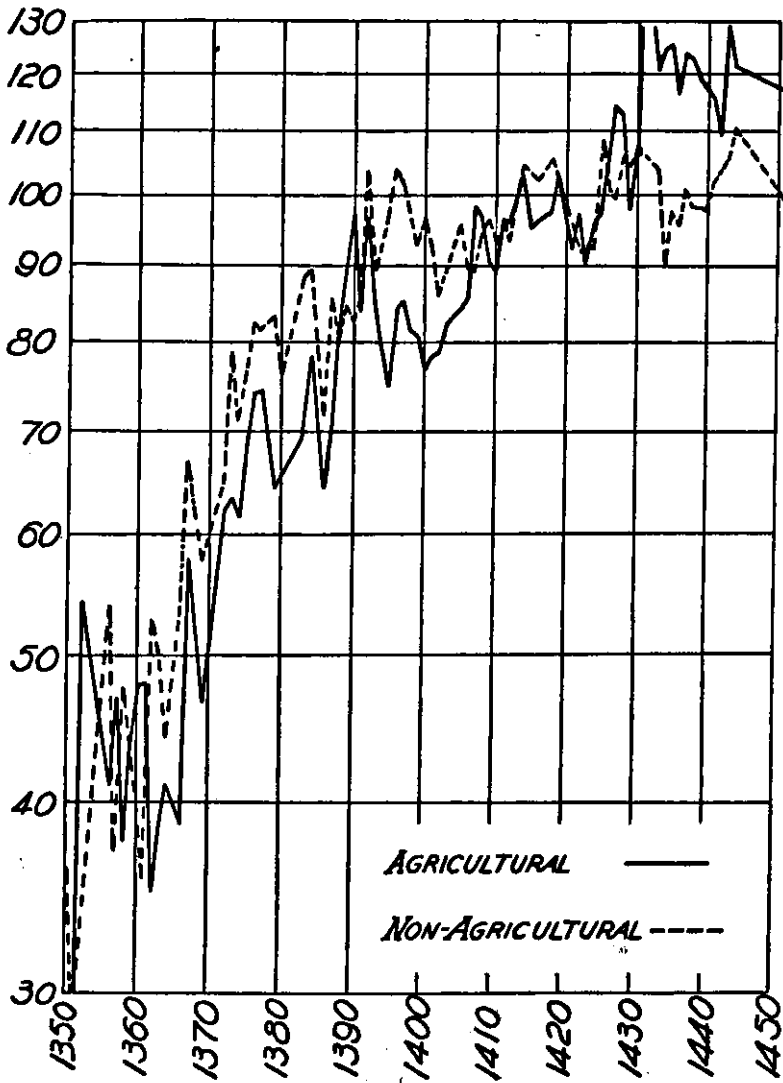
¹ Unfortunately, the paucity of data obstructs the extension of group index numbers beyond 1451.

² Cf. Appendices V and VIII.

CHART 15

INDEX NUMBERS OF THE PRICES OF AGRICULTURAL AND
NON-AGRICULTURAL COMMODITIES IN NAVARRE

Base = 1421-1430



dices take second place, only slightly ahead of fruits and nuts, which have eight series in 1351-1400 and twelve in 1401-1451. As has been explained,¹ the data for poultry products and building materials are glaringly defective. Sharing the medieval fondness for highly seasoned food and possessing the means to make their desires effective, the royal household regularly bought seven spices throughout the two half-centuries included in this study. Frequent purchases outside Navarre and the occasional failure of the royal accountants to record the prices have caused lacunae in the series; nevertheless the spice prices are among the most extensive, complete, and continuous accessible for any small European region during the Middle Ages.

Chart 16 gives the index numbers of group prices.

Despite significant divergences, the most salient fact revealed by Chart 16 is the similarity of trends and short-term movements among the group indices. The advance of fruit and nut prices prior to 1410 was slightly below the average, but after this date they remained in line with a majority of the other groups. Reflecting the unusual effects of good and bad seasons, the year-to-year fluctuations of the fruit-and-nut index were extraordinarily wide. In the third quarter of the fourteenth century the prices of animal products rose rapidly, but after 1375 noticeable differences between this group and the general average were rare. The upswing of fish prices in the second half of the fourteenth century exceeded the average, and in the second quarter of the fifteenth century the fish indices fell more abruptly than did those for most other groups. Possibly as a result of the heavy concurrent depreciation of the Navarrese money of account on the foreign exchange, the index numbers of spices — which were imported commodities — mounted skyward in 1357-1379; but, from 1385 on, spice prices conformed fairly closely to the general average. The cant of the indices for building materials seldom moved out of line with the trend of the general commodity indices, but the lack of metrological and regional homogeneity caused notable short-run fluctuations in the quotations for this group. Owing to the arbitrary legal control of

¹ *Vide supra*, pp. 154-155

the poultry prices paid by the royal household, the indices lagged considerably behind those of all other groups in 1351-1390; and, after moving parallel to general prices in 1390-1430, the poultry indices rose phenomenally in 1431-1435 and remained far above the average through 1451, the terminal year.

CHAPTER IX

WAGES IN NAVARRE

As in the case of prices, the expense accounts of the royal household have supplied most of the Navarrese wage statistics. The absolute form of government necessitated numerous judicial, administrative, consultative, and military officials and employees. Owing to an insatiable desire for pomp and splendor, the royal entourage comprised a host of guards, retainers, and domestic servants. The erection and repair of royal palaces, saw mills, flour mills, and fortresses frequently gave rise to the employment of artisans in the building trades; and occasionally during busy seasons free labor was hired for the exploitation of royal vineyards.

The play of non-economic forces in determining the remuneration of most of the grades of labor in the royal account-books has greatly reduced the components of the wage indices. The age-old reluctance to drive hard bargains with employees rendering direct personal service probably forced the rewards of domestic laborers above their true market levels. The mere caprice of members of the royal household doubtless influenced the emoluments of retainers; and the desirability of political support in an age of latent baronial opposition and dynastic struggle probably affected the financial rewards of the military, judicial, and administrative servants of the Crown.

In 1346-1450 the accounts regularly listed the wages of poultrymen, water-carriers, bakers, and laundresses — whose personal contacts with members of the royal family were presumably remote; but none of these workers was rewarded altogether in money, and the impossibility of determining the exact quantity of the payments in kind eliminated their wages from the tables and index numbers.¹

¹ The royal accountants often lumped allowances for soap and even for assistance with the wages of laundresses, as if the total represented a labor income.

Records of the maintenance of a few parochial churches and of the Cathedral at Pamplona¹ have supplied a modicum of quotations for the building trades, but the data are scattered and incomplete. As sources for the wages of all other grades of labor in Navarre, ecclesiastical account-books are extraordinarily defective.

The index numbers of Navarrese wages represent only the prevailing rates for skilled and unskilled workers in the building trades. But one must not forget that construction was the largest industry utilizing free labor in the Middle Ages,² and there is reason to believe that even in later periods characterized by greater craft diversification the rates of pay of artisans and laborers engaged in building have proved to be representative of general wages.³

In the computation of homogeneous annual wages several difficulties requiring mathematical adjustments were encountered. For instance, the artisans and laborers included in the index numbers, unlike the domestic servants, ordinarily received only money incomes; but payments in kind (such as meat, drink, board, or lodging) were not unknown. The account-books indicated when real supplements were given, and in most cases it was feasible to ascertain their monetary equivalence. In fact, the impossibility of allowing for non-pecuniary rewards eliminated surprisingly few quotations from the annual averages of money wages listed in Appendix XII.

As has been indicated,⁴ the construction projects of the Crown spread over the entire kingdom. Despite the lack of a royal palace at Pamplona, extensive work upon the fortifications and public buildings and the erection and repair of ecclesiastical structures supplied more satisfactory wage series for the capital than could be obtained for any other city. Hence the annual wages

¹ Catalogued under *Arca de Fábrica* in the Cathedral Archive.

² Cf. Douglas Knoop and G. P. Jones, *The Medieval Mason* (Manchester, 1933), pp. 2-6.

³ Cf. Elizabeth Waterman Gilboy, *Wages in Eighteenth Century England* (Cambridge, Massachusetts, 1934), p. 19; A. L. Bowley, *Wages in the United Kingdom in the Nineteenth Century* (London, 1900), p. 63.

⁴ *Vide supra*, p. 155.

run in terms of Pamplona quotations. Olite, the principal residence of the royal family, ranked next to the capital as a source of wage material, especially while the magnificent Gothic Palace was under construction during the reign of Charles III (1387-1425). Sangüesa, Tudela, Puente la Reina, and Estella also furnished serviceable statistics. Wage quotations from such distant places as Roncesvalles and Viana have not been utilized. Although a dearth of comparable ratios has prevented accurate calculation of the average deviation, data from other localities have been adjusted for regional divergences before being combined with the Pamplona series.

It was relatively easy to avoid mistaking for complete remuneration the monetary allowances for the maintenance of the captives (cautivos) occasionally employed;¹ but, owing to the lack of description in the account-books, the customary differentials between Christian labor on the one hand and Moorish and Jewish² on the other rendered arbitrary judgments inevitable and impeded the compilation of homogeneous data.

Owing to an *a priori* expectation of seasonal wage variations, the first four quotations occurring in each quarter were transcribed; and the seasonal averages were computed from these data. Although there is clear evidence that (largely because of the longer day)³ the Church and the Crown occasionally paid workers more in the spring and summer than in the winter,⁴ and that there was a slight tendency toward a peak during the grain

¹ *Vide*, for instance, Archivo de la Cámara de Comptos (hereafter ACC), *Obras en los Palacios Reales de Olite*, t. 312.

² *Vide infra*, pp. 178-179.

³ Little information concerning the length of the working day has come to light. On several occasions the royal account-books specifically stated that the days were longer in the summer than in the winter (*vide*, for example, ACC, *Obras en los Palacios de Tafalla*, t. 371). On May 7, 1418, a common laborer who worked 2 hours earned 12d; those who worked the full day received 72d. (ACC, *Obras del Palacio Real de Olite*, t. 355). This relationship suggests a twelve-hour day. On March 8, 1410, an unskilled laborer was paid 20d. for 3 hours' work, while the daily wage was 72d; and on September 3 of this year 2 common laborers received 4s. each for 8 hours' work, while the daily rate was 66d. (ACC, *Obras en los Palacios Reales de Olite*, t. 312). These data point respectively to days of 10.8 and 11 hours. That the working day lasted roughly from sunrise to sunset, with about an hour off at noon, seems to be a fairly safe guess.

⁴ ACC, *Obras en los Palacios de Tafalla*, t. 371; Archivo de la Catedral, *Gastos de las Sillas del Coro*, 29.

harvest, wages in the building trades remained surprisingly stable throughout the year. The median quarterly rate of pay for unskilled labor never diverged by more than 4.4 per cent from the yearly average, and the discrepancy was rarely greater than 2 per cent. Since artisans turned less readily to agriculture during planting and harvesting and were not forced to compete with displaced rural workers during slack times on the farm, fluctuations of the rates for skilled laborers were less than those for the unskilled. In the case of journeymen the maximum seasonal variation seldom reached 1 per cent and never passed 1.5 per cent. The equable climate seems to have been chiefly responsible for the uniformity of constructional wages in Valencia,¹ but in the Pyrenean kingdom the customary employment of most of the labor over long periods was apparently the determinative factor. The infrequency and the insignificance of seasonal variations have justified crude combinations of the quarterly wages to form the annual averages.

The wage series include 10 grades of labor in 1346-1400 and 11 in 1401-1450. The data are sufficiently continuous to permit the construction of index numbers for 87 of these 105 years, with only 3 gaps (1366-1369, 1411-1412, and 1415-1417) exceeding a single year; but in 4 cases only 2 relatives are available, and the average number of annual wage rates entering into each index number is but 5.98. Perhaps the greatest single weakness of the Navarrese wage statistics is the paucity of data in the second half of the fifteenth century, when civil strife and the loss of sovereignty successively to Aragonese and French dynasties prevented either the keeping or the preservation of systematic royal expense accounts in Spanish Navarre.² Records of the improvisation of mints and of indispensable repairs upon royal and ecclesiastical buildings have provided wage statistics for twelve years between 1451 and 1487; but, too discontinuous and scarce to permit thorough tests for regional or seasonal variations, the data are reliable only as a gauge of the approximate secular trend of wages.

¹ *Vide supra*, p. 67.

² *Vide supra*, pp. 144-145.

The Navarrese wage series are glaringly defective when judged by modern standards. Nevertheless, they are among the best that have yet come to light for a small area of continental Europe in any similar medieval period.

Economists have long been interested in the quantity of human energy absorbed by the plethora of religious holidays in Catholic countries during the Middle Ages, but most estimates of the actual time lost have lacked a statistical basis. Fortunately, the royal and (to a less extent) the ecclesiastical account-books furnish abundant cases of building projects extending over more than a month, with adequate explanation of every suspension of the operations. After the elimination of all the months having a single unaccountable day, the total number of samples available for each month ranged from 8 (in March) to 18 (for May, June, August, and September) and averaged 15.3. In a few instances the accountants carelessly attributed the loss of several consecutive days, including indubitable holidays (Christmas or Holy Thursday, for example), to inclement weather. When there was little or no room for doubt, recognized holidays were counted as such; and the remainder of the week days were regarded as working days. But resort to arbitrary classification was so infrequent that no possible error could have materially affected the final results.

Table 25 lists the average number of days, exclusive of Sundays, lost per month by workers in the building trades on account of religious holidays. The exponents indicate the total number of cases comprised in the average for each month.

TABLE 25

AVERAGE LOSS OF TIME IN THE BUILDING TRADES IN
NAVARRÉ BECAUSE OF RELIGIOUS HOLIDAYS

January.....	2.65 ¹⁷ days	July.....	2.00 ¹⁴ days
February.....	2.67 ¹⁵ days	August.....	3.89 ¹⁸ days
March.....	2.00 ⁸ days	September.....	3.06 ¹⁸ days
April.....	3.38 ¹⁸ days	October.....	2.18 ¹¹ days
May.....	2.83 ¹⁸ days	November.....	2.88 ¹⁶ days
June.....	3.94 ¹⁸ days	December.....	5.59 ¹⁷ days
General Average.....	3.09 days per month		
Total.....	37.07 days per annum		

The abundance of holidays in December reflected the usual cessation of building from about the twenty-fourth to the twenty-eighth, and most of the time lost in April fell in the latter half of Easter week. The average number of holidays from April to September (when the weather permitted outdoor feasts and allowed a steadiness of operations that evoked a desire for diversion)¹ was 3.18, as compared with 3.00 for the six fall and winter months.² In the first quarter of the year the average encroachment upon working time by religious holidays was only 2.44 days a month.

Contrary to *a priori* expectations, there was no ascertainable difference between the observance of religious holidays by the workers serving the Crown and by those engaged upon the construction of parochial churches.

During a few emergencies (particularly in October, when cold weather was approaching) the laborers of both the Church and the Crown continued operations on the Sabbath; while teamsters and other handlers of materials often worked every day in the week. On the average, laborers in the building trades were active approximately two Sundays a year. Hence the typical year contained about 278 possible working days.

The number of religious holidays observed by the building trades in Navarre was strikingly similar to the total of thirty-eight national and religious holidays in France after the abolition of seventeen by Colbert³ and was decidedly below the fantastic figures sometimes given for other Catholic regions in the pre-capitalistic stage.⁴ The average number of feast-days and holidays observed by English masons in the 5 complete years listed by Knoop and Jones was 30; but in 1444-1445 and 1445-1446 the numbers were 38 and 43 respectively, as compared with 27 and 20 respectively in 1279 and 1280.⁵ Although the data are

¹ Since the feast of Saint Fermín, the patron saint of Pamplona, came in July, I am unable to explain the low figure for this month.

² The high figure in December materially raised the average for these months.

³ P. Clément, *Lettres, Instructions, et Mémoires de Colbert* (Paris, 1871), VII, 463-467.

⁴ Cf. Werner Sombart, *The Quintessence of Capitalism* (Eng. translation, New York, 1915), p. 19.

⁵ *Op. cit.*, pp. 118-120.

insufficient for generalization, they suggest an upward trend in the number of English holidays. The human energy claimed by holidays and feast-days in Navarre was actually a third less than is absorbed by the five-day week, now widely hailed as a panacea for economic ills and enjoined or sanctioned by the statutes of more than one nation.

The loss of time on account of bad weather and the delay in locating new employment after the termination of each project militated against the observance of holidays by the building trades; but, since inclement weather and a shortage of materials interrupted construction only about forty-five days a year, and since the average project lasted many months, the number of holidays in the building trades was probably representative, or at least not far below normal.

Despite the supposed harmonious relationships between the medieval master and servant, several strikes occurred. Usually no explanation appeared in the account-books; but occasionally the charge that the laborers "refused to work" (no quisieron trabajar) was entered, and in one instance the royal accountant candidly ascribed the disorder to inability to meet the payroll.¹ All of the strikes were of extremely short duration; the longest on record lasted only eighteen days, and the next longest, fourteen.

Apparently the Navarrese kings were fairly humane employers. In 1431 a mason was paid 50 per cent more than the prevailing rate because "the place where he worked was very dangerous." When injured, workers were furnished medical attention and remunerated for the loss of time; and at least burial expenses were provided for those who lost their lives. In some cases aged menial servants were retired upon pensions.²

The annual average daily wages are listed in Appendix XII. To facilitate investigation of the economic consequences of the Black Death, the series have been extended back to 1346.

Particularly striking is the bipartite labor hierarchy. Instead of the usual categories of helper (peón or bracero), journeyman

¹ Vide ACC, *Obras de Olite*, t. 466.

² Vide, for instance, ACC, *Obras del Castillo de Pamplona*, t. 12.

(oficial), and master (maestro), only helpers and "artisans" were encountered. The large numbers employed and the close correspondence between the average ratios of the earnings of craftsmen to those of helpers in Navarre (1.39 to 1) and of the wages of journeymen to those of helpers in Valencia (1.33 to 1) have led me to consider the Navarrese artisans as journeymen.

A surprising lack of rigidity characterized the craft divisions. For example, carpenters performed the functions of masons and vice versa on several occasions; masons and roof-tilers and adobe masons and plasterers were readily interchangeable. Masons often cut stone, but stonecutters rarely laid it. Hence extraordinary uniformity marked the earnings of these workers. Probably because of the hazards to health involved in the trade, the most highly paid artisan was the stonecutter, who earned 9 per cent more than the carpenter.¹ The wages of other craftsmen diverged from those of the carpenter by less than 4 per cent.

The adobe mason's helper earned 1 per cent less than the carpenter's helper, and the mason's helper (who stood at the bottom of the list of common laborers), 5 per cent less. The wages of the plasterer's helper were 6 per cent above those of the carpenter's helper; those of the roof-tiler's helper, 5 per cent above; and those of the stonecutter's helper (like the journeyman, the most highly rewarded laborer of his grade), 22 per cent above.

The differential between the earnings of artisans and their helpers ranged from a premium of 33 per cent for journeymen plasterers and roof-tilers to 48 per cent for masons. On the average, the journeymen received 39 per cent more than their helpers. Extraordinarily wide was the margin between unskilled male and female workers. The wages of men were almost twice (198 per cent) as high as those of women. The discrepancy may have measured the superior efficiency of men; it certainly did not result from lighter tasks for women. In that age noted for chivalry (toward aristocratic ladies) women of the lowest social stratum were freely employed to remove dirt from excavations; to make mortar and plaster; and to carry lumber, plaster, mortar, bricks,

¹ *Vide*, for example, ACC, *Asentadores de Piedra*, t. 55; *Obras en el Castillo de Tudela*, t. 205.

and stone. The remuneration of unskilled male labor was only 18 per cent above that of the female water carrier, but one cannot be certain that the latter did not supply a donkey.¹ The rental of an average mule or work horse was about 70 per cent higher than the wages of unskilled workers and about 7 per cent above those of the journeyman carpenter.

Moorish artisans and common laborers often worked alongside Christians. On a few occasions in Tudela, where the Moorish population was large, unskilled Moors were paid only half as much as Christians; but in Northern Navarre identical wage rates for the two races were not unknown. On the average the Moors received about 75 per cent of the prevailing wages for Christians, and in most towns this was also the modal relationship. Possibly because of religious inhibition, Moorish women rarely engaged in building operations; but Jewish women were often employed. The wages of female Jewish workers ranged from two-thirds to five-sixths and averaged about three-fourths of those of Christians. Discrimination against skilled non-Christian labor was much less frequent and glaring than in the case of the unskilled. Although in some instances Christians received as much as 33 per cent more than non-Christians, equality of artisans' wages seems to have been the rule, particularly in the fifteenth century.

In all cases the wages in Appendix XII are for Christian labor.

One must recognize the possibility that the differential between the wages of Christians and non-Christians may simply reflect the impressment of the latter by the Crown at a lower rate. On December 31, 1391, Charles III decreed that, "when summoned by the King," common Moorish laborers should work upon the Castle at Tudela for 24d. a day and that Moorish women should supply wickers and twigs at 12d. The Crown was then paying unskilled Moors employed upon this project 36d. a day, and Christian women were earning 21d.² Whether the royal

¹ The "wages" of laundresses listed in the royal account-books stood about 33 per cent above those of carpenters' helpers, but the inclusion of soap and assistance in the pay of laundresses apparently accounts for the difference.

² ACC, *Obras en el Castillo de Tudela*, t. 205.

wage policy either governed or corresponded to the schedules of other employers I have been unable to determine. The Pamplona Cathedral ordinarily paid Christians and heretics identical wages; but most of the latter were artisans, and in Pamplona even the king was seldom guilty of racial discrimination in paying labor.

Comparisons with the rewards of carpenters and their helpers will roughly indicate the wages of a few important grades of labor occurring too infrequently for tabulation or inclusion in the index numbers. Carpenters' helpers received about 20 per cent more than grape pickers (*vendimiadores*), 10 per cent more than apple pickers (*cogedores de manzanas*), 20 per cent more than hoe hands (*cavadores*), and approximately the same as pruners (*podadores*), cask washers (*lavadores de cubos*), wine pressers (*pisadores*), seamsters (*costureros*),¹ and pastry cooks (*pastadores*). Carpenters earned 17 per cent less than painters (*pin-tores*) and 15 per cent less than plumbers (*plomeros*); 25 per cent more than bakers (*panaderos*) and shoemakers (*zapateros*); and about the same as gardeners (*jardineros*) and woodcutters (*leñadores*). In the first half of the fourteenth century the hangman (*verdugo*) was paid for each whipping almost twice the daily wages of the carpenter; and his fees for cutting off ears, hanging, drowning, and burying alive were generally three times the carpenter's wage.² On May 7, 1403, a bullfighter received £11 4s., almost 10 per cent more than a carpenter earned in a month, for "killing a bull in the presence of the King."³

Unweighted arithmetic index numbers⁴ of wages are listed in Table 26. The exponents indicate the number of wage relatives included in each index number.

Chart 17 presents the data in Table 26 along with the index numbers of commodity prices to facilitate comparison.

¹ Most of the seamsters, tailors, and goldsmiths employed by the royal household were Jews (*vide*, for example, ACC, caj. 66, no. 23; *Libro de Obras*, t. 355).

² In a disproportionate number of cases the hangman's victims were Jews. In the Archivo de la Cámara de Comptos a fertile mine awaits the investigator of Jewish persecution in the Middle Ages.

³ ACC, *Comptos del Tesoro*, t. 273.

⁴ The indices for 1346-1400 have been constructed on 1371-1380 as a base and shifted onto 1421-1430; those for 1401-1487 have been computed directly on 1421-1430 as a base.

TABLE 26

INDEX NUMBERS OF MONEY WAGES IN NAVARRE

Base = 1421-1430

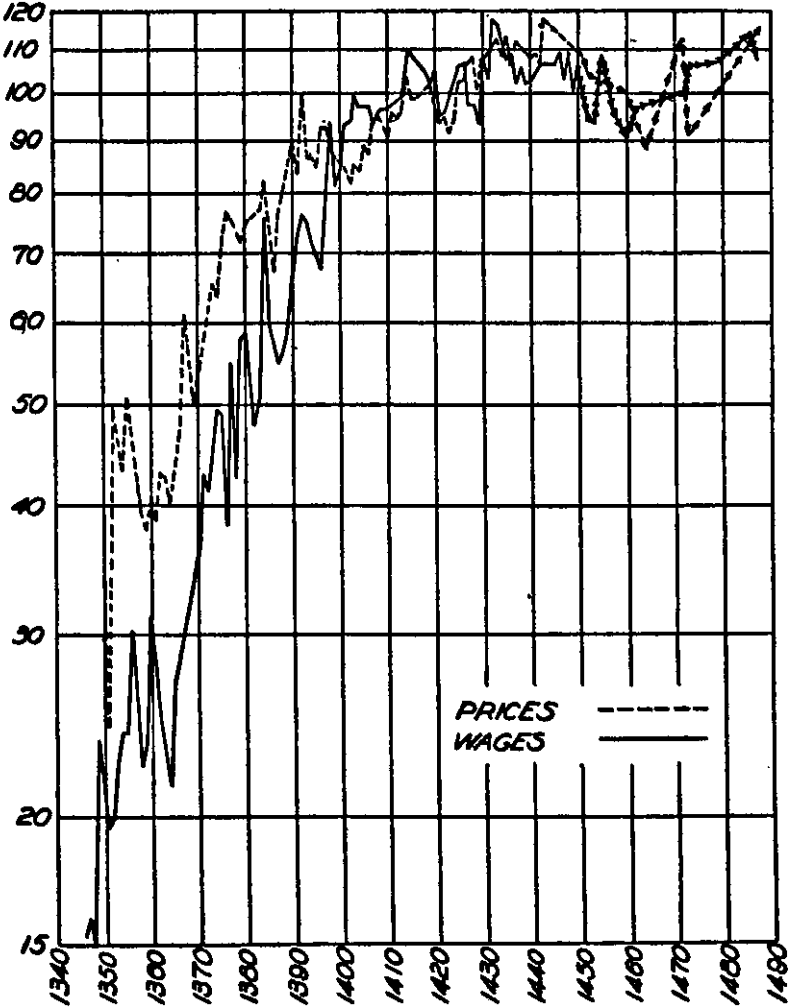
Year	Indices	Year	Indices	Year	Indices
1346.....	15.3 ^b	1385.....	59.9 ⁷	1424.....	102.9 ^b
1347.....	16.0 ^d	1386.....	.....	1425.....	106.2 ^a
1348.....	14.9 ^b	1387.....	55.3 ^b	1426.....	106.5 ^b
1349.....	23.7 ^d	1388.....	56.3 ¹⁰	1427.....	97.6 ^b
1350.....	.....	1389.....	59.1 ⁷	1428.....	97.6 ^b
1351.....	19.5 ^b	1390.....	66.9 ⁷	1429.....	93.4 ^b
1352.....	20.0 ⁷	1391.....	72.7 ^b	1430.....	107.7 ⁹
1353.....	22.6 ^b	1392.....	75.9 ^b	1431.....	103.1 ^b
1354.....	24.1 ^b	1393.....	74.9 ⁷	1432.....	117.6 ^b
1355.....	24.1 ^b	1394.....	71.9 ^b	1433.....	116.2 ^a
1356.....	30.2 ^b	1395.....	70.0 ¹⁰	1434.....	112.8 ^b
1357.....	25.7 ^d	1396.....	68.0 ^d	1435.....	107.8 ^b
1358.....	22.4 ^b	1397.....	.....	1436.....	109.3 ^b
1359.....	23.6 ^b	1398.....	94.0 ^d	1437.....	102.1 ⁹
1360.....	31.3 ⁷	1399.....	81.5 ^d	1438.....	106.0 ^b
1361.....	28.3 ^d	1400.....	84.6 ^b	1439.....	102.1 ¹¹
1362.....	25.0 ^b	1401.....	93.3 ^a	1440.....	102.8 ⁹
1363.....	.....	1402.....	93.7 ^b	1441.....	105.1 ⁹
1364.....	21.5 ^b	1403.....	99.9 ^b	1442.....	106.6 ^b
1365.....	26.9 ^b	1404.....	97.0 ^d	1443.....	106.9 ^b
1366.....	.....	1405.....	.....	1444.....	.....
1367.....	.....	1406.....	97.2 ⁹	1445.....	106.4 ¹⁰
1368.....	.....	1407.....	93.6 ⁹	1446.....	109.5 ^b
1369.....	.....	1408.....	96.2 ^a	1447.....	103.8 ^b
1370.....	36.1 ^a	1409.....	.....	1448.....	109.5 ^b
1371.....	42.8 ^b	1410.....	96.5 ⁹	1449.....	100.2 ^b
1372.....	41.4 ^a	1411.....	.....	1450.....	106.2 ^a
1373.....	.....	1412.....	.....	1451.....	98.8 ^d
1374.....	49.4 ^b	1413.....	98.8 ^b	1452.....	94.8 ^d
1375.....	48.8 ^b	1414.....	110.0 ⁹	1453.....	93.8 ^b
1376.....	38.4 ^b	1415.....	.....	1455.....	109.0 ^b
1377.....	54.8 ^b	1416.....	.....	1457.....	96.7 ¹
1378.....	42.6 ^b	1417.....	.....	1460.....	90.7 ^a
1379.....	57.8 ^b	1418.....	104.8 ⁹	1462.....	96.7 ^a
1380.....	58.6 ¹⁰	1419.....	102.2 ^d	1472.....	100.4 ^a
1381.....	.....	1420.....	105.4 ⁹	1473.....	106.8 ^d
1382.....	47.8 ^d	1421.....	95.0 ^b	1479.....	107.2 ^a
1383.....	50.9 ^b	1422.....	96.5 ^d	1486.....	115.2 ^a
1384.....	75.9 ¹⁰	1423.....	99.7 ^a	1487.....	108.0 ^d

After rising slightly in 1347 and losing the gain the following year, under the stimulus of the Black Death (which was severe in Navarre¹) wages soared 59.1 per cent in 1349. In 1351 the index stood 17.7 per cent lower than in 1349; but, reacting

¹ ACC, *Comptos del Tesorero*, ts. 61, 75, 151; caj. 14, no. 11; caj. 17, no. 50.

CHART 17

INDEX NUMBERS OF MONEY WAGES AND COMMODITY PRICES IN NAVARRE



sharply, wages rose 54.9 per cent in 1352-1356. A decline of 25.8 per cent in 1357-1358 was followed by a slightly greater rise in the ensuing two years. A precipitate drop in 1361-1364 lowered the index 31.3 per cent, but the following decade witnessed a forward surge of 129.8 per cent. With each crest and trough above the preceding one, wages zigzagged upward in

1375-1384, the net advance being 53.6 per cent. In 1385-1387 wages fell 20.6 points, but in the next quinquennium they rose exactly as much. Wages dropped 10.4 per cent in 1393-1396. A sharp rise in 1398 lifted the index 38.2 per cent above the 1396 level, but almost half the gain was lost in 1399. After rising 18.4 points during the mild but protracted epidemic of 1400-1403,¹ wages receded slightly in 1404-1410. An extraordinarily severe pestilence² carried the indices upward 13.5 points, to 110, in 1414, the first time that the base was exceeded. No data are available for 1415-1417. After remaining steady in 1418-1420, the index fell 10.4 points in 1421. In 1422-1426 wages rose 11.5 points, but a precipitate drop in 1427-1429 more than absorbed the gain. Monetary inflation followed by a pestilence forced the indices upward 24.2 points in 1430-1432. On account of the severe epidemic in 1431-1432,³ the inflationary peak of wages occurred in 1432, several months after the drastic reduction (on September 12, 1431) in the tariff of the groat. The descent of wages from the crest was gradual; that of prices, precipitate. Interrupted by slight upturns in 1436 and 1438, wages dropped 15.5 points in 1433-1439. After a rise of 7.4 points in 1440-1446, the indices moved irregularly downward through 1449. If the two available wage rates (carpenters' and roof-tilers') are representative, the half-century ended with an advance of 6 points.

Although inadequate to measure accurately the short-term fluctuations, the index numbers for 1451-1487 satisfactorily limn the trend of wages. Bating the sharp upswing from 1453 to 1455, wages fell from 1451 to 1460, when the lowest point in the fifteenth century was reached. The total decline in this decade was 14.6 per cent. In 1462-1486 the cant of wages was steadily upward; the advance in these years was approximately 60 per cent greater than the decline in 1451-1460. After a moderate recession in 1487, the last year for which data are available, the wage index stood 1.7 per cent higher than in 1450 and 19.1 per cent above the 1460 level.

¹ ACC, caj. 86, no. 50; caj. 87, no. 28; caj. 89, no. 15; caj. 92, no. 28.

² ACC, caj. 103, no. 58; caj. 113, no. 11.

³ ACC, caj. 131, no. 156; caj. 132, no. 8.

Although the index numbers of commodity prices in 1451-1487 are still more scattered and unreliable than the wage indices, the curves in Chart 17 suggest that the trends of prices and wages were strikingly similar, that both were governed by monetary changes or by some other common force.

Quinquennial averages of the index numbers of money wages, which smooth out the year-to-year fluctuations and thus bring the secular trend into clearer relief, are listed in Table 27.

TABLE 27

QUINQUENNIAL INDEX NUMBERS OF MONEY WAGES IN NAVARRE

Base = 1421-1430

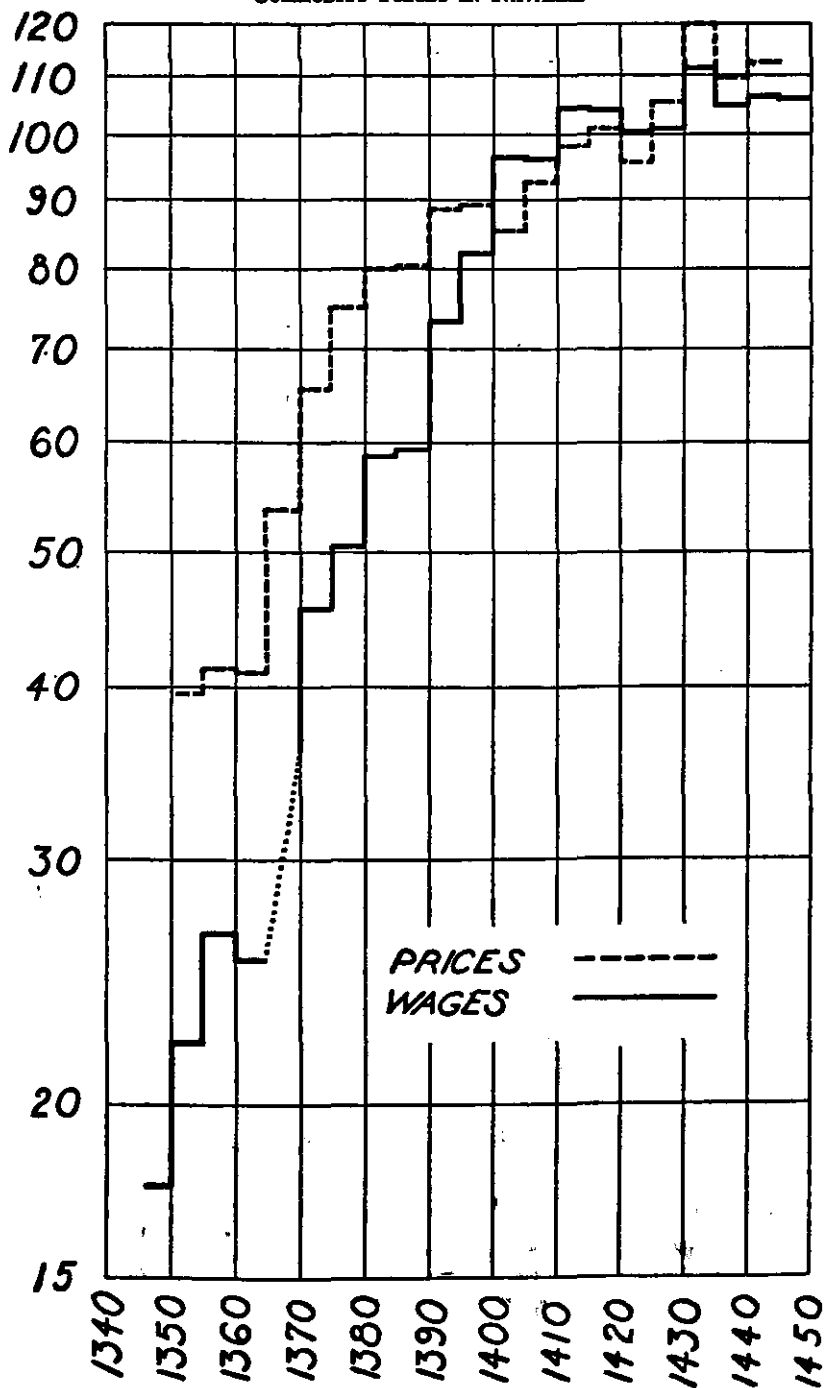
Period	Indices	Period	Indices
1346-1350.....	17.5	1401-1405.....	96.0
1351-1355.....	22.1	1406-1410.....	95.9
1356-1360.....	26.6	1411-1415.....	104.4
1361-1365.....	25.4	1416-1420.....	104.1
1366-1370.....	....	1421-1425.....	100.1
1371-1375.....	45.6	1426-1430.....	100.6
1376-1380.....	50.4	1431-1435.....	111.5
1381-1385.....	58.6	1436-1440.....	104.5
1386-1390.....	59.4	1441-1445.....	106.3
1391-1395.....	73.1	1446-1450.....	105.8
1396-1400.....	82.0		

The data in Table 27 are presented in Chart 18 together with quinquennial averages of the index numbers of commodity prices, to permit ready comparison.

Arrested only by the slight recession in 1361-1365, wages rose continuously but unevenly from 1346-1350 through 1401-1405. Extraordinarily sharp were the advances between 1361-1365 and 1371-1375¹ and between 1386-1390 and 1401-1405. During the three decades from 1346-1350 to 1376-1380 wages almost trebled; by 1391-1395 they had more than quadrupled. In the last quinquennium of the fourteenth century the index stood 4.7 times higher than in 1346-1350. In other words, money wages practically quintupled in the second half of the fourteenth century. After remaining stationary in 1401-1410, wages rose 8.5 points to reach a new plateau in 1411-1420. A decline of 4 points in

¹ Since wage data for 1366-1369 are wanting, an average for 1366-1370 cannot be computed.

CHART 18
 QUINQUENNIAL INDEX NUMBERS OF MONEY WAGES AND
 COMMODITY PRICES IN NAVARRE



1421-1425 was followed by a slight rise in the next quinquennium and by an abrupt advance in 1431-1435, when the index reached 111.5, the highest average during the period under investigation. Wages fell 7 points in 1436-1440 and stood 1.53 per cent above this level in the final decade.

In the century from 1346-1350 to 1446-1450 wages sextupled; and in 1431-1435, the highest peak, the wage index was 6.4 times greater than in 1346-1350, the lowest valley.

I believe that history can offer few, or possibly no, examples of a sustained rise in wages rivaling in amplitude the virtual six-fold increase that took place in Navarre during the seven decades from 1346-1350 to 1411-1415.¹

Even more remarkable than the magnitude of the rise in wages was the considerable lag of prices behind wages from 1391-1395 through 1401-1405. In the period of relatively stable prices from 1406-1410 through 1441-1445, the last quinquennium for which satisfactory price statistics are available, there was a moderate lag of wages behind prices. The disproportionate advance of wages largely accounts for the lack of any significant rise of capitalism in Navarre during the second half of the fourteenth century and the first third of the fifteenth, when commodity prices, rising by leaps and bounds, gave a strong impetus to such a development.²

To measure the course of real wages with precision, it is necessary to compare the total earnings of workers with the cost of living for the laboring class. The index numbers of money wages and commodity prices presented in Chart 18 are obviously inadequate for this purpose. Not only the scales of pay but the regularity of employment govern labor incomes, and the unweighted price indices of the commodities consumed by the royal

¹ For example, Spanish wages little more than quadrupled in the entire period 1501-1650, when, first, the influx of American treasure and, later, velkon inflation revolutionized wage scales. In no seven consecutive decades did the decennial average of money wages treble (*vide* Earl J. Hamilton, *American Treasure and the Price Revolution in Spain, 1501-1650* [Cambridge, Massachusetts, 1934], pp. 272-273). Hence the revolution of Navarrese wages in 1346-1415 was more than twice as great as that of Spanish wages in any similar period of the Price Revolution.

² The mountainous topography and the great distance from important markets also militated against the rise of capitalism.

household are a patently inferior measure of the cost of living for workingmen. Reliable information concerning the volume of employment is unfortunately lacking; but, inasmuch as there is reason to presume that work was fairly regular, the wage rates may be considered as rough indicators of total earnings.

Only index numbers of commodity prices and services weighted in accordance with representative workingmen's expenditures can accurately measure the living costs of laborers. Owing to the paucity of information concerning workers' budgets, it is difficult to make such index numbers for recent years; and, so far as I know, the task has never been attempted in an historical price study.

As the best attainable measure of the cost of living in Navarre, I have constructed an index number of basic food prices. Trivial articles included in the general index numbers have been omitted; and, although some spices were doubtless consumed by artisans (and possibly by common laborers),¹ the entire group has been treated as a single commodity in the food index.

Quinquennial averages of real wages derived from the index numbers of money wages and food prices are given in Table 28.

TABLE 28

QUINQUENNIAL INDEX NUMBERS OF REAL WAGES IN NAVARRE

Base = 1421-1430

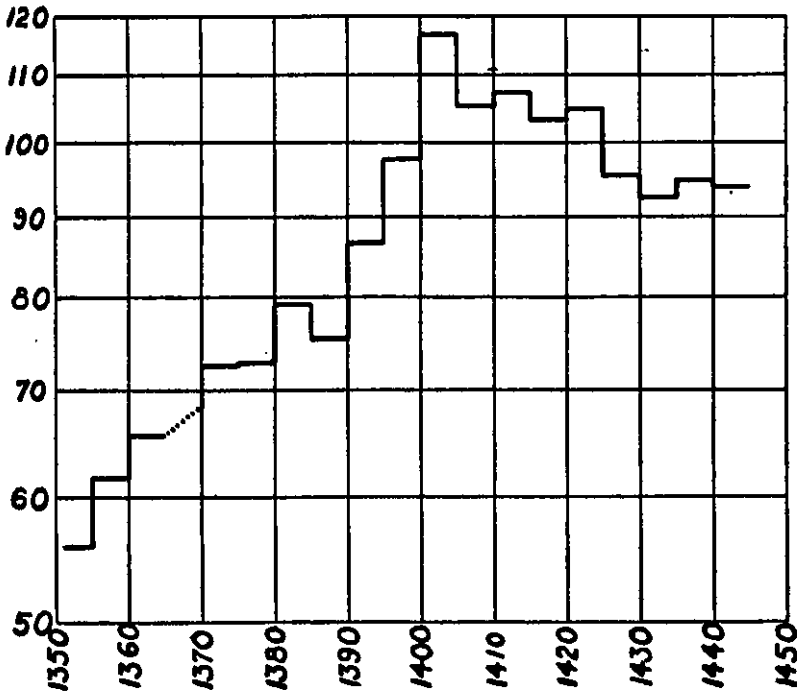
Period	Indices	Period	Indices
1351-1355.....	55.7	1401-1405.....	116.9
1356-1360.....	61.6	1406-1410.....	105.3
1361-1365.....	65.5	1411-1415.....	107.6
1366-1370.....	....	1416-1420.....	103.5
1371-1375.....	72.4	1421-1425.....	104.9
1376-1380.....	72.5	1426-1430.....	95.2
1381-1385.....	79.2	1431-1435.....	92.2
1386-1390.....	75.3	1436-1440.....	94.4
1391-1395.....	86.6	1441-1445.....	93.8
1396-1400.....	97.5		

Chart 19 presents the data in Table 28.

¹ "This is certain: the per capita consumption of spices in the late Middle Ages was incomparably greater than in our time" (Fritz Röhrig, *Mittelalterliche Weltwirtschaft* [Jena, 1933], p. 17).

CHART 19

QUINQUENNIAL INDEX NUMBERS OF REAL WAGES IN NAVARRE



Real wages rose approximately 30 per cent in 1351-1380; and, after a drop of 4.9 per cent in 1386-1390, when a considerable rise in the cost of living outweighed a slight upturn of money wages, real wages rose phenomenally in 1391-1405, the total advance in this brief period being 55.2 per cent.

The highest peak of real wages, in 1401-1405, stood 2.1 times higher than the nadir, in the first quinquennium. With slight reversals of the trend in 1411-1415, 1421-1425, and 1436-1440, real wages sank from 1406-1410 through 1441-1445, the last quinquennium for which an average can be computed. The decline in these forty years was about 20 per cent. But only 37.7 per cent of the gain registered in 1351-1405 was lost. The net increase of real wages during the period 1351-1445 was 68.4 per cent.

Owing to the heterogeneity and scarcity of wage data and to the lack of food prices (posterior to 1445), I cannot extend the measurement of real wages into the second half of the fifteenth century. But the similarity of the movements of money wages and commodity prices in 1451-1487, disclosed by Chart 18, suggests that real wages were fairly stable during this period.

Contrary to the widely held belief (both in lay and scientific circles) that in periods of rapidly rising prices the laboring class invariably suffers a material loss of purchasing power, real wages soared 75 per cent during the phenomenal advance of prices in the second half of the fourteenth century. And in the first half of the fifteenth century, while prices were either rising moderately or falling, a notable decline of real wages occurred.

CHAPTER X

CONCLUSIONS

STRICT separation of prices and wages for the different kingdoms characterizes the preceding chapters, and the scattering data for Aragon and Navarre prior to 1381 and 1351 respectively have not been considered. To give a broad view of the behavior of prices and wages over a long period in different localities, the concluding chapter will present the discontinuous early data and bring together the index numbers for the three kingdoms. The secular trends of prices and wages and the regional congruities and disparities of these movements will receive attention. Comparative fluctuations of the purchasing power of money of account and of fine gold in the different kingdoms enable one to appraise their monetary policies. I shall examine the results of legislative efforts to realize the medieval ideal of a *just price* (*justum pretium*) and inquire whether the Price Revolution antedated modern times. The relationships between the course of prices (including the relative movements of prices and wages) and the progress of capitalism form an interesting theme for speculation.

No price statistics for Valencia prior to 1380 have been unearthed, and the data for Aragon and Navarre before 1381 and 1351 respectively are extremely scant and discontinuous. In computing the annual prices for this early period, adjustments could not be made for regional or seasonal fluctuations; in fact, some data have been used when neither the locality nor the month of the purchase could be ascertained. Hence there is a wide margin of possible error in the price series for the last quarter of the thirteenth century and the first half of the fourteenth. Only the extreme scarcity of any kind of price data for continental Europe in this period could warrant the utilization of the Aragonese and Navarrese material.

To render possible comparisons of absolute prices, annual averages for a few basic commodities are listed in Appendix XIII. The exponents indicate the number of quotations included in each average.

The index numbers of prices in Table 29 include the data in Appendix XIII and all other available commodities for which base quotations¹ could be established. The exponents reveal the number of price relatives comprised by each index number.

TABLE 29

INDEX NUMBERS OF COMMODITY PRICES IN ARAGON AND NAVARRE
(BEFORE 1381 AND 1351 RESPECTIVELY)

Base = 1421-1430

A ARAGON

Year	Indices	Year	Indices
1276.....	48.6 ⁴	1332.....	47.3 ⁶
1277.....	42.7 ⁵	1333.....	52.8 ⁴
1306.....	24.9 ⁵	1335.....	48.9 ⁶
1307.....	29.2 ¹⁰	1336.....	49.1 ⁶
1308.....	27.2 ⁹	1350.....	46.3 ³
1309.....	31.9 ⁶	1363.....	72.4 ⁴
1325.....	51.0 ⁶	1373.....	114.1 ⁴
1326.....	54.9 ⁷	1374.....	109.2 ⁵
1329.....	40.4 ⁴	1378.....	90.9 ³
1330.....	42.3 ³	1379.....	86.1 ⁹
1331.....	48.3 ⁵	1380.....	93.3 ⁹

B NAVARRE

Year	Indices	Year	Indices
1283.....	24.8 ³	1333.....	24.1 ³
1284.....	20.2 ⁵	1336.....	20.7 ³
1285.....	24.4 ⁵	1339.....	21.0 ⁷
1286.....	23.9 ⁵	1340.....	19.1 ⁵
1294.....	21.2 ³	1341.....	24.6 ⁵
1309.....	22.6 ¹	1342.....	20.8 ⁶
1310.....	24.3 ¹	1343.....	25.8 ⁴
1328.....	28.6 ²	1344.....	23.9 ⁵
1330.....	26.7 ³	1350.....	33.9 ¹⁷

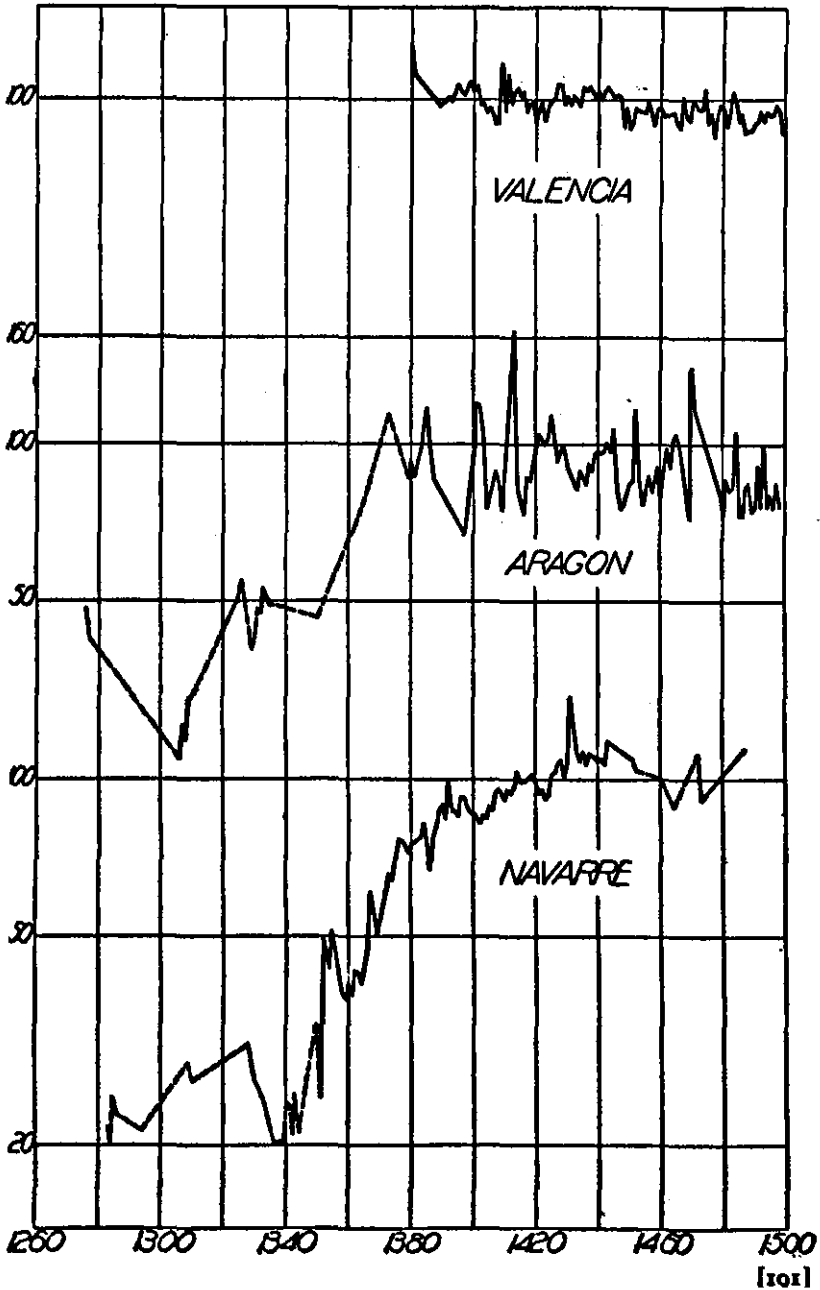
Chart 20 presents the data in Table 29 along with the index numbers of prices in the three kingdoms after 1350, printed in Tables 4, 12, and 23.

¹ The indices for Aragon were constructed on 1371-1380 as a base and shifted onto 1421-1430.

CHART 20

INDEX NUMBERS OF COMMODITY PRICES IN VALENCIA, ARAGON, AND NAVARRE

Base = 1421-1430



From 1284-1285 to 1309-1310 Navarrese prices rose 23.8 per cent; but, aside from the peak in 1328, the limited data available suggest a fairly horizontal movement in the next quarter-century. Although debasement of the penny by Peter III may have been partially responsible, the high Aragonese prices in 1276-1277 apparently reflected poor harvests of the agricultural commodities that dominate the indices.¹ In 1306-1309 Aragonese prices averaged about 38.1 per cent less than in 1276-1277; but, possibly on account of the light pennies struck by James II, the average index for 1325-1336 returned to near the 1276-1277 level. The index for 1350 was 5.7 per cent lower than in 1336. Apparently the trend of prices in Aragon was slightly downward in 1331-1350; but the Navarrese indices seem to have moved irregularly upward. It is needless to say that in each case the inference of a line of trend from the scattered points available is likely to prove erratic.

Since index numbers for Aragon and Navarre through 1350 are available in only five identical years, satisfactory comparisons of prices in the two kingdoms cannot be made. In 1309 the indices stood very near together; but in 1330 the Aragonese index was approximately 60 per cent higher. The indices for 1350 suggest that the disparity may have diminished in the intervening period. The utter discontinuity and inadequacy of the Aragonese material continued through 1380. Bad harvests seem to have been responsible for the high indices in 1373-1374.

In the four decades, 1351-1390, Navarrese prices rose more than 100 per cent, and virtually all of the gain was held until the close of the century. The discontinuity of the material prior to 1381 and the marked fluctuations of the indices (resulting from the availability of only eight commodities,² of which five were agricultural³) throughout the period under investigation debar accurate determination of the trend of Aragonese prices. The

¹ Paper was the sole non-agricultural article included in the index for 1276, and only grain and spice prices were available in 1277.

² A few other articles were used before 1381.

³ Of course, the demand for these articles was inelastic; and the supply was affected by the vagaries of the seasons.

best guess seems to be that they almost doubled in the second half of the fourteenth century.

After falling slightly in the first quarter of the fifteenth century, Valencian prices moved forward in the next two decades. The Aragonese indices mounted irregularly in the first quarter of the century; and the Navarrese, in 1401-1445. Although interrupted by a brisk forward surge in 1433-1445, Aragonese prices turned downward in the second quarter of the century. Beginning about 1445, a pronounced decline occurred in all three kingdoms. If we overlook the collapse of the Valencian indices in 1499-1500, the fall of prices was arrested in the last two decades of the fifteenth century; but no signs of the Price Revolution are discernible in our period.¹

Despite the glaring differences in the composition of the indices, Chart 20 reveals an extraordinary agreement of the secular trend and even a rough similarity among the cyclical movements of prices in the different kingdoms in the fifteenth century. Monetary inflation in the Pyrenean kingdom accentuated the rise of prices in 1401-1444; the protracted decline began earlier in Aragon than elsewhere; and the Valencian indices were more stable than the Aragonese in the last three decades of the fifteenth century. But the similarities of the price structures are far more striking than the divergences. In fact, one may well doubt whether a considerably higher degree of correlation would be shown by indices of a similar type for any three neighboring countries, using different moneys of account, in the nineteenth century.

The uniformity of prices in the different kingdoms necessarily resulted from active trade.² If they had ever existed, the medieval closed economies had certainly disappeared prior to the fifteenth century. In fact, we know that in the fourteenth century the royal household of Navarre often bought at Saragossa

¹ *Vide infra*, p. 197.

² On August 21, 1475, the Aragonese Cortes advised the Valencian *Corts* that steps had been taken to build a highway for the promotion of commerce between the two kingdoms and requested Valencia to continue the project within its boundaries (Archivo de la Diputación Provincial de Zaragoza [hereafter ADZ], *Registros de Actos Comunes de la Diputación del Reino*, Ms. 63, fol. 39).

Oriental spices, and Levantine sugar and cotton; Italian paper, silk, and fine woolens; and Valencian oranges, lemons, figs, and dates.¹ Barcelona was an entrepôt for most of the Italian and eastern products imported into Aragon, and Catalan merchants were familiar and active figures at the Navarrese court.² Both Aragon and Navarre exported grain, wine, and animal products to Valencia and Catalonia. Large sums obtained from Jewish "usurers" of Barcelona and Saragossa frequently extricated the kings of Navarre from (and involved them in) financial difficulties. The diversity of the media of circulation attests the international commercial and financial activity. In a thorough audit of the accounts of the treasurer of Aragon for 1464-1470 the "true" tariffs of fifteen exotic gold and silver pieces (including Turkish, Sicilian, and Neapolitan coins) were in dispute.³ When the kings of Navarre raised large sums, say, to meet the expenses of a military expedition or to pay the dowry of a princess, literally dozens of monetary units — ranging from Greek, Bohemian, and Portuguese florins to Genoese ducats, English nobles, and Burgundian crowns — were represented. In 1393 Charles the Noble set aside for expenditure upon "amusement" forty-six distinct types of gold coins collected from the royal treasure chests.⁴

As is well known, trade was brisk in the Mediterranean basin in the late medieval period. In maritime commerce Barcelona rivaled Genoa and Venice during the last three centuries of the Middle Ages, and in the fifteenth century Valencian shipping flourished. For example, the Valencian vessels entering the port of Barcelona in February-October, 1448 far outnumbered those from any other city.⁵ As we have seen, Saragossa maintained close commercial contacts with the Catalan capital. There is

¹ Biscayan traders penetrated into Aragon. The Aragonese Cortes exercised their privilege of guaranteeing safe passage and transportation to French, German, and Gascon merchants and merchandise (ADZ, *Registros de Actos Comunes de la Diputación del Reino*, Ms. 56, fols. 26, 162).

² In 1414 Charles III of Navarre spent £1010 7s. 6d. in the autumn fair at Medina del Campo for cloth, a large part of which had been imported from Flanders (Archivo de la Cámara de Comptos, caj. 114, no. 7).

³ Archivo de la Corona de Aragón, *Cortas de Fernando II*, no. 44.

⁴ *Vide supra*, p. 137 n. 1.

⁵ Antonio de Capmany y de Montpalau, *Memorias Históricas sobre la Marina, Comercio y Artes de la Antigua Ciudad de Barcelona*, I (Madrid, 1779), 36-37.

no reason to doubt that (if they could be constructed) index numbers of prices for Catalonia would resemble those for Aragon and differ little from the Valencian indices. One can safely predict that the conformity between Valencian and Catalan prices would be much closer than existed between those for Valencia and Navarre.

The abrupt upheaval of prices in the second half of the fourteenth century apparently resulted from the rapid increase in the supply of gold, along with debasement, and a rise in the tariffs of gold pieces in terms of money of account. That England, Flanders, Germany, Castile, and the Crown of Aragon began the regular coinage of gold near the middle of the fourteenth century was not a mere accident. The discovery of rich gold deposits in Silesia and Hungary, the expansion of commerce with the gold-producing regions of northwestern Africa, and the development of industries capable of reversing the unfavorable balance of trade with the Levant — a gateway to the Crimean gold fields — provided the means for the introduction of gold money at the same time that the increase of population, the rise of towns, and the growth of commerce furnished the incentive. Spirited bidding for gold pieces by kings and merchant princes to meet large or distant payments forced up their tariffs despite the increase in quantity; and the impecuniosity of Peter IV led him to debase the Aragonese florin, the most important coin of any description in Valencia, Aragon, or Navarre.¹ A comparison of Charts 14 and 20 suggests that in 1351-1380 the increase in the supply of gold was undoubtedly an important factor in the rise of prices; but from 1381 through 1425 in Aragon, and through 1445 in Valencia and Navarre, prices in terms of fine gold and money of account moved inversely.² The increase of population, industry, and trade, in conjunction with a less rapid augmentation of the stock of precious metals and relative freedom from devaluation and debasement, seems to have been responsible for the decline of both nominal and gold prices in the second half of the fifteenth century.

¹ The Florentine florin circulated widely in Navarre until about 1367.

² *Vide* Charts 4, 11, and 14.

In Valencia, Aragon, and Navarre the decline of gold prices not only lasted throughout the fifteenth century, but was considerably greater than that of the indices in terms of money of account. The same was true of silver prices for Valencia, the only kingdom for which this type of index could be constructed. Hence debasement of the coinage produced a more stable price level than an inflexible metallic standard would have yielded. Money representing a fixed quantity of either precious metal would have given a protracted and drastic fall of prices, with devastating effects upon the production of wealth. In the light of subsequent developments, the stern opposition of the kingdom of Valencia to the introduction of gold coinage, on the ground that it might displace the traditional base standard of copper with a small admixture of silver,¹ was certainly not irrational.

I regret that the data on medieval prices now being collected under the auspices of the International Committee on Price History by a group of distinguished European scholars² are not available for comparison. The limited material now accessible for England and France suggests that silver prices rose sharply in the third quarter of the fourteenth century and fell considerably during the ensuing hundred years. In the last quarter of the fifteenth century English prices moved horizontally, and the same was apparently true of French prices.³ The trends of silver index numbers in these two countries from 1351 to 1500 were strikingly similar to those of the gold indices in Valencia, Aragon, and Navarre.

Owing to the discontinuity of the quotations, the small number of commodities, and the extreme price fluctuations of the agricultural products largely composing the series, it is difficult to

¹ *Vide supra*, pp. 14-15.

² Professor C. F. Pribram for Austria, Professor N. W. Posthumus for Belgium and the Netherlands, Sir William Beveridge for England, Professor Henri Hauser for France, Dr. Moritz Elsas for Germany, and Professor Fr. Bujak for Poland.

³ My comparisons are based upon the results of J. E. T. Rogers, Vicomte d'Avenel, Émile Levasseur, and others, elaborated and presented in two excellent articles by Professor A. P. Usher ("The General Course of Wheat Prices in France, 1350-1788," *Review of Economic Statistics*, XII, 159-169; "Prices of Wheat and Commodity Price Indexes for England, 1259-1930," *ibid.*, XIII, 103-113).

interpret the data for Münster and Saxony published by Keller¹ and Falke² respectively; but it seems that the course of German prices was not out of line with the trends elsewhere.

The rise in the output of Austrian, German, and Hungarian silver mines in the second half of the fifteenth century³ may have been responsible for the horizontal movement of prices toward the end of the century; but at present there is no evidence that the rapid augmentation of the monetary stock of silver in the closing decades of the Middle Ages caused the Price Revolution of the sixteenth century to take root in any country before the dawn of modern times.⁴

In Valencia, Aragon, and Navarre there was a great deal of governmental "interference" with the play of economic forces impinging upon prices. A considerable portion of the debates in the Valencian *Corts* and of the proceedings of the Valencian city council were directed toward the removal and the prevention of impediments to grain imports from Sicily and Sardinia. The municipal council regularly subsidized the importation of wheat⁵ either through direct grants or through loans without interest; and legal maximum prices for several staple articles such as beef, mutton, and tallow candles were prescribed by city ordinances.⁶ The kings of Navarre fixed the price for grain needed to supply troops and established tariffs for many of the domestic products purchased by the royal household.⁷

¹ "Zur Geschichte der Preisbewegung in Deutschland während der Jahre 1466-525," *Jahrbücher für Nationalökonomie und Statistik*, XXXIV, 181-207.

² "Geschichtliche Statistik der Preise im Königreich Sachsen," *ibid.*, XIII, 64-395.

³ Jakob Strieder, *Studien zur Geschichte kapitalistischer Organisationsformen* (Munich and Leipzig, 1914), pp. 6-11; Adolf Soetbeer, *Edelmetall-Produktion und Verhältnisse zwischen Gold und Silber seit der Entdeckung Amerikas bis zur Gegenwart* (Gotha, 1879), pp. 14-16.

⁴ Cf. Georg Wiebe, *Geschichte der Preisrevolution des XVI. und XVII. Jahrhunderts* (Leipzig, 1895), pp. 19, 106, 148-150, 412-413.

⁵ Which often came from Andalusia and Murcia, and was occasionally brought from Rumania and other regions near the Black Sea.

⁶ Archivo Regional de Valencia, *Real*, lib. 507, fol. 135; Archivo Municipal de Valencia, *Manuales de Consells*, A23, fols. 66-68; Biblioteca Universitaria de Valencia, Ms. 1206.

⁷ *Vide*, for instance, Archivo de la Cámara de Comptos, caj. 132, no. 128.

The Saragossan city council earnestly endeavored to assure abundant and cheap supplies of wheat, wine, meat, and olive oil. The legal maximum prices were usually based upon inquiries regarding the available stock, the possibility of obtaining "imports" at a low figure, and the current market quotations. The maximum tariffs were ordinarily set only slightly below the prevailing prices; in fact, I have found no case in which the city attempted a radical reduction. For its meat supply, the municipality apparently relied upon a regulated monopoly. The exclusive privilege of operating meat markets was granted to the butcher, or butchers, who offered the most attractive combination of a high payment for the franchise and of low (guaranteed) prices for standard products such as mutton, kid, veal, and beef.¹ When certain provisions were dear, the city often either lowered or entirely removed the *octroi* taxes² and established heavy fines for the exportation of the scarce articles.³ "Because of the dearth of olive oil from which the city is suffering and because of the low stocks in the possession of merchants," on February 18, 1468, the council authorized imports in unlimited quantities and sales at whatever prices might be obtained.⁴ At times vessels carrying grain on the River Ebro were not permitted to pass through Saragossa without leaving a portion of the cargo.⁵ The city had, and occasionally exercised, the power to require the hoarders of scarce commodities to sell them at the legal maximum prices.⁶ Furthermore, bakers could be forced to bake and sell bread even when they were losing money.⁷

In 1471, when "the greatest scarcity of wheat within mem-

¹ *Vide*, for example, Archivo Municipal de Zaragoza (hereafter AMZ), *Actos Comunes*, 1440, 8, 15 y 17 de Marzo; 28, 30 y 31 de Mayo; 14-15 de Junio; 16 de Julio; 10 de Octubre.

² AMZ, *Actos Comunes*, 1440, fol. 121.

³ For instance, on August 13, 1442, the city council instituted a fine of 500s. for the shipment of olive oil out of the city (AMZ, *Actos Comunes*, 1442, 13 de Agosto); and on May 30, 1442, the penalty for exporting oxen was fixed at 1000s. (*ibid.*, 1442, fol. 80).

⁴ AMZ, *Actos Comunes*, 1468, 18 de Febrero.

⁵ AMZ, *Actos Comunes*, 1442, 12 de Marzo, 17 de Abril.

⁶ AMZ, *Actos Comunes*, 1440, fol. 125; 1489, 15 de Enero; 1469, 12 de Mayo y 2 de Septiembre.

⁷ AMZ, *Actos Comunes*, 1492, 4 de Mayo.

ry"¹ occurred, the municipal council and the Cortes took energetic action to increase the supply. On March 7 the members of the council pledged personal funds to guarantee a bounty of 1s. for every *cahiz* of wheat brought into the city for sale in the public market (*almodí*).² Because "the available stock of 150 cahices is insignificant and because no one who will guarantee to bring more has been found," on March 9 the council called a meeting of citizens to consider the best means for raising funds to meet the emergency.³ On April 28 a great public assembly resolved "to obtain grain within and without the kingdom regardless of the price"; and the Cortes urged the city of Jaca to permit shipments of wheat to the capital, where "it is greatly needed."⁴ The following day the council sent a merchant to Valencia with instructions "to buy at the market" and bring to Saragossa "without delay" a thousand cahices of Sicilian wheat "even if it is not of altogether good quality."⁵ The municipality refused to permit the bakers to reduce the weight of loaves of bread and decided to sell wheat at figures low enough to prevent a rise in their price.⁶ Doubting that "irreparable injury from hunger riots can be avoided," on May 4 the Cortes urged Ferdinand the Catholic to request the Archbishop to return to Saragossa to assist in preventing social disorder; and Juan López de Guerra, "governor" of the kingdom, was advised to hasten to the capital.⁷ In the spring of 1471 wheat was bought in many Aragonese towns and imported from Naples, France, Navarre, Tortosa, and Valencia.⁸

The price control in Saragossa was not exclusively designed

¹ ADZ, *Registros de Actos Comunes de la Diputación del Reino*, Ms. 56, fol. 211.

² AMZ, *Actos Comunes*, 1471, fols. 60, 138.

³ AMZ, *Actos Comunes*, 1471, fol. 66.

⁴ ADZ, *Registros de Actos Comunes de la Diputación del Reino*, Ms. 56, fols. 207-209.

⁵ AMZ, *Actos Comunes*, 1471, fol. 95.

A proposal to import wheat from Gascony was rejected because (1) not over 100 cahices would be available; (2) the cost of transportation would be prohibitive; (3) it would arrive too late; and (4) France would probably refuse to grant the export license.

⁶ AMZ, *Actos Comunes*, 1471, fols. 101, 138.

⁷ ADZ, *Registros de Actos Comunes de la Diputación del Reino*, Ms. 56, fol. 211.

⁸ AMZ, *Actos Comunes*, 1471, fols. 210, 225.

to favor consumers;¹ the interests of dealers were also recognized. For instance, when merchants held an adequate supply of, say, olive oil, imports were either restricted or prohibited; and the expected maintenance of this policy affected supply and demand in the Saragossan market.²

At least in a few cases, the legal maximum prices were violated in Valencia and Saragossa; but they were frequently observed in both cities. The number of price-fixing ordinances is too small to permit one to ascertain the true extent of their influence upon market quotations. Since the maximum tariffs were altered in accordance with market conditions at short intervals, and since prices were either rising moderately or falling during most of the period under investigation, there are strong reasons to believe that the price control was more effective than in Castile during the sixteenth century, when opposite conditions prevailed. But the fairly close agreement among the price trends in the three kingdoms, with independent regulating bodies, suggests that the control failed to govern the course of prices in any region. Furthermore, the fluctuations of the curves (in Chart 20) for the three kingdoms clearly indicate that legal control in an effort to realize the medieval ideal of a just price did not stereotype prices in the last two centuries of the Middle Ages. No reasonable allowance for the discontinuity or defective character of the data could lead one to believe that inflexibility of prices could have prevented adjustments to specie outflows, with monetary debasement (to bring the metallic content of coins into line with the higher value of bullion) as an inevitable consequence.³ In fact, there is reason to doubt that prices were more sluggish in the fifteenth century than in the nineteenth.

Discontinuous wages for a few grades of workers in Aragon and Navarre prior to 1381 and 1346 respectively are given in Appendix XIII. The exponents reveal the small number of quotations included in each average wage rate. Furthermore, the

¹ At least not in the short run.

² *Vide*, for example, AMZ, *Actos Comunes*, 1460, 12 de Mayo y 2 de Septiembre.

³ For a brief statement by an able economist of the traditional viewpoint on this question, *vide* R. G. Hawtrey, *Currency and Credit* (ed. London, 1923), pp. 286-287.

data are too scattered and otherwise defective to permit regional or seasonal adjustments. Since "beggars cannot be choosers," figures have been utilized when neither the month nor the exact locality could be determined. The fragmentary early wage material obviously leaves much to be desired. The most that can be obtained from it is a rough idea of the trend of wages.

Index numbers of wages derived from the rates in Appendix XIII and all others for which base quotations could be obtained are listed in Table 30. The exponents indicate the number of grades of labor comprised by each index.

TABLE 30

INDEX NUMBERS OF MONEY WAGES IN ARAGON AND NAVARRE
(BEFORE 1381 AND 1346 RESPECTIVELY)

Base = 1421-1430

A ARAGON

Year	Indices	Year	Indices
1301.....	18.5 ²	1314.....	31.8 ³
1306.....	16.1 ¹	1315.....	26.8 ²
1307.....	21.9 ²	1326.....	27.5 ¹
1308.....	25.0 ¹	1329.....	43.8 ¹
1309.....	25.6 ¹	1332.....	28.6 ¹
		1333.....	33.3 ¹

B NAVARRE

Year	Indices	Year	Indices
1284.....	15.7 ⁴	1309.....	17.0 ⁶
1308.....	16.2 ⁵	1310.....	16.8 ⁶

Chart 21 presents the data in Table 30 along with the wage indices for all three kingdoms printed in Tables 7, 14, and 26.

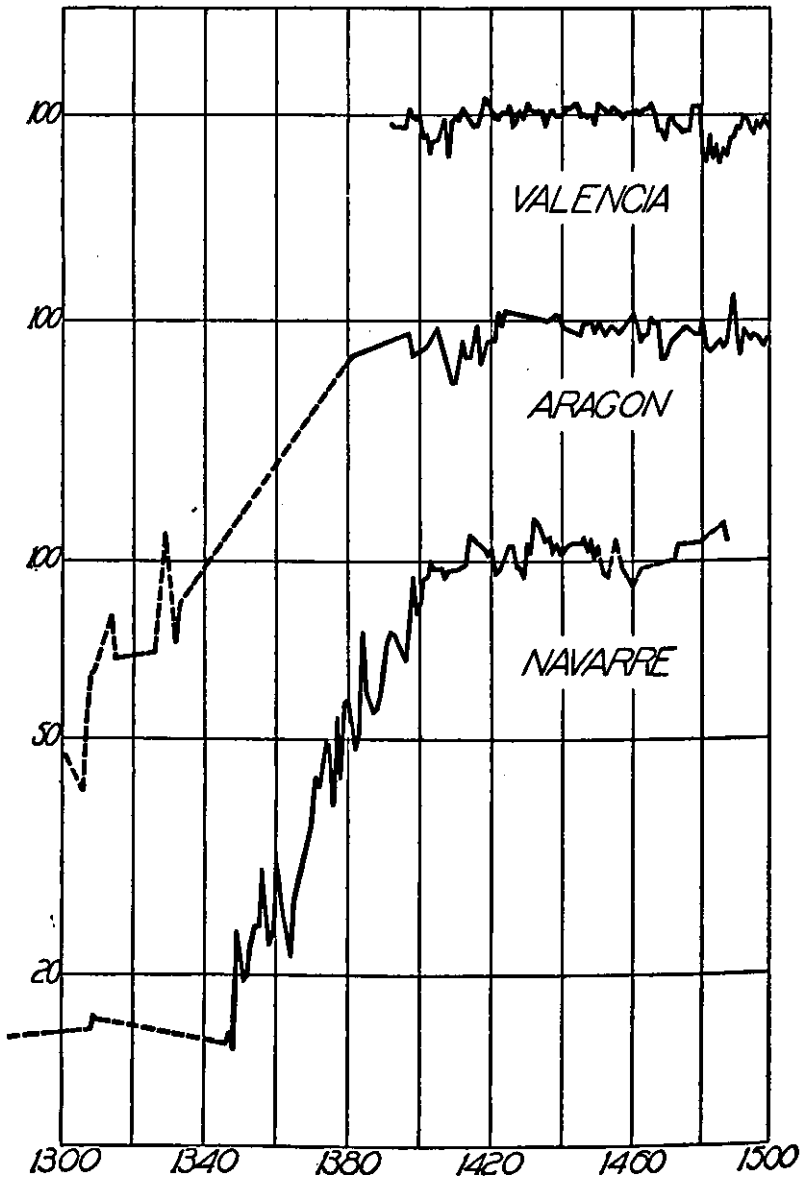
Bating the increase of roughly 10 per cent in 1308-1310, the trend of Navarrese wages in 1284-1348 was horizontal. It appears that Aragonese wages practically doubled in 1307-1315 and then gradually rose until 1333. In 1381, the next year for which data are available, the index was 161.9 per cent higher than in 1333; but one cannot say when the advance occurred.

Extremely severe in Navarre, as in most of Europe, the Black Death apparently caused the sharp rise of the Navarrese wage index in 1349. About 40 per cent of the gain had been lost by

CHART 21

INDEX NUMBERS OF MONEY WAGES IN VALENCIA, ARAGON, AND NAVARRE

Base = 14211-430



1351, but wages rose briskly from this date until 1390. The concurrent upswing of prices suggests that gold inflation controlled the course of wages. The 9 per cent advance of the Valencian salary index in 1356¹ may have been a belated adjustment of this sluggish series to a scarcity of labor resulting from the Black Death, but monetary factors may have been wholly or partially responsible. For in Navarre, where the Black Death had already spent its force, the advance of wages in this year was practically three times as great.

Particularly striking is the harmony among the wage curves for the three kingdoms throughout the fifteenth century. Not only the secular trends but the cyclical fluctuations moved in remarkable unison. The only notable divergence was that of the discontinuous indices for Navarre from 1455 onward, while dynastic struggles and baronial strife were devastating the Pyrenean kingdom. The uniformity of wages leaves no room to doubt that laborers migrated from one region to another in response to wage differentials. The Valencian and Aragonese wage records seldom indicate the nationality of workers, but they show that laborers moved between the two kingdoms. On the construction projects of the kings of Navarre, Valencians, Catalans, Aragonese, and Gascons often worked; and Castilians and Britons were occasionally employed.

Prices and wages in the three kingdoms tended to follow similar paths; but, in accordance with *a priori* expectations, wages lagged behind falling prices in Valencia from 1448 through 1466² and in Aragon during the last three quarters of the fifteenth century.³ The greatest anomaly disclosed by the present study is the complete failure of wages to lag behind prices in any of the kingdoms during a single period of upheaval. In fact, Navarrese wages advanced much faster than prices in the last decade of the fourteenth century. Hence the impetus to the rise of modern capitalism given by the revolution of prices in the second half of the fourteenth century was limited to the windfalls received by

¹ *Vide supra*, Chart 5, p. 69.

² *Vide supra*, Chart 6, p. 73.

³ *Vide supra*, Chart 12, p. 113.

debtors, some of whom were active business men, at the expense of the more passive creditor class¹ and to the activity engendered by the inveterate tendency to confuse nominal and real incomes under the money illusion.

¹ A notable memorial on monetary reform presented to Charles II of Navarre by P. Girardi, a Florentine mining engineer who prospected for deposits of precious metals in Navarre during the 1340's (Archivo de la Cámara de Comptos, *Comptos del Tesorero*, ts. 43, 46, 48), divided society into three categories: (1) those dependent upon labor incomes, (2) those dependent upon profits, and (3) those dependent upon fixed incomes in money; and discussed the effects of monetary legislation upon the welfare of each class. This uncatalogued memorial was found by my able research assistant, Don Miguel Bordonau y Mas, in a set of duplicate rolls of royal expense accounts.

APPENDICES

APPENDIX I

STATISTICS OF COINAGE IN THE VALENCIAN MINT

THE following data have been derived from the contracts between mint farmers and the Crown and from the reports of the master of the mint to the royal treasurer (*maestre racional*). All these documents are deposited in the Archivo Regional de Valencia, and most of them are catalogued under *Maestre Racional: Tesorería*.¹ One must bear in mind that the figures for the coinage of vellon which began in 1249 and in 1271 are estimates² and that lacunae mar the statistics. For instance, in the contract negotiated on February 20, 1407, with certain Florentine merchants for the coinage of silver over a period of 3 1/4 years the Crown specifically exempted the mint farmers from the obligation to submit accounts or render reports.³ No extant documents reveal the amount of recoinage that took place in 1480-1483, while the mint was farmed to the Estates General. It is probable, however, that my statistics are very nearly complete for vellon in 1249-1500, for gold in 1382-1500, and for silver in 1410-1500. I have endeavored to attain accuracy to the nearest penny and tenth of a mark. Aside from the mistakes that have doubtless crept into my work through the thousands of calculations involved, minor errors abound in the records of the mint; but not less than nine hundred hours were devoted to the collection of archive material, and more than five hundred were required for its elaboration. That large errors distort the data is highly improbable.

In computing the kilograms of fine gold coined after 1483, I have concluded that the mark of Valencia superseded that of Perpignan in 1483,⁴ when the ducat was introduced. I have assumed that the 259 marks 2 3/8 ounces of fine gold purchased by the mint between September 3, 1418, and August 18, 1419, were struck (although the delivery of the bullion to officials and the release of the coins cannot be verified) and that the 388 1/4 marks of standard gold formally accepted by the master of the mint on May 23, 1478, as well as the 74 marks and 7/8 of an ounce of standard gold received on December 22, 1498, were minted. Departures from normal weight and fine-

¹ Legs. 355, 444, and 488 have supplied a large percentage of the data.

² *Vide supra*, pp. 9-10.

³ *Vide supra*, pp. 17-18.

The privilege of coining gold over a period of six years was farmed on September 4, 1405, with the understanding that reports would not be required; but there is reason to believe that no gold was minted under this concession (AR, *Real: Títulos y Enajenaciones*, lib. II).

⁴ *Vide supra*, p. 35.

ness within the limits of tolerance¹ have been neglected in calculating the probable number of coins struck, when this datum is missing; for experimentation has demonstrated that allowance for the discrepancies does not afford substantially greater accuracy. The commercial tariffs of coins have been employed.² The dates marked "enc."³ represent deliveries of bullion to officials for coinage; and the remaining dates indicate the formal release of money by the treasurer of the mint, which, on the average, occurred some three or four months later. Coins are abbreviated as follows: f = florin, r = real, t = timbre, and d = ducat.

The data on the volume of coinage do not include the various counterfeit issues sanctioned by the Aragonese monarchs. Since prudence dictated the keeping of few, or no, records of the princely counterfeiting, it has proved impossible to ascertain the quantity of foreign money minted.

The most salient phenomenon revealed by the above statistics is the diversion of silver to the Valencian mint during the Catalan revolt against John II. In the seven years, 1462-1468, the coinage of reals in the Mediterranean kingdom exceeded that of the entire sixteenth century, when the Mexican and Peruvian silver mines were inundating the motherland.⁴ In spite of the low mint rating of gold relative to the bimetallic ratios obtaining in most European countries prior to 1483, the coinage was heavy and, bating extensive periods of inactivity in 1389-1444, fairly continuous. The overvaluation of gold after 1483 stimulated the minting of ducats, and the output of gold money remained high in the first half of the sixteenth century.⁵ The rate of issue declined, however, in 1551-1650; and the quantity of fine gold minted in 1501-1650 was only 3,848,135.9 grams — 345,793 grams less than the total in 1382-1500. The pure silver coined in 1410-1500 weighed about one-fifth more than the pure gold struck in 1382-1500, but the monetary yield of the latter was almost nine times that of the former. Owing to the preponderance of gold in the domestic money and to the prevalence of exotic gold pieces (as in all of Europe at the close of the Middle Ages), the circulating medium consisted largely of gold after the middle of the fourteenth century.⁶ The restrained issue of vellon, which yielded less than 10 per cent of the total money struck, prevented menuts from falling below par. In fact, on more than one occasion the paucity of fractional coins gave rise to serious problems.

Although the utter lack of explanation of units and terms renders it extremely hazardous to utilize the otherwise excellent statistics on English coinage compiled by Miss Ethel Stokes,⁷ it seems safe to assert that the London mint coined about twenty-three times as much silver in 1401-1500

¹ These departures explain the lack of exact correspondence between the "marks of standard fineness" and the "coins struck."

² *Vide supra*, pp. 38 n. 1., 39 n. 1.

³ An abbreviation of *encerrado*.

⁴ Cf. Earl J. Hamilton, *American Treasure and the Price Revolution in Spain, 1501-1650* (Cambridge, Massachusetts, 1934), p. 126.

⁵ *Ibid.*, p. 125.

⁶ Except possibly in the seventh and eighth decades of the fifteenth century.

⁷ "Tables of Bullion Coined," *Numismatic Chronicle*, 5th Series, IX, 27-69.

QUANTITIES OF GOLD, SILVER, AND VELLON MINTED

Date	A GOLD				Monetary Yield		
	Marks of Standard Fineness	Grams of Pure Gold	Coins	£	s.	d.	
Jan. 31-Dec. 30, 1382.....	1,256.3	225,568.7	85,408.sf	46,974	13	6	
Jan. 31-Dec. 31, 1383.....	1,101.9	197,846.1	74,851.of	41,168	1	0	
Jan. 30-Dec. 31, 1384.....	1,373.7	246,647.8	93,297.of	51,313	7	0	
Jan. 4, 1388-Jan. 15, 1389..	1,620.2	290,906.9	110,001.of	60,500	11	0	
Sept. 18, 1411-Sept. 1, 1412.	1,172.7	210,558.3	79,754.of	43,864	14	0	
Sept. 6, 1417-Aug. 27, 1418.	290.8	52,213.1	19,759.of	10,867	9	0	
Sept. 3, 1418-Aug. 18, 1419.	345.8	62,088.4	23,514.of	12,932	14	0	
Oct. 29, 1426-Nov. 12, 1428.	155.3	30,982.4	14,905.ot	7,452	10	0	
May 4, 1445-May 4, 1446..	303.9	60,628.1	29,177.5t	14,588	15	0	
May 16, 1446-April 21, 1447	290.4	57,934.8	27,900.ot	13,950	0	0	
May 10, 1447-April 30, 1448	281.8	56,219.1	27,051.ot	13,525	10	0	
May 21, 1448-April 10, 1449	98.4	19,030.8	9,444.5t	4,722	5	0	
May 19, 1450-April 17, 1451	421.2	75,626.5	28,624.5t	18,844	9	3	
May 13, 1451-May 4, 1452.	254.4	45,677.5	17,285.sf	11,379	12	5	
May 25-June 1, 1451.....	34.2	6,822.9	3,283.ot	1,641	10	0	
June 22, 1452-Mar. 17, 1453	202.9	36,430.7	13,793.of	9,080	7	10	
May 17, 1453-April 20, 1454	96.5	17,326.6	6,565.of	4,321	19	2	
July 6, 1454-April 26, 1455.	307.6	55,229.6	20,909.of	13,765	1	10	
May 13, 1455-April 28, 1456	323.3	58,048.5	21,971.of	14,464	4	10	
May 22-July 2, 1459.....	122.9	22,066.7	8,358.sf	5,502	13	7	
Oct. 21, 1462.....	166.1	29,823.3	11,295.of	7,435	17	6	
Sept. 27, 1463.....	10.3	1,849.4	700.sf	461	3	3	
Sept. 27, 1463-Sept. 27, 1464	215.3	42,952.4	20,669.of	10,334	10	0	
Sept. 27, 1464.....	114.4	20,540.5	7,779.of	5,121	3	6	
Sept. 14, 1465.....	347.2	62,339.8	23,609.sf	15,542	18	5	
Mar. 4, 1467.....	346.7	62,250.0	23,575.sf	15,520	10	9	
Jan. 15, 1468.....	688.3	123,584.3	46,804.sf	30,812	19	3	
Feb. 28, 1471.....	51.3	9,210.9	3,488.sf	2,296	11	11	
Dec. 30, 1472.....	1,666.6	299,238.0	113,329.of	74,608	5	2	
Jan. 5, 1473.....	923.1	165,742.6	62,771.of	43,416	12	2	
Dec. 28, 1474.....	443.6	79,648.4	30,165.of	20,864	2	6	
May 23, 1478.....	388.2	69,701.3	26,397.sf	19,798	2	6	
Oct. 31, 1485-Feb. 14, 1486.	338.2	79,624.9	22,659.5d	23,792	9	6	
Mar. 9-Dec. 2, 1486.....	521.4	122,757.0	34,934.od	36,680	14	0	
Dec. 6, 1486-May 14, 1488.	604.4	142,298.3	40,489.od	42,513	9	0	
June 5-Dec. 12, 1489.....	684.6	161,180.4	45,854.5d	48,147	4	6	
Mar. 15, 1490-Feb. 12, 1491	535.3	126,029.6	35,854.5d	37,646	14	0	
Feb. 28-April 15, 1491.....	900.8	212,082.0	60,353.5d	63,371	3	6	
May 10, 1492-Feb. 14, 1493	517.7	121,885.9	34,686.od	36,420	6	0	
June 14, 1494-Mar. 13, 1495	442.3	104,133.9	29,634.od	31,115	14	0	
Apr. 3, 1495-Mar. 16, 1496.	449.0	105,711.4	30,083.od	31,587	3	0	
Apr. 1, 1496-Mar. 18, 1497.	514.0	121,014.8	34,431.5d	36,153	1	6	
Apr. 21, 1497-June 26, 1498.	659.6	155,294.5	44,168.5d	46,376	18	6	
Dec. 22, 1498.....	74.1	17,445.9	4,961.5d	5,209	11	6	
Jan. 9-Dec. 14, 1499.....	285.1	67,123.2	19,088.od	20,042	8	0	
Jan. 9-Oct. 21, 1500.....	140.9	33,173.1	9,437.5d	9,909	2	3	
Total.....	22,082.7	4,365,089.3	954,006.of 132,430.ot 446,634.5d	1,116,039	4	7	

B SILVER

Date	Marks of Standard Fineness	Grams of Pure Silver	Coins	Monetary Yield £ s. d.		
May 5, 1449-Apr. 27, 1450.	179.5	38,942.1	12,918.5r	968	17	9
Oct. 21, 1462 (enc.).....	9,568.5	2,075,862.2	688,932.or	51,669	18	0
Sept. 27, 1463 (enc.).....	3,151.1	683,623.3	226,879.or	17,015	18	6
Sept. 28, 1464 (enc.).....	1,629.0	353,407.5	117,288.or	8,796	12	0
Sept. 14, 1465 (enc.).....	559.0	121,273.7	40,248.or	3,018	12	0
May 4, 1467 (enc.).....	5,960.9	1,293,202.4	429,185.or	32,188	17	6
Jan. 15, 1468 (enc.).....	2,193.3	475,831.0	157,918.or	11,843	17	0
Feb. 28, 1470 (enc.).....	342.4	74,282.8	24,653.or	1,848	19	6
Total.....	23,583.7	5,116,425.0	1,698,021.5r	127,351	12	3

C VELLON¹

Date	Marks of Silver	Marks of Standard Bullion	Monetary Yield £
1249-1250.....	10,000.0	40,000.0	38,000
1271.....	23,000.0	92,000.0	87,400
1450.....	14.3	93.3	105
Total.....	33,014.3	132,093.3	125,505

as issued from the Valencian mint in 1411-1500. Probably owing to the greater proximity of the Mediterranean kingdom to the African deposits, however, the gold coined in London in 1377-1500 was apparently only ten times greater than the Valencian output in 1382-1500.

APPENDIX II

STATISTICS OF COINAGE IN NAVARRESE MINTS

FROM the surviving records of the master of the mint (including reports to the Crown on receipts of bullion and deliveries of seigniorage to royal agents), the account-books of the public treasury (listing the sums derived from "loans" of plate), contracts with business men to supply bullion, and concessions to private individuals of the privilege of coining and receiving the seigniorage on stipulated quantities of bullion in one of the royal mints,² it is possible to arrive at a fairly accurate estimate of the output of money

¹ The figures for 1249-1250 and 1271 are estimates (*vide supra*, pp. 8-10).

² All of these records are deposited in the Archivo de la Cámara de Comptos at Pamplona. The following documents supplied most of the data: *Comptos del Tesorero*, ts. 76², 153, 161, 169, 183, 197, 201; caj. 35, no. 50; caj. 42, no. 48; caj. 46, no. 6; caj. 47, nos. 22, 78, 80; caj. 48, nos. 24, 49, 86; caj. 69, no. 53; caj. 126, no. 64; caj. 127, nos. 5, 19-21, 28; caj. 128, nos. 24, 41; caj. 129, nos. 7, 21, 23, 42, 50, 52; caj. 130, nos. 1, 4, 15-16, 27, 30; caj. 131, nos. 4, 9-10, 14, 16-17, 19, 21, 23, 25, 27, 29, 33-34, 37, 39, 40, 43, 46; caj. 132, nos. 11, 15, 17, 24, 44; caj. 134, no. 2; caj. 164, nos. 21, 23, 28. *Vide also*, Archivo Municipal de Pamplona, *Pergaminos*, caj. B, no. 8.

from 1377 through 1493. The results derived from the different sources have been compared, and special care has been taken to avoid double counting; but the reader is warned that a few cases of conflicting evidence have necessitated arbitrary decisions, and that when only the yield of seigniorage was known it was necessary to guess¹ at the allocation among the different kinds of coins currently minted. To preserve uniformity with the Valencian statistics in calculating the monetary yield from the marks of standard fineness, no allowance has been made for the usual exploitation of the full limits of mint tolerance.²

Like most specimens of medieval bookkeeping, the records of the master of the mint are replete with mistakes; and inaccuracies have doubtless arisen from the numerous computations involved in the compilation of data. But I believe that the statistics are probably free from major errors.

Coins are abbreviated as follows: b = blanca, c = corona, ca = carlin, g = groat, n = navarro, and r = real.

QUANTITIES OF GOLD, SILVER, AND VELLON MINTED

A GOLD

Date	Marks of Standard Fineness	Grams of Pure Gold	Coins	Monetary Yield		
				£	s.	d.
Dec. 25, 1377-July 9, 1379.	53.5	12,769.2	3,481.3c	5,221	18	0
June 19, 1381-May 22, 1382	31.6	7,216.1	2,056.4c	3,084	11	0
Feb. 27-Dec. 18, 1482.....	31.2	7,446.5	2,248.3r	10,342	7	8
Jan. 24, 1484-Feb. 8, 1485.	19.8	4,712.6	1,422.9r	6,687	9	3
Jan. 17-Dec. 20, 1486.....	15.7	3,746.9	1,131.3r	5,430	8	3
Mar. 24, 1487-Dec. 28, 1493	1,366.8	318,852.0	983,128.9n	521,583	1	10
Total.....	1,518.6	354,743.3		552,349	16	9

B SILVER

Date	Marks of Standard Fineness	Grams of Pure Silver	Coins	Monetary Yield		
				£	s.	d.
Oct. 29, 1375-Mar. 14, 1376	6,461.1	1,272,765.5	814,101.1c	47,489	4	7
Dec. 25, 1377-July 9, 1379.	54,653.6	10,766,227.1	6,886,347.7c	344,317	7	8
April 5, 1380-Feb. 1, 1381.	1,595.4	198,491.7	201,020.0c	10,051	0	0
Mar. 10, 1384-Oct. 18, 1385	13,890.1	2,152,578.6	6,526,895.0g	100,017	17	0
Jan. 27-Aug. 13, 1390....	1,220.7	151,860.9	351,556.8g	8,788	18	5
July 31, 1428-Nov. 30, 1429	7,815.0	854,133.9	625,200.0g	62,520	0	0
Dec. 2, 1429-Feb. 8, 1430..	1,579.2	98,238.1	126,336.0b	12,633	12	0
Feb. 15-May 26, 1430.....	5,471.4	226,908.1	437,712.0b	43,771	4	0
Aug. 16, 1430-Aug. 16, 1432	15,115.9	548,520.9	1,269,735.6b	126,973	11	2
Sept. 24, 1431-Aug. 8, 1432	3,500.5	417,362.6	280,040.0ca	28,004	0	0
Dec. 20, 1481-Jan. 16, 1484	447.2	40,559.3	41,729.6g	5,563	18	11
Total.....	111,750.1	16,727,646.7		790,130	13	9

¹ The guesses have been controlled by the ratios between the different types of coins struck in other periods.

² *Vide supra*, Appendix I.

C VELLON

Date	Marks of Pure Silver	Marks of Standard Bullion	Monetary Yield		
			£	s.	d.
April 1-20, 1382.....	180.5	1,083.0	2,924	2	0
?, 1382-?.	57.2	686.4	875	3	2
Oct. 31, 1383.....	555.6	3,333.3	9,000	0	0
Sept. 20, 1428-Feb. 28, 1429.....	10.4	207.4	259	5	0
Sept. 30, 1428-Jan. 31, 1429.....	224.5	2,108.0	3,794	8	0
Sept. 8, 1430-?.	8.4	483.8	604	15	0
Apr. 1-Aug. 8, 1432.....	131.3	1,181.7	2,363	8	0
Dec. 20, 1482-Jan. 31, 1485.....	36.4	698.9	1,490	19	9
Feb. 19, 1483-Mar. 16, 1485.....	7.9	284.4	417	2	5
Apr. 4, 1487-Dec. 18, 1493.....	476.9	12,486.1	26,637	0	3
Apr. 4, 1487-Oct. 21, 1493.....	15.4	739.2	1,084	3	2
Total.....	1,704.5	23,292.2	49,450	6	9

The most striking phenomena revealed by the above table are the utter inactivity of the mint during most of the period under investigation and the concentration of coinage in three short intervals — 1377-1390, 1428-1432, and 1481-1494.

As has been indicated, the output of money was probably heavy in 1351-1355.¹ No data are available for the two decades following the abjuration of coinage by Charles the Bad in 1355, but apparently the mints were reopened by 1375. In accordance with the coronal pledge of 1390,² Charles the Noble kept the mints closed during the remainder of his long reign. But the heaviest coinage during our period occurred in 1428-1432, when the patriotic zeal aroused by Castilian invasion induced individuals and institutions to advance plate to the Crown, and when successive increases in the price of silver attracted specie to the mints. Prior to the enormous emission resulting from the highly favorable bimetallic ratio in 1487-1493 the output of gold was infinitesimal.

If we lump silver and vellon money together, the pure silver struck in Navarre was about $3 \frac{1}{3}$ times as high as in Valencia in 1410-1500 and approximately 14 per cent of the total minted in England in 1377-1500. The pure gold coined in Navarre was roughly 0.68 per cent of the English output in 1377-1500 and about 8 per cent of that of Valencia in 1382-1500.³ The monetary yield of vellon was much greater than in Valencia, which apparently had several times the population and wealth of the Pyrenean kingdom.⁴

¹ *Vide supra*, pp. 122-123.

² In consideration of 30,000 florins.

³ Cf. Ethel Stokes, "Tables of Bullion Coined," *Numismatic Chronicle*, 5th Series, IX, 27-69; pp. 209-210 *supra*.

⁴ At best one can only guess at the population of either kingdom. But the most reliable material accessible (José Yanguas y Miranda, *Diccionario de Antigüedades del Reino de Navarra* [Pamplona, 1840], II, 722ff. and Tomás González, *Censo de Población* [Madrid, 1829], pp. 160-170, 390) supports the hypothesis that the Valencian population was much larger than the Navarrese. As to the greater wealth of the Mediterranean kingdom there can be little doubt.

APPENDIX III

COMMODITY PRICES IN VALENCIA

To conserve space, the following abbreviations of metrological units are used in the price tables in Appendices III-V.

ABBREVIATIONS OF WEIGHTS AND MEASURES

@	.....	arroba	k	.....	cántara
ad	.....	almodf	lb	.....	pound (libra)
al	.....	almud	12 lb	.....	12 pounds
bot	.....	bottle (frasco)	lb c	.....	pound, <i>carnicera</i>
ba	.....	barchilla	m	.....	1000
ca	.....	cahiz	p	.....	carapito
doz	.....	dozen (docena)	q	.....	quintal
f	.....	fanega	qu	.....	quire (mano)
g	.....	load (carga)	st	.....	string (cuerda or forch)
12 g	.....	12 loads			

Approximate metrical equivalents of these units may be found in Chapters II, V, and VIII.

A brief description of the method used in computing annual averages is given in Chapter II. More detailed information is available in my *American Treasure and the Price Revolution in Spain, 1501-1650* (Cambridge, Massachusetts, 1934), pp. 309-310.

The Valencian names of the commodities in Section A occur in Section B. At the beginning of Section C the Valencian equivalents of the articles absent from Section B are listed in parentheses.

Equivalences of the penny in fine gold and silver appear in Table 2, p. 38 *supra*. The exponents indicate the number of quotations included in each annual average or used as controls.

MONEY, PRICES, AND WAGES

A 1380-1412

(in pence)

Commodities	Units	1380	1381	1389	1390	1392	1393
1 Bricks.....	m	....	....	....	....	....	480.0 ¹
2 Iron gratings.....	lb	14.0	13.0	....	....	....	....
3 Lime.....	g	56.0	72.0	63.3 ⁴	74.0	54.5 ⁵	47.1 ⁹
4 Nails, large.....	lb	12.0	12.0	13.0 ²	....	12.0 ⁸	12.5 ⁷
5 Plaster of Paris.....	ca	144.0	....	....	....	96.0 ¹	96.0 ³
6 Sand.....	12 g	16.0	15.0	13.0 ²	....	12.0 ¹	12.0 ²
	Units	1395	1396	1397	1398	1399	1400
1 Bricks.....	m	480.0 ⁶	480.0 ⁶	480.0 ⁸	....	600.0	480.0
2 Iron gratings.....	lb	....	10.0 ¹	....	....	....	....
3 Lime.....	g	54.8 ⁵	56.7 ³	60.0 ²	66.0 ²	46.4	43.7
4 Nails, large.....	lb	12.0 ⁴	12.0 ⁴	12.0 ¹	12.0 ¹	12.0	14.0
5 Plaster of Paris.....	ca	96.0 ⁶	96.0 ⁴	96.0 ¹	96.0 ¹	96.0	....
6 Sand.....	12 g	18.0 ⁶	14.0 ⁷	12.0 ⁴	12.0 ²	18.0	22.0
	Units	1401	1402	1403	1404	1405	1406
1 Bricks.....	m	....	....	....	....	....	456.0
2 Iron gratings.....	lb	9.0	9.0	....	....	11.0	9.0
3 Lime.....	g	....	48.0	42.8	44.6	44.6	48.0
4 Nails, large.....	lb	12.0	10.5	11.5	12.5	11.0	12.0
5 Plaster of Paris.....	ca	....	84.0	84.0	78.0	78.0	76.0
6 Sand.....	12 g	....	18.0	18.0	14.0	14.0	14.0
	Units	1407	1408	1409	1410	1411	1412
1 Bricks.....	m	429.3	....	....	456.0	....	....
2 Iron gratings.....	lb	....	8.0	11.0	9.0	10.0	10.0
3 Lime.....	g	34.0	44.6	....	48.0	....	54.0
4 Nails, large.....	lb	12.0	12.0	12.0	12.0	12.0	11.0
5 Plaster of Paris.....	ca	78.0	78.0	82.5
6 Sand.....	12 g	15.3	14.0	14.0

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B 1413-1450

(in pence)

COMMODITIES		English	Valencian	Units	1413	1414	1415	1416
1	Beef	.....	Carn de vaca.....	lb c	....	8.7 ^b	....	....
2	Bricks	.....	Rajoles.....	m	480.0 ¹	....	....	555.0 ²
3	Carob beans	.....	Garrofos.....	@	....	....	....	....
4	Cheese	.....	Formatge.....	lb	....	....	....	....
5	Firewood	.....	Llanya.....	q	15.4 ²	18.2 ²	....	17.1 ²
6	*Fish, fresh	.....	Peix.....	lb	....	3.8 ²	....	....
7	Flax	.....	Lli.....	@	....	....	....	252.4 ⁴
8	*Hake	.....	Lluç.....	doz	....	114.0 ⁴	....	....
9	Hens	.....	Gallines.....	each	25.2 ¹	....	23.4 ¹	31.5 ¹
10	Iron gratings	.....	Reixes.....	lb	....	....	9.0 ¹	9.0 ²
11	Lime	.....	Cals.....	g	56.1 ¹¹	....	55.0 ²	64.6 ¹⁰
12	Mutton	.....	Moltó.....	lb c	....	11.8 ¹²	12.5 ²	....
13	Nails, large	.....	Claus.....	lb	12.0 ¹	....	11.5 ²	10.5 ²
14	Olive oil	.....	Oli.....	@	111.3 ¹	105.4 ¹	112.6 ²	108.2 ¹
15	Plaster of Paris	.....	Algeps.....	ca	78.0 ²	....	72.0 ¹	72.0 ⁴
16	Rice	.....	Arroç.....	lb	....	....	....	....
17	Salt	.....	Sal.....	bs	....	....	....	14.4 ¹
18	Sand	.....	Arena.....	12 g	14.0 ²	....	14.0 ¹	14.0 ¹
19	*Sardines	.....	Sardines.....	m	....	180.0 ¹	281.8 ²	....
20	Straw	.....	Palla.....	@	....	....	....	7.9 ²
21	*Tuna fish	.....	Tonyina.....	lb	....	5.7 ²	5.0 ⁴	....
22	Wax candles	.....	Candelas de cera	lb	16.0 ²	....	20.0 ²	20.7 ²
23	Wheat	.....	Forment or Blat	f	98.0 ²	70.2 ⁴	....	....
24	Wine	.....	Vi.....	k	....	....	....	10.4 ²

	Units	1417	1418	1419	1420	1421	1422
1	Beef	.....	.....	.....	8.1 ⁴	....	7.6 ²
2	Bricks	.....	583.2 ¹	497.5 ⁴	393.6 ¹	500.0 ¹	480.0 ¹
3	Carob beans	.....	....	12.5 ¹	12.0 ¹	8.0 ¹	13.0 ¹
4	Cheese	.....	3.3 ²	3.0 ²	....	4.0 ⁴	4.0 ²
5	Firewood	.....	19.4 ⁴	19.0 ²	15.5 ¹	17.1 ²	14.8 ¹
6	*Fish, fresh	.....	....	....	....	....	....
7	Flax	.....	256.9 ²	....	....	187.2 ²	246.0 ²
8	*Hake	.....	....	....	151.6 ¹	106.0 ¹	111.7 ¹
9	Hens	.....	20.1 ²	31.1 ⁴	29.9 ¹	30.5 ¹	26.8 ¹
10	Iron gratings	.....	....	....	9.0 ¹	....	9.0 ²
11	Lime	.....	64.7 ⁴	61.3 ¹²	53.5 ¹¹	....	79.0 ¹
12	Mutton	.....	12.0 ¹	....	12.0 ⁴	12.0 ¹²	12.0 ²
13	Nails, large	.....	9.5 ²	10.5 ⁷	11.0 ²	12.5 ²	12.0 ²
14	Olive oil	.....	110.6 ²	100.2 ²	115.2 ¹	104.1 ⁷	90.1 ⁴
15	Plaster of Paris	.....	72.0 ²	72.0 ⁴	72.0 ²	72.0 ²	66.0 ²
16	Rice	.....	1.9 ¹	1.6 ¹	....	1.5 ¹	....
17	Salt	.....	14.0 ²	14.0 ²	14.0 ¹	14.0 ⁷	14.0 ¹
18	Sand	.....	14.0 ²	....	14.0 ¹	15.0 ¹	....
19	*Sardines	.....	....	151.8 ¹	....	189.8 ²	....
20	Straw	.....	8.0 ²	8.5 ⁴	....	5.8 ⁷	5.0 ²
21	*Tuna fish	.....	....	....	....	5.0 ⁴	....
22	Wax candles	.....	18.0 ¹	18.0 ¹	15.0 ¹	14.0 ²	14.0 ²
23	Wheat	.....	51.0 ²	....	....	67.9 ¹²	87.1 ¹²
24	Wine	.....	10.5 ²	11.7 ¹	....	10.1 ²	10.5 ⁴

⁸ Not included in the general index numbers in Table 4.

MONEY, PRICES, AND WAGES

	Units	1423	1424	1425	1426	1427	1428	1429
1	Beef.....	lb c	7.0 ³	8.0 ¹	8.0 ⁸	8.0 ¹	9.0 ⁹	9.0 ⁸
2	Bricks.....	m	416.0 ³	510.0 ³	510.0 ¹	480.0 ⁶	480.0 ³	475.0 ³
3	Carob beans..	@	....	12.5 ⁴	14.0 ²	14.7 ⁹	13.3 ⁴	11.8 ³
4	Cheese.....	lb	....	4.0 ¹	2.9 ³	3.8 ⁷	5.3 ⁸	5.5 ¹
5	Firewood.....	q	16.0 ¹	16.9 ⁹	16.0 ¹⁰	15.5 ⁷	16.0 ⁶	17.2 ¹⁰
6	*Fish, fresh....	lb	4.0 ³	5.0 ¹	3.0 ¹	....	4.8 ³	6.0 ¹
7	Flax.....	@	270.0 ³	270.5 ⁹	....	255.7 ⁴	....	335.8 ¹⁸
8	*Hake.....	doz	....	....	....	....	168.0 ²	132.0 ¹
9	Hens.....	each	....	22.1 ¹	30.1 ²	28.7 ¹	37.4 ¹	23.4 ¹
10	Iron gratings .	lb	9.0 ¹	....	8.3 ⁴	9.3 ³	....	10.7 ³
11	Lime.....	g	55.0 ²	66.0 ¹	63.5 ³	55.8 ⁸	65.3 ⁹	63.5 ⁹
12	Mutton.....	lb c	11.5 ¹⁶	11.8 ¹⁶	12.0 ¹⁵	12.0 ²	13.0 ¹⁵	13.0 ¹⁰
13	Nails, large...	lb	10.7 ⁶	10.0 ¹	11.0 ⁵	10.1 ²	9.5 ⁴	9.8 ⁵
14	Olive oil.....	@	92.4 ³	76.4 ⁴	70.2 ⁷	88.9 ⁸	93.8 ⁸	115.1 ⁶
15	Plaster of Paris	ca	60.0 ³	72.0 ²	81.0 ⁶	66.0 ⁶	66.0 ⁶	66.0 ⁴
16	Rice.....	lb	....	....	....	....	5.0 ¹	6.0 ¹
17	Salt.....	bs	....	14.0 ⁷	14.0 ²	14.0 ⁸	14.0 ²	14.0 ²
18	Sand.....	12 g	14.0 ²	20.0 ²	18.0 ²	20.5 ¹	....	....
19	*Sardines.....	m	....	350.1 ²	....	156.0 ²	239.1 ²	192.0 ¹
20	Straw.....	@	5.0 ¹	7.3 ⁴	7.0 ⁶	7.2 ⁸	5.7 ²	7.3 ⁶
21	*Tuna fish.....	lb	....	4.4 ⁶	3.5 ²	....	2.2 ²	....
22	Wax candles..	lb	14.0 ²	....	14.0 ⁷	14.0 ²³	14.0 ¹⁴	16.5 ¹
23	Wheat.....	f	67.3 ¹⁴	69.8 ¹⁴	72.4 ¹⁶	75.5 ¹⁶	76.1 ¹⁶	60.9 ¹⁴
24	Wine.....	k	....	11.7 ⁴	20.6 ¹³	22.9 ¹¹	23.1 ¹⁵	12.3 ⁵

	Units	1430	1431	1432	1433	1434	1435	1436
1	Beef.....	lb c	9.0 ²	8.0 ⁸	9.0 ⁶	9.0 ⁵	9.0 ⁴	9.7 ⁷
2	Bricks.....	m	495.0 ²	492.0 ²	471.0 ⁶	480.0 ²	....	480.0 ⁴
3	Carob beans..	@	11.8 ⁴	15.0 ¹	13.8 ⁴	....	10.0 ¹	9.3 ³
4	Cheese.....	lb	....	....	4.5 ⁵	....	3.6 ¹	....
5	Firewood.....	q	16.5 ⁵	16.8 ⁹	16.0 ⁵	16.5 ²	17.2 ⁷	17.0 ⁶
6	*Fish, fresh....	lb	....	5.0 ³	4.4 ⁵	5.0 ¹	3.5 ¹	4.8 ¹
7	Flax.....	@	228.0 ¹⁴	....	....	....	251.8 ¹⁶	270.8 ¹⁵
8	*Hake.....	doz	....	144.0 ¹	144.0 ¹	138.0 ¹	....	143.6 ¹
9	Hens.....	each	27.5 ²	....	....	26.7 ²	29.4 ⁴	31.0 ⁴
10	Iron gratings .	lb	....	9.0 ¹	11.6 ⁹	9.3 ⁵	8.5 ¹	10.0 ²
11	Lime.....	g	66.8 ²	55.5 ²	61.4 ¹⁴	57.5 ¹⁰	61.5 ⁹	53.3 ⁵
12	Mutton.....	lb c	13.0 ¹⁸	13.0 ¹⁵	13.0 ¹⁶	12.3 ¹⁶	12.0 ¹⁶	12.0 ¹⁶
13	Nails, large...	lb	9.4 ⁵	10.7 ⁶	9.9 ¹²	9.8 ⁹	9.3 ³	10.0 ⁶
14	Olive oil.....	@	97.5 ⁴	121.8 ⁸	118.8 ⁴	113.1 ⁸	106.5 ²	125.3 ⁵
15	Plaster of Paris	ca	78.0 ⁶	75.0 ⁵	66.0 ⁷	66.0 ⁷	66.0 ⁶	63.0 ⁶
16	Rice.....	lb	3.0 ¹	3.5 ¹	3.0 ¹	....	....	4.0 ¹
17	Salt.....	bs	14.0 ¹	14.0 ²	14.0 ⁶	14.0 ²	14.0 ⁴	14.0 ²
18	Sand.....	12 g	24.0 ²	16.0 ¹	18.0 ¹	....	18.0 ²	....
19	*Sardines.....	m	252.0 ¹	....	352.7 ²	216.0 ¹	388.9 ¹	279.9 ⁴
20	Straw.....	@	6.5 ²	6.0 ³	7.0 ¹	....	7.0 ²	7.0 ²
21	*Tuna fish.....	lb	....	3.5 ⁸	3.0 ⁸	....	....	4.0 ¹
22	Wax candles..	lb	18.0 ²	13.5 ²	18.6 ¹	....	14.0 ¹	18.0 ¹
23	Wheat.....	f	76.9 ⁸	73.3 ⁵	89.3 ¹⁰	75.5 ⁹	70.5 ⁹	98.2 ¹⁴
24	Wine.....	k	14.5 ¹	8.1 ⁴	7.5 ⁸	13.7 ⁵	10.3 ⁴	17.9 ⁸

* Not included in the general index numbers in Table 4.

APPENDICES

	Units	1437	1438	1439	1440	1441	1442	1443
1	Beef.....	lb c	....	9.0 ¹¹	10.0 ⁸	10.0 ⁸	9.0 ⁴	9.0 ⁸
2	Bricks.....	m	510.0 ¹	462.5 ⁸	470.7 ¹⁰	....	510.0 ²	....
3	Carob beans..	@	....	....	....	....	....	....
4	Cheese.....	lb	....	4.0 ⁹	....	....	3.8 ⁸	4.0 ²
5	Firewood.....	q	17.0 ²	17.3 ¹⁷	15.8 ⁷	17.0 ¹¹	18.0 ⁸	18.5 ⁴
6	*Fish, fresh....	lb	....	3.0 ²	3.0 ¹	3.0 ²	4.3 ⁹	3.5 ⁶
7	Flax.....	@	....	285.5 ¹⁰	214.1 ¹	233.9 ²	....	255.1 ⁷
8	*Hake.....	dos	....	131.0 ⁸	159.0 ⁸	174.0 ⁴	152.0 ¹	102.0 ⁴
9	Hens.....	each	....	29.3 ¹⁰	26.7 ²	30.8 ⁴	34.0 ²	26.3 ¹
10	Iron gratings .	lb	....	9.8 ⁸	8.9 ⁹	9.5 ⁴	11.2 ⁸	....
11	Lime.....	g	64.0 ²	60.2 ¹⁷	58.0 ⁹	60.5 ¹⁸	71.0 ²	66.0 ⁶
12	Mutton.....	lb c	....	12.9 ¹⁸	13.3 ¹⁸	13.0 ¹²	13.0 ⁸	12.8 ¹⁰
13	Nails, large...	lb	9.0 ²	9.4 ¹¹	9.6 ¹⁸	9.5 ⁹	11.6 ¹⁸	12.0 ⁷
14	Olive oil.....	@	....	80.2 ²	99.6 ⁷	96.6 ²	80.9 ²	105.5 ⁸
15	Plaster of Paris	ca	69.4 ¹	60.5 ¹⁸	60.8 ¹⁸	67.2 ¹¹	65.3 ⁷	66.0 ⁴
16	Rice.....	lb	....	3.0 ¹	3.0 ¹	....	3.3 ⁶	3.4 ⁷
17	Salt.....	bs	....	14.0 ⁷	14.0 ⁹	14.0 ⁴	14.0 ¹¹	14.0 ⁴
18	Sand.....	12 g	27.3 ²	20.3 ²	20.2 ⁹	....	....	20.0 ²
19	*Sardines.....	m	....	328.8 ⁸	222.0 ¹	432.0 ⁸	....	192.0 ²
20	Straw.....	@	....	....	6.0 ¹	6.0 ¹	6.5 ²	6.0 ¹
21	*Tuna fish.....	lb	....	3.5 ⁸	4.5 ¹¹	5.1 ⁷	3.0 ⁴	3.0 ¹⁸
22	Wax candles..	lb	16.0 ¹	18.0 ²⁸	....	21.0 ²	13.6 ²	16.2 ⁸
23	Wheat.....	f	....	73.3 ¹⁸	83.3 ¹⁸	79.3 ¹⁸	70.9 ¹¹	81.3 ¹⁸
24	Wine.....	k	....	28.5 ⁸	22.0 ⁸	17.0 ⁸	9.7 ⁸	17.8 ⁸

	Units	1444	1445	1446	1447	1448	1449	1450
1	Beef.....	lb c	9.0 ⁴	....	9.0 ²	....	....	....
2	Bricks.....	m	510.0 ²	510.0	510.0 ¹	....	....	595.0 ¹
3	Carob beans..	@	11.5 ²	....	13.0 ¹	9.0 ¹	....	....
4	Cheese.....	lb	4.0 ⁸	....	3.9 ²	4.2 ²	3.6 ²	3.5 ²
5	Firewood.....	q	18.0 ¹⁴	....	18.0 ²	19.3 ⁶	15.9 ⁶	16.5 ²
6	*Fish, fresh....	lb	3.3 ⁴	....	4.4 ¹⁴	....	3.8 ¹⁸	....
7	Flax.....	@	291.8 ⁸	....	242.5 ⁴	217.5 ²	196.8 ⁷	211.0 ⁸
8	*Hake.....	dos	....	....	....	156.9 ²	223.4 ⁸	186.0 ²
9	Hens.....	each	....	....	33.4 ¹	30.2 ²	22.5 ²	27.0 ⁴
10	Iron gratings .	lb	10.0 ¹	....	....	....	....	....
11	Lime.....	g	63.0 ⁴	60.0	69.3 ²	56.0 ¹	59.0 ⁴	66.0 ¹
12	Mutton.....	lb c	12.0 ⁸	....	12.9 ¹⁸	....	12.0 ⁴	....
13	Nails, large...	lb	12.0 ⁴	10.7	12.0 ¹	10.5 ²	10.0 ²	10.0 ²
14	Olive oil.....	@	108.8 ⁸	....	118.4 ⁸	120.2 ⁴	75.0 ²	85.8 ⁸
15	Plaster of Paris	ca	63.0 ⁴	60.0	66.0 ¹	66.0 ²	66.0 ¹	48.0 ²
16	Rice.....	lb	3.3 ²	....	2.5 ⁷	....	2.0 ²	....
17	Salt.....	bs	14.0 ⁴	....	14.0 ⁷	14.0 ¹	14.0 ²	....
18	Sand.....	12 g	....	22.0	....	24.0 ¹	24.0 ¹	24.0 ¹
19	*Sardines.....	m	....	....	....	....	365.4 ²	391.5 ¹
20	Straw.....	@	8.0 ¹	....	6.5 ²	6.0 ¹	....	5.8 ²
21	*Tuna fish.....	lb	3.0 ⁷	....	3.0 ¹¹	3.7 ²	3.0 ⁶	3.6 ²
22	Wax candles..	lb	....	....	....	13.8 ⁸	13.0 ²	....
23	Wheat.....	f	71.2 ¹⁸	....	82.5 ¹⁸	65.3 ¹¹	63.3 ¹⁸	85.8 ¹¹
24	Wine.....	k	....	....	13.9 ¹⁸	21.3 ¹⁸	12.5 ¹⁸	14.4 ¹⁸

* Not included in the general index numbers in Table 4.

C 1451-1500

(in pence)

	Units	1451	1452	1453	1454	1455	1456
1	Bricks.....	m	....	....	480.0 ²	456.0 ²	456.0 ²
2	Cheese.....	lb	....	5.0 ⁵	3.5 ⁵	3.3 ¹⁵	3.5 ⁴
3	*Conger eel (congre)..	@	300.0 ²	330.0 ¹	480.0 ¹	310.7 ¹	341.5 ¹
4	Firewood.....	q	16.0 ⁸	16.0 ⁴	16.0 ⁶	15.7 ⁸	17.4 ⁰
5	Flax.....	@	222.0 ⁵	246.0 ²	231.0 ⁷	235.3 ¹⁰	211.5 ⁵
6	*Hake.....	doz	114.0 ⁸	120.0 ²	156.0 ¹	222.0 ²	....
7	Hens.....	each	20.1 ¹	....	35.3 ²	26.8 ⁴	27.3 ⁵
8	Lime.....	g	....	....	66.0 ¹	66.0 ¹	56.3 ⁴
9	Nails, large.....	lb	9.3 ¹	....	10.0 ⁵	12.3 ⁵	10.3 ⁵
10	Olive oil.....	@	84.4 ²	94.3 ⁵	94.5 ²	101.0 ²	115.7 ²
11	Onions (cebollas)....	st	....	....	....	6.0 ¹	....
12	Plaster of Paris.....	ca	....	....	69.4 ¹	64.0 ²	60.0 ⁵
13	Salt.....	bs	....	....	....	14.0 ¹¹	14.0 ¹⁰
14	*Sardines.....	m	336.0 ²	234.0 ²	271.4 ¹	216.0 ²	331.0 ²
15	Straw.....	@	6.0 ¹	6.5 ¹	....	6.5 ¹	6.5 ¹
16	Wax candles.....	lb	13.0 ²	12.6 ¹	11.8 ²	10.9 ⁵	....
17	Wheat.....	f	64.9 ⁷	70.5 ¹⁰	70.0 ¹²	60.9 ²⁶	62.4 ²⁹
18	Wine.....	k	16.1 ⁷	12.0 ⁵	11.0 ⁵	9.0 ²²	12.0 ²²

	Units	1457	1458	1459	1460	1461	1462
1	Bricks.....	m	446.0 ⁴	478.2 ²	432.0 ⁴	....	510.0 ¹
2	Cheese.....	lb	3.6 ⁸	3.4 ¹⁴	3.7 ⁷	3.8 ¹	....
3	*Conger eel.....	@	255.0 ¹	300.0 ¹	....	....	....
4	Firewood.....	q	14.0 ⁵	16.5 ²	18.2 ⁶	19.7 ⁵	19.0 ⁹
5	Flax.....	@	198.0 ⁷	212.3 ⁵	217.1 ²	222.5 ¹⁰	198.0 ²
6	*Hake.....	doz	143.6 ⁵	126.0 ²	....	107.0 ²	....
7	Hens.....	each	38.3 ¹	27.1 ⁴	23.1 ¹	....	....
8	Lime.....	g	49.5 ²	60.0 ²	57.7 ²	54.0 ¹	61.5 ⁴
9	Nails, large.....	lb	10.0 ¹	9.2 ⁹	9.0 ¹²	9.0 ¹	9.0 ⁷
10	Olive oil.....	@	117.5 ⁷	100.4 ⁹	108.9 ⁵	104.0 ⁷	102.8 ¹²
11	Onions.....	st	4.0 ¹	3.5 ¹	6.5 ¹	6.0 ¹	....
12	Plaster of Paris.....	ca	45.0 ⁴	42.0 ⁷	48.0 ¹⁰	48.0 ⁵	48.0 ²
13	Salt.....	bs	14.0 ¹²	14.0 ¹²	14.0 ¹¹	14.0 ¹¹	14.0 ¹
14	*Sardines.....	m	429.2 ²	417.6 ²	....	162.0 ¹	....
15	Straw.....	@	6.0 ¹	6.5 ²	....	6.5 ¹	6.0 ¹
16	Wax candles.....	lb	....	15.0 ⁵	16.7 ¹	....	....
17	Wheat.....	f	73.9 ²⁰	63.7 ²⁵	66.3 ²¹	62.5 ²⁴	57.8 ¹⁷
18	Wine.....	k	17.4 ²²	10.7 ²⁰	14.2 ²⁰	14.7 ¹²	12.0 ¹⁴

* Not included in the general index numbers in Table 4.

APPENDICES

	Units	1463	1464	1465	1466	1467	1468
1 Bricks.....	m	480.0 ¹	....	495.0 ²	....	....	....
2 Cheese.....	lb	....	3.8 ⁰	3.3 ⁸	3.7 ⁷	3.4 ⁸	2.8 ¹
3 *Conger eel.....	@	....	....	....	....	144.0 ¹	....
4 Firewood.....	q	15.9 ¹⁰	16.0 ³	15.5 ¹²	16.3 ¹⁷	14.5 ¹⁸	14.9 ¹⁸
5 Flax.....	@	232.7 ²	....	242.5 ¹⁰	241.5 ¹¹	223.0 ⁷	213.9 ¹⁰
6 *Hake.....	doz	....	....	66.0 ¹	132.0 ²	60.0 ¹	96.0 ¹
7 Hens.....	each	....	....	25.8 ¹	....	....	....
8 Lime.....	g	....	....	63.3 ³	....	60.0 ¹	55.5 ²
9 Nails, large.....	lb	9.7 ³	9.5 ²	9.0 ⁴	8.5 ⁶	9.0 ³	9.0 ¹
10 Olive oil.....	@	100.2 ⁶	89.5 ¹	77.6 ⁷	85.0 ¹⁰	124.9 ⁶	124.4 ⁶
11 Onions.....	st	4.5 ¹	6.0 ¹	5.5 ⁶	5.0 ¹	6.5 ²	5.0 ¹
12 Plaster of Paris.....	ca	48.0 ⁶	....	48.0 ³	....	....	48.0 ⁶
13 Salt.....	bs	14.0 ¹³	14.0 ¹¹	14.0 ¹¹	14.0 ¹⁰	14.2 ¹⁰	14.0 ²
14 *Sardines.....	m	....	....	....	....	....	222.0 ¹
15 Straw.....	@	5.8 ²	....	6.0 ²	....	6.0 ¹	5.0 ¹
16 Wax candles.....	lb	17.3 ¹	12.0 ¹	....	....	22.3 ⁸	18.6 ¹⁰
17 Wheat.....	f	81.1 ¹⁶	83.1 ²	71.0 ¹⁰	57.7 ¹⁴	73.6 ¹⁸	72.0 ¹⁸
18 Wine.....	k	8.5 ¹³	9.3 ¹³	9.9 ¹³	9.8 ²²	12.0 ²⁴	13.5 ¹³

	Units	1469	1470	1471	1472	1473	1474
1 Bricks.....	m	434.3 ²	440.0 ⁶	429.0 ⁸	432.0 ¹	432.0 ¹	429.0 ¹
2 Cheese.....	lb	....	....	....	....	....	....
3 *Conger eel.....	@	....	....	....	....	....	....
4 Firewood.....	q	15.0 ⁷	15.0 ¹⁶	14.5 ¹²	14.5 ¹⁰	13.5 ¹⁴	14.6 ⁸
5 Flax.....	@	240.0 ²	241.5 ⁶	240.5 ⁸	253.5 ⁶	246.9 ¹²	228.0 ¹²
6 *Hake.....	doz	84.0 ¹	90.0 ¹	72.0 ¹	144.0 ¹	90.0 ¹	144.0 ¹
7 Hens.....	each	....	....	....	....	....	....
8 Lime.....	g	57.9 ⁷	55.6 ¹⁰	57.4 ⁹	53.3 ²	55.3 ¹	54.0 ²
9 Nails, large.....	lb	8.1 ⁵	8.0 ²	8.0 ¹	....	8.0 ¹	12.0 ¹
10 Olive oil.....	@	115.2 ⁶	104.7 ⁷	104.5 ⁹	134.0 ⁶	107.3 ⁶	115.4 ⁷
11 Onions.....	st	5.0 ¹	....	6.0 ¹	5.0 ¹	5.5 ¹	5.5 ¹
12 Plaster of Paris.....	ca	48.0 ¹⁰	58.5 ¹²	54.0 ⁸	48.0 ⁶	48.0 ¹	54.0 ²
13 Salt.....	bs	....	....	....	....	....	....
14 *Sardines.....	m	240.0 ¹	276.0 ¹	180.0 ¹	156.0 ¹	240.0 ¹	....
15 Straw.....	@	5.0 ²	6.0 ¹	5.0 ¹	5.7 ²	5.0 ¹	6.0 ¹
16 Wax candles.....	lb	....	19.8 ¹	19.8 ¹	....	18.6 ¹	18.6 ¹
17 Wheat.....	f	77.6 ⁴	75.2 ²	67.5 ¹⁶	61.4 ²	95.4 ⁹	112.4 ¹⁶
18 Wine.....	k	12.0 ²	19.2 ¹²	20.3 ¹⁸	16.3 ¹⁸	13.1 ¹⁸	16.6 ¹⁸

* Not included in the general index numbers in Table 4.

MONEY, PRICES, AND WAGES

	Units	1475	1476	1477	1478	1479	1480
1 Bricks.....	m	411.0 ¹	408.0 ¹	....	....	360.0 ¹	360.0 ¹
2 Cheese.....	lb	....	....	....	....	....	....
3 *Conger eel.....	@	280.0 ¹	....	285.0 ¹	330.0 ¹	240.0 ¹	270.0 ¹
4 Firewood.....	q	14.0 ¹¹	14.5 ¹⁶	17.0 ¹⁸	14.5 ⁸	16.3 ⁸	15.0 ¹⁸
5 Flax.....	@	191.5 ⁹	217.1 ¹⁸	216.0 ²	274.5 ⁸	216.0 ²	252.0 ⁴
6 *Hake.....	doz	110.0 ⁸	102.0 ¹	132.0 ¹	132.0 ¹	144.0 ¹	102.0 ¹
7 Hens.....	each	....	....	....	....	....	....
8 Lime.....	g	54.0 ¹	61.5 ²	....	....	66.0 ¹	50.0 ²
9 Nails, large.....	lb	....	....	....	....	....	7.0 ²
10 Olive oil.....	@	88.0 ⁹	88.6 ⁷	69.0 ⁹	70.8 ⁷	85.1 ⁸	100.1 ⁷
11 Onions.....	st	....	5.5 ¹	....	5.0 ¹	6.0 ¹	6.5 ¹
12 Plaster of Paris.....	ca	48.0 ¹	....	....	....	54.0 ¹	52.5 ⁴
13 Salt.....	bs	....	....	....	....	....	....
14 *Sardines.....	m	180.0 ¹	360.0 ¹	444.0 ¹	444.0 ¹	303.0 ²	....
15 Straw.....	@	4.5 ¹	6.5 ¹	....	6.0 ¹	5.8 ²	5.5 ¹
16 Wax candles.....	lb	....	18.6 ¹	....	....	....	....
17 Wheat.....	f	76.3 ⁸	69.3 ¹⁰	68.6 ⁸	89.5 ¹⁰	82.2 ¹⁸	64.7 ¹⁸
18 Wine.....	k	21.3 ¹¹	10.1 ¹²	10.1 ¹⁸	10.2 ¹⁰	18.8 ¹⁰	24.2 ⁸

	Units	1481	1482	1483	1484	1485	1486
1 Bricks.....	m	360.0 ¹	360.0 ¹	....	480.0 ¹	342.0 ²	500.0 ²
2 Cheese.....	lb	....	....	....	....	4.0 ¹	....
3 *Conger eel.....	@	324.0 ¹	360.0 ¹	180.0 ¹	228.0 ¹	360.0 ¹	288.0 ¹
4 Firewood.....	q	13.0 ¹⁰	15.3 ⁷	14.8 ⁹	14.0 ¹¹	13.7 ¹²	12.5 ¹¹
5 Flax.....	@	200.9 ⁸	249.7 ¹	219.0 ⁸	191.2 ²	185.8 ⁸	204.0 ²
6 *Hake.....	doz	90.0 ¹	114.0 ¹	78.0 ¹	126.0 ¹	741.0 ²	144.0 ¹
7 Hens.....	each	30.8 ⁴	....	....	....	33.0 ²	....
8 Lime.....	g	54.0 ¹	....	....	52.2 ²	47.8 ⁸	53.7 ⁷
9 Nails, large.....	lb	6.9 ¹⁴	7.0 ¹	....	....	6.0 ²	....
10 Olive oil.....	@	98.3 ⁹	120.4 ⁹	123.9 ⁷	111.4 ⁷	118.5 ⁹	124.8 ⁹
11 Onions.....	st	6.0 ¹	6.0 ¹	8.0 ¹	8.0 ¹	5.0 ¹	6.0 ¹
12 Plaster of Paris.....	ca	54.0 ²	54.0 ¹	....	54.0 ²	48.0 ⁷	48.0 ⁴
13 Salt.....	bs	....	....	....	....	....	....
14 *Sardines.....	m	....	294.0 ¹	180.0 ¹	163.0 ²	306.0 ²	222.0 ²
15 Straw.....	@	6.0 ¹	6.0 ²	6.0 ²	6.0 ¹	6.5 ²	4.0 ¹
16 Wax candles.....	lb	....	....	14.8 ²	14.8 ¹	14.8 ¹	18.6 ¹
17 Wheat.....	f	61.4 ¹²	63.6 ¹¹	71.6 ¹²	79.7 ¹²	85.8 ¹⁸	75.4 ¹¹
18 Wine.....	k	13.6 ¹⁰	15.4 ¹⁰	10.4 ¹⁰	12.6 ¹¹	13.3 ¹⁰	12.0 ¹¹

* Not included in the general index numbers in Table 4.

APPENDICES

	Units	1487	1488	1489	1490	1491	1492	1493	
1	Bricks.....	m	360.0 ²	332.0 ⁵	343.5 ⁵	....	349.0 ²	....	314.0 ²
2	Cheese.....	lb	....	3.0 ²	3.0 ¹²	3.0 ⁵	6.0 ¹	....	....
3	*Conger eel....	@	306.0 ¹	300.0 ¹	312.0 ¹	....	396.0 ¹	288.0 ¹	....
4	Firewood.....	q	13.5 ⁹	12.5 ⁵	13.6 ¹⁰	....	13.6 ⁵	13.9 ¹¹	14.7 ¹²
5	Flax.....	@	219.0 ⁵	234.0 ⁵	243.0 ⁹	....	236.5 ¹⁰	243.5 ⁵	214.5 ²
6	*Hake.....	doz	105.0 ¹	120.0 ²	130.0 ¹	108.0 ²	132.0 ¹	....	149.0 ¹
7	Hens.....	each	....	....	25.2 ¹	39.6 ⁴	....	38.5 ¹	29.0 ²
8	Lime.....	g	51.7 ⁵	56.5 ²	58.1 ⁵	48.8 ⁴	58.5 ⁵	45.0 ¹	44.2 ²
9	Nails, large...	lb	....	7.0 ¹	6.8 ⁴	....	6.5 ²	7.0 ¹	....
10	Olive oil.....	@	91.5 ⁷	85.1 ⁵	83.7 ⁷	....	79.7 ⁹	89.8 ²	76.2 ²
11	Onions.....	st	4.0 ¹	6.0 ¹	6.0 ²	....	....	....	6.0 ¹
12	Plaster of Paris	ca	48.0 ⁵	48.0 ⁵	48.0 ⁷	48.0 ²	48.0 ⁵	48.2 ²	44.8 ²
13	Salt.....	bs	....	....	14.0 ²	14.0 ²	....	14.0 ⁵	....
14	*Sardines.....	m	135.0 ²	....	240.0 ¹	....	108.0 ¹	....	....
15	Straw.....	@	6.0 ¹	7.0 ¹	6.0 ¹	....	....	7.5 ¹	4.0 ¹
16	Wax candles..	lb	....	....	....	....	19.3 ¹	20.4 ¹	21.4 ²
17	Wheat.....	f	73.5 ¹⁴	69.5 ¹¹	79.1 ¹²	....	80.2 ¹²	57.1 ¹²	61.9 ⁵
18	Wine.....	k	14.9 ¹²	15.0 ⁷	11.8 ¹⁰	....	10.6 ¹⁰	14.1 ¹²	18.8 ¹¹

	Units	1494	1495	1496	1497	1498	1499	1500	
1	Bricks.....	m	360.0 ¹	....	360.0 ¹	300.0 ¹	320.0 ¹	328.0 ¹	300.0 ¹
2	Cheese.....	lb	....	3.5 ¹⁴	....	....	....	....	....
3	*Conger eel....	@	....	288.0 ¹	....	....	....	....	....
4	Firewood.....	q	13.5 ⁹	14.6 ¹²	14.8 ¹⁴	15.7 ¹¹	14.5 ⁵	14.3 ⁴	14.5 ⁹
5	Flax.....	@	213.3 ⁵	206.8 ⁷	199.2 ¹	222.0 ⁴	229.9 ⁵	213.0 ²	178.5 ⁵
6	*Hake.....	doz	....	108.0 ¹⁰	....	....	....	....	....
7	Hens.....	each	32.3 ²	28.9 ⁴	22.9 ¹	35.1 ¹	30.3 ¹	....	....
8	Lime.....	g	43.0 ²	66.0 ¹	51.3 ⁴	47.2 ²	42.0 ²	43.0 ¹	45.2 ²
9	Nails, large...	lb	....	7.0 ⁵	6.7 ⁴	....	8.0 ²	6.9 ⁵	6.0 ¹
10	Olive oil.....	@	91.2 ⁹	101.9 ¹⁰	134.9 ¹¹	121.5 ¹¹	117.0 ¹²	77.6 ⁵	74.4 ⁷
11	Onions.....	st	5.0 ¹	5.0 ¹	5.5 ¹	5.0 ¹	7.5 ¹	6.0 ¹	....
12	Plaster of Paris	ca	44.8 ¹	48.0 ⁵	48.0 ⁵	48.0 ²	48.0 ⁴	48.0 ²	....
13	Salt.....	bs	....	14.0 ⁷	....	....	....	....	....
14	*Sardines.....	m	....	153.7 ⁴	....	....	....	....	....
15	Straw.....	@	5.0 ¹	5.5 ¹	6.0 ¹	6.0 ¹	6.5 ¹	6.0 ¹	4.0 ¹
16	Wax candles..	lb	20.0 ²	....	....	18.0 ²	14.8 ¹	13.6 ¹	....
17	Wheat.....	f	66.8 ⁵	65.7 ¹⁰	67.1 ¹²	70.2 ¹⁴	74.4 ⁹	67.0 ²	65.6 ¹¹
18	Wine.....	k	23.0 ²	20.8 ⁷	21.1 ²	17.4 ⁹	12.8 ¹²	17.0 ¹²	14.6 ⁷

* Not included in the general index numbers in Table 4.

APPENDIX IV

COMMODITY PRICES IN ARAGON

For abbreviations of the metrological units, *vide supra*, p. 213. Equivalences of the penny in fine gold appear in Table 11, p. 94 *supra*. The exponents indicate the number of quotations included in each annual average or used as controls. For fragmentary data prior to 1381, *vide Appendix XIII*.

APPENDICES

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COMMODITY PRICES IN ARAGON

(in pence)

COMMODITIES							
English	Spanish	Units	1381	1382	1383		
1 Barley.....	Cebada.....	ca	....	120.0 ²	....	
2 Nails, large.....	Trabaderos....	lb	4.7 ⁸	....	....
3 Oats.....	Avena.....	ca	....	120.0 ¹	....	
4 Olive oil.....	Accite.....	@	61.4 ⁵	85.0 ⁵	85.0 ²		
5 Paper, writing.....	Papel.....	qu	16.0 ²	16.0 ²	16.0 ²		
6 Plaster of Paris.....	Yeso.....	ad	....	....	....
7 Rye.....	Centeno.....	ca	....	144.0 ²	....	
8 Wheat.....	Trigo.....	ca	....	228.0 ²	204.0 ²		
	Units		1385	1386	1387	1397	1400
1 Barley.....	ca	216.0 ¹	167.0 ²	132.0 ¹	59.0 ²	120.0 ¹	
2 Nails, large.....	lb	....	....	....	....	....
3 Oats.....	ca	156.0 ¹	108.0 ²	108.0 ¹	....	120.0 ¹	
4 Olive oil.....	@	61.5 ⁸	66.6 ²	84.0 ²	60.5 ¹	....
5 Paper, writing.....	qu	15.0 ¹	16.0 ¹	....	16.0 ¹	....
6 Plaster of Paris.....	ad	....	....	....	....	....
7 Rye.....	ca	....	132.0 ¹	132.0 ¹	84.0 ²	192.0 ¹	
8 Wheat.....	ca	360.0 ¹	303.0 ²	240.0 ¹	175.2 ²	288.0 ¹	
	Units		1401	1402	1403	1404	1407
1 Barley.....	ca	180.0 ²	172.0 ⁴	....	....	87.3 ¹¹	
2 Nails, large.....	lb	....	7.9 ¹⁰	7.7 ⁴	....	7.0 ¹	
3 Oats.....	ca	144.0 ¹	140.0 ²	....	96.0 ¹	....
4 Olive oil.....	@	56.0 ¹	....	93.0 ¹	60.0 ¹	....
5 Paper, writing.....	qu	....	13.7 ⁴	12.0 ¹	....	16.0 ²	
6 Plaster of Paris.....	ad	....	....	....	....	....
7 Rye.....	ca	288.0 ¹	264.0 ¹	....	156.0 ¹	144.0 ¹	
8 Wheat.....	ca	402.0 ²	338.4 ⁷	....	....	....
	Units		1408	1409	1412	1413	1414
1 Barley.....	ca	114.0 ²	90.0 ⁴	240.0 ¹	336.0 ¹	84.0 ¹	
2 Nails, large.....	lb	....	....	....	....	....
3 Oats.....	ca	96.0 ¹	72.0 ²	192.0 ¹	276.0 ¹	72.0 ¹	
4 Olive oil.....	@	60.0 ¹	66.0 ¹	62.0 ²	84.7 ¹⁴	92.8 ¹²	
5 Paper, writing.....	qu	16.0 ²	16.0 ²	....	14.0 ¹	15.0 ¹	
6 Plaster of Paris.....	ad	....	....	....	....	....
7 Rye.....	ca	144.0 ¹	114.9 ⁷	....	....	....
8 Wheat.....	ca	254.7 ²	210.0 ²	336.0 ¹	474.0 ¹	....

MONEY, PRICES, AND WAGES

	Units	1416	1417	1418	1421	1423
1 Barley.....	ca	85.0 ⁸	110.0 ⁹	73.1 ¹¹	148.0 ¹	144.0 ¹
2 Nails, large.....	lb	....	....	6.0 ²	....	6.4 ¹⁸
3 Oats.....	ca	78.0 ¹	90.0 ²	....	108.0 ¹	120.0 ¹
4 Olive oil.....	@	74.0 ⁶	99.3 ⁴	92.0 ⁸	88.0 ⁴	98.0 ⁸
5 Paper, writing.....	qu	13.5 ⁵	15.0 ³	14.3 ⁴	....	13.8 ⁴
6 Plaster of Paris.....	ad	144.0 ¹	198.0 ¹	180.0 ¹	....	....
7 Rye.....	ca	108.0 ²	96.0 ²	96.0 ²	....	....
8 Wheat.....	ca	180.0 ²	185.3 ²	240.0 ²	354.0 ²	256.0 ¹⁰

	Units	1424	1425	1427	1429	1430
1 Barley.....	ca	....	216.0 ⁸	....	163.5 ⁵	102.0 ⁴
2 Nails, large.....	lb	6.5 ²	....	....	....	....
3 Oats.....	ca	....	....	....	135.0 ¹	....
4 Olive oil.....	@	98.0 ⁶	78.0 ⁴	89.0 ²	90.0 ²	95.0 ²
5 Paper, writing.....	qu	13.0 ²	....	....	....	14.0 ²
6 Plaster of Paris.....	ad	....	....	....	....	....
7 Rye.....	ca	....	249.0 ²	176.0 ¹	168.0 ¹	....
8 Wheat.....	ca	270.0 ¹	270.0 ⁵	228.0 ¹	252.0 ²	....

	Units	1432	1433	1434	1435	1436
1 Barley.....	ca	114.0 ⁴	113.5 ⁴	129.0 ⁴	100.5 ⁴	108.0 ¹
2 Nails, large.....	lb	....	....	....	....	6.0 ²
3 Oats.....	ca	99.0 ⁴	88.0 ²	94.0 ²	78.0 ²	84.0 ¹
4 Olive oil.....	@	85.3 ²	74.0 ²	92.0 ¹	98.0 ²	....
5 Paper, writing.....	qu	14.0 ²	14.0 ²	14.0 ²	13.0 ⁵	....
6 Plaster of Paris.....	ad	....	....	....	....	144.0 ⁴
7 Rye.....	ca	120.0 ¹	144.0 ¹	150.0 ²	180.0 ¹	180.0 ¹
8 Wheat.....	ca	240.0 ¹	228.0 ²	240.0 ¹	240.0 ¹	240.0 ¹

	Units	1437	1438	1439	1440	1441
1 Barley.....	ca	137.0 ²	108.0 ¹	124.0 ²	120.0 ²	120.0 ¹
2 Nails, large.....	lb	....	....	....	5.9 ⁶	....
3 Oats.....	ca	108.0 ²	96.0 ¹	....	96.0 ²	96.0 ¹
4 Olive oil.....	@	80.7 ²	90.0 ²	87.0 ²	92.0 ¹	101.0 ²
5 Paper, writing.....	qu	14.0 ²	15.7 ²	15.3 ²	16.0 ⁹	15.5 ²
6 Plaster of Paris.....	ad	....	....	....	144.0 ²	....
7 Rye.....	ca	168.0 ¹	....	....	....	....
8 Wheat.....	ca	252.0 ¹	208.0 ²	240.0 ¹	324.0 ¹	....

	Units	1442	1443	1444	1445	1446
1 Barley.....	ca	....	120.0 ²	132.0 ⁶	180.0 ²	99.0 ²
2 Nails, large.....	lb	6.4 ⁴	6.0 ²	....	6.0 ¹	....
3 Oats.....	ca	....	....	132.0 ¹	144.0 ¹	81.0 ²
4 Olive oil.....	@	....	99.0 ²	84.0 ²	84.0 ⁷	91.7 ⁴
5 Paper, writing.....	qu	14.3 ⁷	14.0 ⁴	14.0 ⁴	14.0 ⁴	13.8 ²
6 Plaster of Paris.....	ad	144.0 ²	....	....	144.0 ¹	144.0 ²
7 Rye.....	ca	....	204.0 ¹	....	....	....
8 Wheat.....	ca	....	304.0 ²	240.0 ²	360.0 ¹	176.0 ²

APPENDICES

	Units	1447	1448	1449	1450	1451
1 Barley.....	ca	88.0 ⁸	92.0 ⁸	108.0 ⁵	108.0 ¹	84.0 ²
2 Nails, large.....	lb	6.0 ²	6.0 ¹	6.5 ⁸	6.4 ⁴	....
3 Oats.....	ca	60.0 ¹	79.0 ²	96.0 ¹	....	72.0 ²
4 Olive oil.....	@	75.4 ⁶	62.0 ²	64.3 ⁴	67.3 ²	....
5 Paper, writing.....	qu	12.7 ⁴	13.0 ²	12.7 ⁴	....	13.8 ⁷
6 Plaster of Paris.....	ad	144.0 ⁵	144.0 ¹	144.0 ⁴	130.5 ⁹	....
7 Rye.....	ca	....	....	120.0 ¹	....	....
8 Wheat.....	ca	156.0 ¹	174.0 ²	216.0 ²	246.0 ⁴	324.0 ¹

	Units	1452	1453	1454	1456	1457
1 Barley.....	ca	193.6 ⁸	....	96.0 ²	135.0 ⁴	108.0 ²
2 Nails, large.....	lb	8.0 ¹	6.0 ²	6.1 ²	6.7 ²	....
3 Oats.....	ca	156.0 ¹	....	84.0 ²	120.0 ²	89.0 ²
4 Olive oil.....	@	....	66.0 ¹	62.0 ²	83.2 ²	92.0 ²
5 Paper, writing.....	qu	12.0 ²	12.0 ¹	13.0 ²	12.0 ⁴	11.5 ²
6 Plaster of Paris.....	ad	....	146.0 ⁵	144.0 ²	122.3 ²	....
7 Rye.....	ca	....	....	120.0 ¹	108.0 ¹	120.0 ¹
8 Wheat.....	ca	300.0 ¹	....	198.0 ²	255.0 ⁴	240.0 ¹

	Units	1459	1460	1462	1463	1464
1 Barley.....	ca	144.0 ²	108.0 ¹	....	....	153.0 ²
2 Nails, large.....	lb	....	....	6.5 ²	6.5 ²	7.0 ²
3 Oats.....	ca	120.0 ¹	96.0 ¹	....	....	102.0 ²
4 Olive oil.....	@	....	....	93.3 ²	74.0 ¹	73.5 ²
5 Paper, writing.....	qu	12.0 ¹	12.0 ¹	12.0 ¹	....	10.5 ²
6 Plaster of Paris.....	ad	....	....	....	144.0 ¹	144.0 ⁴
7 Rye.....	ca	....	....	....	....	....
8 Wheat.....	ca	216.0 ¹	....	....	....	334.5 ⁴

	Units	1465	1466	1467	1468	1469
1 Barley.....	ca	192.0 ¹	152.0 ²	111.6 ¹¹	99.0 ⁴	103.5 ⁴
2 Nails, large.....	lb	....	6.3 ²	6.0 ²	....	....
3 Oats.....	ca	192.0 ¹	122.0 ²	132.0 ²	84.0 ²	90.0 ²
4 Olive oil.....	@	86.0 ¹	94.0 ²	85.8 ²	110.0 ²	....
5 Paper, writing.....	qu	12.0 ¹	14.0 ¹	12.0 ¹	12.0 ¹	12.0 ¹
6 Plaster of Paris.....	ad	160.0 ²	168.0 ²	141.0 ⁴	....	....
7 Rye.....	ca	132.0 ¹	132.0 ²	152.7 ²	120.0 ²	108.0 ²
8 Wheat.....	ca	261.0 ⁴	320.0 ²	220.0 ¹²	186.0 ²	196.0 ²

	Units	1470	1472	1479	1480	1481
1 Barley.....	ca	228.0 ⁴	222.0 ²	96.0 ¹	84.0 ⁴	120.0 ¹
2 Nails, large.....	lb	....	6.0 ⁴	6.0 ⁴	....	5.3 ²
3 Oats.....	ca	201.0 ²	162.0 ¹	69.0 ²	78.0 ⁴	96.0 ¹
4 Olive oil.....	@	....	....	95.2 ²	72.0 ¹	100.7 ²
5 Paper, writing.....	qu	12.0 ¹	12.0 ¹	....	11.5 ²	11.3 ²
6 Plaster of Paris.....	ad	....	126.0 ²	144.0 ²	160.0 ²	127.3 ¹
7 Rye.....	ca	270.0 ²	294.0 ¹	132.0 ²	94.0 ²	....
8 Wheat.....	ca	426.0 ²	337.4 ⁴	220.0 ²	209.6 ¹⁶	....

MONEY, PRICES, AND WAGES

	Units	1482	1483	1484	1485	1486
1 Barley.....	ca	108.0 ³	120.0 ¹	174.0 ²	91.5 ³	96.0 ¹
2 Nails, large.....	lb	5.0 ³	....	....	5.0 ¹	....
3 Oats.....	ca	90.0 ²	120.0 ¹	120.0 ¹	72.0 ¹	72.0 ¹
4 Olive oil.....	@	105.7 ⁷	72.0 ¹	84.0 ⁴	....	....
5 Paper, writing.....	qu	12.0 ¹	12.0 ¹	....	10.0 ¹	....
6 Plaster of Paris.....	ad	129.0 ³	....	120.0 ¹	....	116.7 ³
7 Rye.....	ca	102.0 ²	120.0 ¹	240.0 ¹	....	....
8 Wheat.....	ca	230.4 ⁶	224.0 ⁶	336.0 ¹	240.0 ²	252.0 ²

	Units	1487	1488	1489	1490	1491
1 Barley.....	ca	132.0 ²	138.0 ²	94.0 ²	94.7 ²	148.0 ²
2 Nails, large.....	lb	6.0 ²	5.0 ¹	5.8 ³	....	....
3 Oats.....	ca	102.0 ²	108.0 ¹	60.0 ¹	84.0 ¹	120.0 ¹
4 Olive oil.....	@	86.0 ¹	82.3 ⁷	79.3 ⁶	78.0 ⁶	68.0 ¹
5 Paper, writing.....	qu	9.5 ²	9.0 ¹	9.0 ¹	10.0 ²	12.0 ²
6 Plaster of Paris.....	ad	72.0 ²	....	120.0 ¹	106.0 ¹	100.0 ¹
7 Rye.....	ca	....	....	....	....	....
8 Wheat.....	ca	272.4 ⁶	240.0 ²	222.0 ²	240.0 ²	324.0 ²

	Units	1492	1493	1494	1495	1496
1 Barley.....	ca	102.0 ²	180.0 ¹	78.0 ¹	....	96.0 ²
2 Nails, large.....	lb	4.0 ¹	....	5.0 ¹	5.8 ²	5.4 ¹¹
3 Oats.....	ca	84.0 ¹	156.0 ²	72.0 ¹	....	68.0 ¹
4 Olive oil.....	@	69.3 ⁴	94.0 ²	88.7 ⁶	74.0 ²	93.0 ²
5 Paper, writing.....	qu	10.0 ²	9.0 ²	....	10.0 ¹	9.0 ¹
6 Plaster of Paris.....	ad	120.0 ²	113.1 ¹	120.0 ¹	106.0 ⁷	116.3 ¹⁰
7 Rye.....	ca	....	....	....	....	128.0 ¹
8 Wheat.....	ca	272.0 ²	288.0 ²	240.0 ²	240.0 ¹	240.0 ²

	Units	1497	1498
1 Barley.....	ca	111.3 ²	120.0 ²
2 Nails, large.....	lb	5.8 ⁶	....
3 Oats.....	ca	84.0 ²	96.0 ²
4 Olive oil.....	@	....	....
5 Paper, writing.....	qu	10.6 ²	11.0 ¹
6 Plaster of Paris.....	ad	....	108.0 ¹
7 Rye.....	ca	....	....
8 Wheat.....	ca	292.0 ²	....

APPENDIX V

COMMODITY PRICES IN NAVARRE

FOR abbreviations of the metrological units, *vide supra*, p. 213. Equivalences of the penny in fine gold appear in Table 18, p. 141 *supra*. The exponents indicate the number of quotations included in each annual average or used as controls. For fragmentary data prior to 1351, *vide* Appendix XIII.

MONEY, PRICES, AND WAGES

A 1351-1400

(in pence)

COMMODITIES					
English	Spanish	Units	1351	1352	
1 Almonds.....	Almendras.....	lb	....	....
2 Beef.....	Carne de vaca.....	lb c	....	....
3 Bran.....	Salvado.....	robo	....	....
4 Butter.....	Mantequilla.....	lb	....	....
5 Candles, tallow.....	Velas de sebo.....	lb	....	6.0 ¹	
6 Candle-wicks.....	Babil.....	12 lb	....	....
7 Cardamom.....	Grana de paraíso.....	lb	....	....
8 Cheese.....	Queso.....	lb	....	....
9 Cinnamon.....	Canela.....	lb	....	....
10 Cloth*	Tela.....	codo	....	....
11 Cloves.....	Clavos.....	lb	....	....
12 Conger eel, dried.....	Congrio seco.....	lb	....	....
13 Conger eel, fresh.....	Congrio fresco.....	lb	....	....
14 Figs.....	Higos.....	lb	....	....
15 Filberts.....	Avellanas.....	lb	....	....
16 Geese*	Ansarón.....	each	....	....
17 Ginger.....	Jengibre.....	lb	120.0 ¹	....
18 Grapes.....	Uvas.....	st	....	....
19 Hake, dried.....	Merluza seca.....	each	....	....
20 Hake, fresh.....	Merluza fresca.....	lb	....	....
21 Hares.....	Liebres.....	each	....	....
22 Hogs.....	Tocinos.....	each	....	....
23 Honey.....	Miel.....	lb	....	....
24 Horseshoes.....	Herraduras.....	each	....	....
25 Ink*	Tinta.....	bot	....	....
26 Kids.....	Cabritos.....	each	36.0 ¹	93.0 ³	
27 Lambs.....	Cárneros.....	each	....	144.0 ¹	
28 Lard.....	Manteca.....	lb	....	....
29 Nails, large*	Trabaderos.....	lb	....	....
30 Olive oil.....	Aceite.....	lb	1.7 ¹	....
31 Paper, writing.....	Papel.....	qu	14.3 ²	....
32 Peaches.....	Duraznos.....	100	....	....
33 Pears.....	Peras.....	100	....	....
34 Peas, garden.....	Arvejas.....	robo	....	....
35 Pepper.....	Pimienta.....	lb	....	....
36 Pigs.....	Lechones.....	each	....	....
37 Pork.....	Tocino.....	lb	....	6.0 ¹	
38 Quail.....	Perdices.....	each	....	....
39 Rice.....	Arroz.....	lb	....	....
40 Saffron.....	Azafrán.....	lb	....	....
41 Salt*	Sal.....	robo	....	....
42 Sardines, fresh.....	Sardinas frescas.....	100	....	....
43 Sardines, pickled.....	Sardinas arençadas.....	doz	....	....
44 Sealing wax.....	Cera gomada.....	lb	....	....
45 Serge*	Estameña.....	codo	....	....
46 Sheepskins.....	Pergaminos.....	each	....	....
47 Shoes, men's*	Zapatos de hombre.....	pair	....	....
48 Sugar.....	Azúcar.....	lb	....	....
49 Vinegar.....	Vinagre.....	p	....	....
50 Wax.....	Cera.....	12 lb	191.7 ¹	....
51 Wickers.....	Bergas.....	gross	....	....
52 Wine, red.....	Vino tinto.....	p	11.1 ⁸	....
53 Wine, white.....	Vino blanco.....	p	20.9 ¹¹	24.0 ¹	

* Not included in the general index numbers in Table 23.

APPENDICES

A 1351-1400 — CONTINUED

	Units	1353	1354	1355	1356	1357
1 Almonds.....	lb	....	....	....	....	....
2 Beef.....	lb c	....	....	....	....	....
3 Bran.....	robo	....	....	....	....	....
4 Butter.....	lb	....	....	....	20.0 ²	....
5 Candles, tallow.....	lb	....	....	....	6.0 ³	....
6 Candle-wicks.....	12 lb	....	....	....	120.0 ¹	....
7 Cardamom.....	lb	....	....	....	....	....
8 Cheese.....	lb	....	....	....	5.9 ²	....
9 Cinnamon.....	lb	....	....	....	....	....
10 Cloth*.....	codo	....	....	....	....	....
11 Cloves.....	lb	....	....	....	....	....
12 Conger eel, dried.....	lb	....	....	....	....	....
13 Conger eel, fresh.....	lb	....	....	....	....	....
14 Figs.....	lb	....	....	....	....	3.2 ¹
15 Filberts.....	lb	....	....	....	....	11.7 ¹
16 Geese*.....	each	....	....	....	....	....
17 Ginger.....	lb	....	....	....	....	51.0 ¹
18 Grapes.....	st	....	....	....	....	....
19 Hake, dried.....	each	....	....	....	....	....
20 Hake, fresh.....	lb	....	....	....	....	....
21 Hares.....	each	....	....	....	....	....
22 Hogs.....	each	....	....	....	480.0 ²	552.0 ¹
23 Honey.....	lb	....	....	....	....	....
24 Horseroes.....	each	....	....	....	10.0 ⁴	9.0 ¹
25 Ink*.....	bot	....	....	....	....	....
26 Kids.....	each	....	....	....	....	....
27 Lambs.....	each	....	....	120.0 ²	141.0 ⁶	120.0 ¹
28 Lard.....	lb	....	....	....	....	....
29 Nails, large*.....	lb	....	....	....	....	4.0 ⁴
30 Olive oil.....	lb	....	....	....	6.5 ²	5.8 ²
31 Paper, writing.....	qu	....	....	....	....	....
32 Peaches.....	100	....	....	....	....	....
33 Pears.....	100	....	....	....	....	....
34 Peas, garden.....	robo	....	....	....	73.8 ⁶	....
35 Pepper.....	lb	....	....	....	....	....
36 Figs.....	each	....	....	....	....	....
37 Pork.....	lb	....	....	....	....	....
38 Quail.....	each	....	....	....	....	....
39 Rice.....	lb	....	....	....	....	....
40 Saffron.....	lb	....	....	....	....	360.0 ¹
41 Salt*.....	robo	....	....	....	16.0 ¹	....
42 Sardines, fresh.....	100	....	....	....	....	....
43 Sardines, pickled.....	dos	....	....	....	....	....
44 Sealing wax.....	lb	....	....	....	....	....
45 Serge*.....	codo	....	....	....	....	....
46 Sheepskins.....	each	....	....	....	75.0 ¹	....
47 Shoes, men's*.....	pair	....	....	....	60.0 ¹	....
48 Sugar.....	lb	....	132.0 ¹	138.0 ²	132.0 ¹	55.5 ²
49 Vinegar.....	p	....	....	....	....	....
50 Wax.....	12 lb	....	423.9 ²	448.6 ²	396.0 ¹²	362.1 ²
51 Wickers.....	gross	....	....	....	....	....
52 Wine, red.....	p	....	12.0 ²	....	....	....
53 Wine, white.....	p	....	22.5 ⁴	24.0 ¹	43.3 ²	....

* Not included in the general index numbers in Table 23.

A 1351-1400 — CONTINUED

	Units	1358	1359	1360	1361	1362
1 Almonds.....	lb	5.3 ⁴	.....	.....	.....	6.8 ²
2 Beef.....	lb c	.....	.....	.....	.....	.....
3 Bran.....	robo	.....	.....	.....	.....	.....
4 Butter.....	lb	18.0 ¹	.....	.....	.....	12.0 ¹
5 Candles, tallow.....	lb	5.8 ⁴	.....	.....	.....	5.0 ⁷
6 Candle-wicks.....	12 lb	96.0 ²	.....	.....	84.0 ¹	78.0 ⁴
7 Cardamom.....	lb	204.0 ¹	.....	240.0 ¹	132.0 ²	120.0 ¹
8 Cheese.....	lb	3.3 ²	.....	.....	4.3 ¹	.....
9 Cinnamon.....	lb	50.0 ¹	.....	.....	54.0 ²	60.0 ¹
10 Cloth*.....	codo	.....	.....	.....	15.0 ²	.....
11 Cloves.....	lb	220.3 ¹	.....	181.4 ¹	148.0 ⁴	194.4 ¹
12 Conger eel, dried.....	lb	.....	.....	.....	.....	.....
13 Conger eel, fresh.....	lb	.....	.....	.....	.....	.....
14 Figs.....	lb	3.2 ¹	3.7 ¹	3.7 ²	3.1 ²	.....
15 Filberts.....	lb	6.9 ¹	7.1 ¹	7.2 ²	10.4 ¹	.....
16 Geese*.....	each	.....	.....	.....	.....	34.5 ⁴
17 Ginger.....	lb	61.5 ²	60.0 ¹	48.0 ¹	55.7 ⁴	60.0 ¹
18 Grapes.....	st	.....	.....	.....	.....	.....
19 Hake, dried.....	each	23.0 ⁴	.....	18.0 ¹	10.1 ⁹	15.0 ⁴
20 Hake, fresh.....	lb	7.9 ²	.....	6.4 ²	4.6 ⁶	4.0 ¹
21 Hares.....	each	25.8 ⁴	.....	17.4 ²	19.7 ¹	17.4 ¹
22 Hogs.....	each	420.0 ²	432.0 ¹	456.0 ¹	422.7 ²	240.0 ⁴
23 Honey.....	lb	3.5 ²	.....	.....	.....	.....
24 Horseshoes.....	each	10.0 ²	.....	.....	.....	.....
25 Ink*.....	bot	.....	.....	.....	.....	.....
26 Kids.....	each	73.5 ⁴	.....	72.0 ⁷	55.2 ⁷	45.4 ⁴
27 Lambs.....	each	138.0 ⁴	.....	166.5 ⁴	168.1 ⁹	115.5 ⁹
28 Lard.....	lb	.....	.....	.....	.....	6.0 ¹
29 Nails, large*.....	lb	8.0 ⁴	.....	6.0 ⁶	6.0 ²	6.0 ⁴
30 Olive oil.....	lb	4.5 ⁵	.....	.....	5.0 ¹	6.0 ⁷
31 Paper, writing.....	qu	30.0 ²	.....	.....	23.0 ²	36.0 ¹
32 Peaches.....	100	.....	.....	.....	.....	.....
33 Pears.....	100	.....	.....	.....	.....	.....
34 Peas, garden.....	robo	86.1 ⁴	.....	.....	120.0 ¹	105.6 ⁴
35 Pepper.....	lb	102.0 ²	.....	.....	42.0 ²	.....
36 Pigs.....	each	.....	.....	.....	72.0 ¹	.....
37 Pork.....	lb	.....	.....	.....	.....	4.0 ⁴
38 Quail.....	each	14.8 ⁴	.....	.....	.....	16.3 ⁴
39 Rice.....	lb	3.5 ¹	.....	.....	4.0 ²	.....
40 Saffron.....	lb	.....	.....	384.0 ²	432.0 ²	480.0 ¹
41 Salt*.....	robo	9.0 ¹	.....	.....	18.0 ¹	.....
42 Sardines, fresh.....	100	.....	.....	.....	.....	.....
43 Sardines, pickled.....	doz	34.5 ¹	.....	.....	16.4 ⁴	25.6 ⁴
44 Sealing wax.....	lb	.....	.....	.....	.....	.....
45 Serge*.....	codo	.....	.....	20.0 ¹	.....	.....
46 Sheepskins.....	each	.....	.....	.....	.....	.....
47 Shoes, men's*.....	pair	.....	.....	.....	.....	.....
48 Sugar.....	lb	56.7 ²	.....	.....	85.7 ⁶	100.0 ⁴
49 Vinegar.....	p	26.0 ⁴	.....	.....	.....	18.0 ¹
50 Wax.....	12 lb	288.0 ⁶	249.2 ⁶	238.0 ¹²	285.0 ¹²	528.0 ⁶
51 Wickers.....	gross	.....	.....	.....	.....	432.0 ¹
52 Wine, red.....	p	21.1 ⁴	.....	.....	41.7 ²	24.0 ¹
53 Wine, white.....	p	41.3 ⁶	42.7 ²	37.4 ⁸	53.2 ¹²	32.6 ²

* Not included in the general index numbers in Table 23.

APPENDICES

A 1351-1400 -- CONTINUED

	Units	1363	1364	1365	1366	1367
1 Almonds.....	lb	6.0 ¹⁰	6.6 ⁸	....	4.7 ⁸	12.4 ¹⁸
2 Beef.....	lb c	....	....	....	....	9.0 ²⁸
3 Bran.....	robo	18.0 ¹	12.0 ¹	....	14.0 ⁸	17.9 ⁸
4 Butter.....	lb	16.0 ¹	17.2 ⁸	....	....	....
5 Candles, tallow.....	lb	6.3 ¹¹	5.7 ¹⁸	6.0 ¹	10.0 ⁸	12.3 ²⁰
6 Candle-wicks.....	12 lb	83.0 ⁹	96.0 ⁴	....	126.0 ²	156.5 ¹⁰
7 Cardamom.....	lb	....	108.0 ¹	....	120.0 ¹	....
8 Cheese.....	lb	3.7 ⁹	5.0 ⁸	....	5.2 ¹⁰	6.3 ²⁴
9 Cinnamon.....	lb	79.2 ⁶	60.0 ⁴	....	50.7 ¹	....
10 Cloth*.....	codo	15.0 ⁸	....	....	....	26.0 ¹
11 Cloves.....	lb	160.1 ¹	216.0 ¹	....	312.0 ¹	216.0 ¹
12 Conger eel, dried.....	lb	....	....	....	24.7 ¹	32.8 ⁸
13 Conger eel, fresh.....	lb	....	....	....	11.2 ¹	14.8 ⁸
14 Figs.....	lb	....	....	....	4.0 ⁴	7.5 ⁷
15 Filberts.....	lb	6.0 ⁴	....	....	5.7 ¹	10.0 ⁸
16 Geese*.....	each	30.0 ⁸	....	....	....	55.5 ⁷
17 Ginger.....	lb	62.4 ¹	63.0 ⁸	....	222.0 ²	256.0 ⁴
18 Grapes.....	st	....	....	....	....	....
19 Hake, dried.....	each	14.8 ¹⁸	15.3 ⁴	....	14.1 ⁸	20.1 ¹⁶
20 Hake, fresh.....	lb	4.8 ⁸	6.1 ⁴	....	4.3 ⁹	8.0 ⁴
21 Hares.....	each	16.7 ⁸	....	....	....	33.2 ²
22 Hogs.....	each	360.0 ⁵	312.0 ⁴	....	426.0 ⁶	410.0 ¹⁸
23 Honey.....	lb	4.0 ¹	3.9 ⁴	....	....	....
24 Horseshoes.....	each	7.5 ⁸	9.0 ⁴	....	9.6 ⁹	9.5 ⁴
25 Ink*.....	bot	40.0 ¹	....	....	....	....
26 Kids.....	each	46.8 ¹⁰	58.0 ⁷	....	48.0 ⁴	67.5 ¹¹
27 Lambs.....	each	98.0 ²²	147.0 ¹⁸	....	111.8 ¹¹	165.8 ²⁸
28 Lard.....	lb	....	....	....	....	8.3 ⁷
29 Nails, large*.....	lb	....	6.0 ⁸	6.0 ⁴	....	....
30 Olive oil.....	lb	6.3 ¹⁴	5.7 ⁷	....	5.9 ¹⁸	11.2 ²⁸
31 Paper, writing.....	qu	42.0 ⁸	37.7 ⁴	....	30.0 ⁴	32.0 ¹
32 Peaches.....	100	....	....	....	....	96.0 ⁴
33 Pears.....	100	....	....	....	123.1 ¹	82.0 ⁸
34 Peas, garden.....	robo	112.2 ¹⁸	90.0 ⁸	....	69.5 ²	109.4 ¹⁸
35 Pepper.....	lb	54.9 ¹	60.0 ⁸	....	104.8 ¹⁸	97.5 ⁴
36 Pigs.....	each	30.0 ¹	....	....	....	53.5 ⁸
37 Pork.....	lb	4.4 ¹⁸	4.0 ⁷	....	4.8 ⁸	4.8 ¹⁷
38 Quail.....	each	16.5 ⁴	15.0 ⁸	....	17.5 ⁸	23.0 ¹⁸
39 Rice.....	lb	5.6 ²	....	....	....	18.2 ⁴
40 Saffron.....	lb	499.2 ¹	480.0 ¹	360.0 ¹	373.5 ¹¹	342.0 ⁴
41 Salt*.....	robo	26.0 ⁸	32.0 ¹	....	16.0 ¹	20.0 ¹⁸
42 Sardines, fresh.....	100	....	....	....	70.8 ²	57.1 ⁹
43 Sardines, pickled.....	dos	33.8 ⁸	24.0 ⁸	....	17.2 ⁵	22.0 ¹⁸
44 Sealing wax.....	lb	....	....	....	....	....
45 Serge*.....	codo	18.0 ¹	20.0 ¹	....	22.0 ¹	20.0 ²
46 Sheepskins.....	each	....	12.0 ¹	10.0 ¹	....	....
47 Shoes, men's*.....	pair	....	60.0 ⁸	....	....	60.0 ⁸
48 Sugar.....	lb	80.1 ²	96.0 ¹	....	120.0 ²	120.0 ⁷
49 Vinegar.....	p	13.8 ⁷	....	....	....	19.1 ¹⁸
50 Wax.....	12 lb	561.0 ⁴	356.0 ⁸	....	380.5 ²¹	441.0 ²⁸
51 Wickera.....	gross	300.0 ⁴	168.0 ⁸	....	240.0 ¹	240.0 ⁸
52 Wine, red.....	p	32.3 ¹⁴	40.6 ¹	....	23.8 ⁶	....
53 Wine, white.....	p	46.2 ⁸	62.0 ¹⁸	....	....	48.5 ²²

* Not included in the general index numbers in Table 23.

A 1351-1400 — CONTINUED

	Units	1368	1369	1370	1371	1372
1 Almonds.....	lb	8.6 ⁶	6.4 ¹⁰	.....	.....	14.4 ⁶
2 Beef.....	lb c	9.3 ¹⁸	.....	.....	.....	.....
3 Bran.....	robo	.....	23.1 ¹⁸	.....	.....	.....
4 Butter.....	lb	.....	20.7 ²	.....	.....	25.5 ¹⁰
5 Candles, tallow.....	lb	11.3 ¹⁸	9.8 ²⁰	.....	.....	14.9 ⁸
6 Candle-wicks.....	12 lb	150.9 ⁶	80.0 ¹⁶	.....	.....	126.0 ¹⁴
7 Cardamom.....	lb	168.0 ³	252.0 ³	.....	.....	146.3 ¹
8 Cheese.....	lb	7.5 ¹⁸	6.2 ¹²	.....	.....	9.6 ¹⁷
9 Cinnamon.....	lb	66.0 ¹	78.0 ²	.....	.....	137.5 ⁶
10 Cloth*.....	codo	18.0 ¹	19.7 ¹⁰	.....	18.0 ¹	19.3 ⁸
11 Cloves.....	lb	240.0 ³	240.0 ²	.....	.....	405.0 ³
12 Conger eel, dried.....	lb	.....	.....	.....	.....	.....
13 Conger eel, fresh.....	lb	.....	.....	.....	.....	.....
14 Figs.....	lb	9.5 ⁸	5.0 ¹	.....	.....	4.5 ³
15 Filberts.....	lb	.....	5.0 ⁷	.....	.....	10.0 ¹
16 Geese*.....	each	44.3 ⁴	52.0 ⁷	.....	.....	46.3 ⁶
17 Ginger.....	lb	156.0 ⁶	183.5 ⁸	.....	.....	153.0 ³
18 Grapes.....	st	.....	.....	.....	.....	.....
19 Hake, dried.....	each	25.7 ¹²	24.8 ⁶	.....	.....	34.2 ¹⁰
20 Hake, fresh.....	lb	7.7 ²	7.6 ⁶	.....	.....	9.3 ¹⁰
21 Hares.....	each	25.8 ¹	15.8 ⁷	.....	.....	25.5 ⁹
22 Hogs.....	each	480.0 ¹	543.0 ⁶	.....	.....	570.0 ⁶
23 Honey.....	lb	.....	.....	.....	.....	8.0 ²
24 Horseshoes.....	each	.....	10.0 ³	.....	.....	10.0 ³
25 Ink*.....	bot	.....	63.0 ⁶	.....	.....	66.0 ⁶
26 Kids.....	each	70.8 ¹⁶	62.3 ¹⁶	.....	.....	95.3 ¹¹
27 Lambs.....	each	178.1 ²⁶	164.0 ¹⁹	.....	.....	210.7 ¹²
28 Lard.....	lb	11.0 ³	.....	.....	.....	12.5 ⁴
29 Nails, large*.....	lb	.....	.....	.....	6.3 ¹⁰	7.0 ¹
30 Olive oil.....	lb	8.1 ¹⁸	9.0 ¹⁶	.....	8.0 ¹	12.2 ⁶
31 Paper, writing.....	qu	32.0 ¹	41.0 ⁹	.....	.....	39.0 ¹⁰
32 Peaches.....	100	.....	66.0 ²	.....	.....	38.5 ⁴
33 Pears.....	100	.....	61.8 ²	.....	.....	79.0 ⁶
34 Peas, garden.....	robo	162.0 ⁵	153.2 ¹⁸	.....	.....	87.0 ⁶
35 Pepper.....	lb	81.0 ³	114.0 ²	.....	.....	115.5 ²
36 Pigs.....	each	58.0 ⁴	36.5 ⁵	.....	.....	63.2 ⁸
37 Pork.....	lb	6.5 ¹⁸	6.9 ⁸	.....	.....	9.3 ⁶
38 Quail.....	each	.....	24.0 ¹⁶	.....	.....	20.0 ¹²
39 Rice.....	lb	6.3 ⁵	4.3 ¹	.....	.....	10.0 ⁶
40 Saffron.....	lb	300.0 ³	312.0 ¹	.....	.....	719.0 ⁴
41 Salt*.....	robo	.....	14.3 ¹⁶	.....	.....	20.1 ¹²
42 Sardines, fresh.....	100	100.0 ¹	53.9 ⁵	.....	.....	.....
43 Sardines, pickled.....	doz	27.4 ⁸	23.7 ²	.....	.....	36.6 ⁴
44 Sealing wax.....	lb	.....	94.0 ²	.....	.....	100.0 ⁴
45 Serge*.....	codo	30.0 ¹	30.7 ⁴	.....	.....	39.9 ⁵
46 Sheepskins.....	each	.....	13.5 ³	.....	.....	28.9 ⁷
47 Shoes, men's*.....	pair	66.0 ⁶	60.0 ¹⁹	.....	.....	60.0 ¹⁸
48 Sugar.....	lb	149.0 ⁵	144.0 ²	.....	.....	138.0 ³
49 Vinegar.....	p	26.3 ⁶	13.0 ¹²	.....	.....	34.2 ⁹
50 Wax.....	12 lb	391.2 ⁹	370.5 ⁸	.....	.....	421.1 ¹⁰
51 Wickers.....	gross	204.0 ⁶	192.0 ⁸	.....	.....	220.8 ⁸
52 Wine, red.....	p	.....	28.5 ¹¹	.....	.....	.....
53 Wine, white.....	p	46.4 ¹⁷	37.8 ¹⁰	.....	.....	45.4 ²⁰

* Not included in the general index numbers in Table 23.

A 1351-1400—CONTINUED

	Units	1373	1374	1375	1376	1377
Almonds.....	lb	....	14.6 ⁸	16.8 ⁴	21.2 ⁸	....
Beef.....	lb c	....	10.5 ¹²	10.0 ⁹	12.5 ⁶	13.0 ⁶
Bran.....	robo	....	27.0 ³	38.0 ⁴	39.0 ⁴	30.5 ⁴
Butter.....	lb	24.8 ⁸	18.5 ⁸	22.0 ⁴	28.0 ³	30.0 ⁸
Candles, tallow.....	lb	....	14.0 ¹⁵	12.0 ⁴	12.0 ⁴	17.0 ⁸
Candle-wicks.....	12 lb	153.0 ⁴	156.0 ⁶	138.0 ³	144.0 ⁴	126.0 ⁶
Cardamom.....	lb	....	....	240.0 ¹	324.0 ⁴	270.0 ¹
Cheese.....	lb	8.4 ⁴	....	8.6 ⁴	8.9 ⁴	10.2 ⁴
Cinnamon.....	lb	....	....	....	240.0 ¹	174.0 ³
Cloth*.....	codo	20.4 ⁴	16.5 ⁴	....	....	....
Cloves.....	lb	....	....	1206.0 ¹	1200.0 ¹	1200.0 ¹
Conger eel, dried.....	lb	....	32.0 ²	21.3 ³	....	....
Conger eel, fresh.....	lb	....	15.0 ³	10.0 ³	....	....
Figs.....	lb	6.0 ¹	....	....	....	....
Filberts.....	lb	....	8.0 ¹	....	10.8 ⁴	10.1 ¹
Geese*.....	each	54.0 ⁴	42.0 ⁴	43.5 ⁴	38.0 ³	....
Ginger.....	lb	....	144.0 ³	144.0 ³	132.0 ⁴	132.0 ¹
Grapes.....	st	10.0 ¹	....	....	....	12.0 ⁴
Hake, dried.....	each	42.0 ³	24.8 ⁸	26.3 ¹	33.8 ⁴	27.8 ⁴
Hake, fresh.....	lb	11.2 ⁴	7.1 ⁴	8.0 ¹	10.0 ¹	8.5 ⁴
Horns.....	each	....	27.7 ³	32.8 ³	35.0 ³	37.0 ⁴
Hogs.....	each	....	495.0 ⁴	423.0 ⁴	450.0 ⁴	....
Honey.....	lb	....	6.0 ²	6.0 ²	....	....
Horseshoes.....	each	10.0 ¹	10.0 ¹⁴	10.0 ³	9.1 ³	10.0 ²
Ink*.....	bot	60.0 ¹	55.8 ³	60.8 ⁴	60.0 ⁴	....
Kids.....	each	75.0 ⁴	108.0 ³	62.0 ⁴	66.0 ⁴	60.0 ⁴
Lambs.....	each	....	233.0 ²³	159.0 ³	174.0 ³	106.0 ³
Lard.....	lb	14.7 ³	12.0 ⁷	16.0 ⁴	....	12.0 ³
Nails, large*.....	lb	....	....	4.7 ¹¹	6.0 ⁷	....
Olive oil.....	lb	11.3 ⁴	13.5 ³	15.5 ⁴	10.0 ⁴	15.0 ³
Paper, writing.....	qu	....	42.0 ¹¹	42.5 ⁴	42.0 ⁴	46.5 ⁴
Peaches.....	100	....	43.0 ³	48.0 ⁴	85.5 ⁴	....
Pears.....	100	....	28.9 ³	46.2 ⁴	20.5 ³	70.1 ³
Peas, garden.....	robo	....	159.0 ³	144.0 ⁴	193.7 ³	210.0 ³
Pepper.....	lb	....	....	58.8 ¹	96.0 ¹	102.0 ¹
Pigs.....	each	51.0 ⁴	46.5 ⁴	60.0 ¹	....	54.0 ¹
Pork.....	lb	....	6.8 ¹⁰	8.0 ⁴	11.0 ⁴	12.0 ³
Quail.....	each	....	21.0 ³	20.0 ³	....	25.5 ³
Rice.....	lb	11.0 ³	8.0 ³	18.0 ³	14.0 ⁴	10.0 ¹
Saffron.....	lb	....	885.0 ³	960.0 ³	1028.2 ³	1320.0 ³
Salt*.....	robo	....	....	21.0 ⁴	17.0 ³	24.0 ⁴
Sardines, fresh.....	100	....	75.0 ⁴	75.5 ⁴	61.0 ⁴	....
Sardines, pickled.....	dos	49.6 ³	25.1 ¹	....	42.9 ³	47.1 ⁴
Sealing wax.....	lb	96.0 ¹	98.3 ⁴	99.5 ³	108.0 ³	120.0 ³
Serge*.....	codo	....	48.0 ¹	42.0 ¹	48.0 ³	52.0 ³
Sheepskins.....	each	24.0 ¹	30.0 ⁴	27.9 ⁴	30.6 ³	30.0 ⁴
Shoes, men's*.....	pair	....	60.0 ⁴	60.0 ³	72.0 ³	60.0 ³
Sugar.....	lb	....	154.7 ³	224.0 ³	192.0 ¹	195.0 ⁴
Vinegar.....	p	35.7 ⁴	....	26.8 ⁴	45.9 ⁴	54.0 ⁴
Wax.....	12 lb	....	600.0 ³	525.0 ⁴	609.0 ⁴	648.0 ³
Wickers.....	gross	216.0 ³	210.0 ³	240.0 ¹	216.0 ¹	....
Wine, red.....	p	37.9 ⁴	34.1 ⁷	....	....	....
Wine, white.....	p	....	54.5 ³	70.1 ⁴	72.1 ³	54.0 ¹³

* Not included in the general index numbers in Table 23.

MONEY, PRICES, AND WAGES

A 1351-1400 — CONTINUED

	Units	1378	1379	1380	1381	1382
1	Almonds.....	lb	19.4 ²	.....	.....	.....
2	Beef.....	lb c	10.0 ²	.....	.....	.....
3	Bran.....	robo	20.0 ¹	.....	.....	.....
4	Butter.....	lb	24.0 ¹	.....	.....	.....
5	Candles, tallow.....	lb	16.0 ⁶	.....	.....	.....
6	Candle-wicks.....	12 lb	176.0 ⁸	.....	.....	.....
7	Cardamom.....	lb	210.0 ²	.....	.....	.....
8	Cheese.....	lb	.....	.....	.....	.....
9	Cinnamon.....	lb	.....	288.0 ¹	.....	.....
10	Cloth*.....	codo	.....	.....	.....	.....
11	Cloves.....	lb	1080.0 ¹	.....	.....	.....
12	Conger eel, dried.....	lb	.....	.....	.....	.....
13	Conger eel, fresh.....	lb	.....	.....	.....	.....
14	Figs.....	lb	.....	.....	.....	.....
15	Filberts.....	lb	.....	9.4 ¹	.....	.....
16	Geese*.....	each	.....	.....	.....	.....
17	Ginger.....	lb	232.0 ²	276.0 ¹	.....	.....
18	Grapes.....	st	6.0 ⁴	.....	.....	.....
19	Hake, dried.....	each	36.0 ²	.....	.....	.....
20	Hake, fresh.....	lb	10.3 ⁵	.....	.....	.....
21	Hares.....	each	.....	.....	.....	.....
22	Hogs.....	each	.....	.....	.....	.....
23	Honey.....	lb	.....	.....	.....	.....
24	Horseshoes.....	each	10.0 ²	.....	.....	.....
25	Ink*.....	bot	.....	.....	.....	.....
26	Kids.....	each	.....	.....	.....	.....
27	Lambs.....	each	215.0 ⁸	.....	.....	.....
28	Lard.....	lb	.....	.....	.....	.....
29	Nails, large*.....	lb	11.0 ³	.....	.....	.....
30	Olive oil.....	lb	9.0 ⁶	.....	.....	12.0 ¹
31	Paper, writing.....	qu	42.0 ⁴	39.8 ¹	.....	.....
32	Peaches.....	100	.....	.....	.....	.....
33	Pears.....	100	61.5 ⁶	.....	.....	.....
34	Peas, garden.....	robo	72.0 ²	.....	.....	.....
35	Pepper.....	lb	.....	.....	.....	.....
36	Figs.....	each	72.0 ¹	.....	.....	.....
37	Pork.....	lb	7.0 ⁵	.....	.....	.....
38	Quail.....	each	.....	.....	.....	.....
39	Rice.....	lb	20.0 ²	.....	.....	.....
40	Saffron.....	lb	960.0 ¹	.....	.....	.....
41	Salt*.....	robo	18.0 ¹	.....	.....	.....
42	Sardines, fresh.....	100	.....	.....	.....	.....
43	Sardines, pickled.....	doz	.....	.....	.....	.....
44	Sealing wax.....	lb	96.0 ²	.....	.....	.....
45	Serge*.....	codo	.....	.....	.....	.....
46	Sheepskins.....	each	.....	.....	.....	.....
47	Shoes, men's*.....	pair	60.0 ²	.....	.....	.....
48	Sugar.....	lb	153.0 ²	168.0 ²	168.0 ¹	210.0 ²
49	Vinegar.....	p	28.7 ¹	.....	.....	.....
50	Wax.....	12 lb	540.0 ²	.....	.....	.....
51	Wickers.....	gross	216.0 ¹	.....	.....	.....
52	Wine, red.....	p	49.8 ²	.....	.....	.....
53	Wine, white.....	p	87.6 ¹	.....	.....	.....

* Not included in the general index numbers in Table 23.

APPENDICES

A 1351-1400 — CONTINUED

	Units	1383	1384	1385	1386	1387
1 Almonds.....	lb	12.9 ¹	23.6 ¹²	....	12.5 ¹²	17.3 ¹⁵
2 Beef.....	lb c	12.7 ¹⁶	11.9 ¹²	....	9.2 ²⁴	12.8 ²⁰
3 Bran.....	robo	....	20.0 ¹	....	24.7 ¹⁰	26.0 ⁴
4 Butter.....	lb	....	22.0 ²	....	21.6 ¹¹	36.0 ¹⁵
5 Candles, tallow.....	lb	17.3 ¹⁶	15.3 ¹⁶	....	13.0 ¹⁶	14.5 ¹⁶
6 Candle-wicks.....	12 lb	108.0 ⁴	119.3 ⁷	....	....	171.5 ¹⁶
7 Cardamom.....	lb	249.0 ²	250.7 ⁹	....	296.5 ¹²	249.0 ²
8 Cheese.....	lb	9.6 ¹²	8.8 ¹⁴	....	8.7 ¹⁴	10.5 ¹⁸
9 Cinnamon.....	lb	276.0 ²	252.0 ²	....	132.8 ¹⁶	193.7 ¹⁴
10 Cloth*.....	codo	27.8 ¹⁶	30.0 ¹⁰	....	23.6 ¹⁴	25.6 ¹¹
11 Cloves.....	lb	831.0 ²	774.7 ²	....	417.5 ¹⁰	700.8 ¹²
12 Conger eel, dried.....	lb	....	36.2 ²	....	39.9 ²	33.9 ²
13 Conger eel, fresh.....	lb	....	16.4 ²	....	14.5 ⁴	15.9 ²
14 Figs.....	lb	....	....	....	11.3 ⁴	8.8 ²
15 Filberts.....	lb	20.9 ¹	13.7 ¹	....	9.0 ²	8.2 ²
16 Geese*.....	each	66.0 ²	72.0 ⁴	....	45.8 ¹⁵	72.0 ²
17 Ginger.....	lb	261.0 ¹¹	264.0 ¹²	....	153.0 ²⁰	205.5 ¹⁶
18 Grapes.....	st	12.0 ²	11.5 ²	....	9.0 ¹⁰	10.0 ²
19 Hake, dried.....	each	47.3 ¹²	55.2 ¹⁴	....	35.3 ¹⁶	47.1 ¹²
20 Hake, fresh.....	lb	12.0 ¹	13.5 ²	....	12.8 ¹⁷	14.1 ¹²
21 Hares.....	each	35.3 ²	33.2 ²	....	27.0 ¹²	35.3 ¹²
22 Hogs.....	each	444.0 ⁴	504.0 ²	....	727.0 ¹²	1088.0 ¹
23 Honey.....	lb	....	....	....	....	....
24 Horsehoes.....	each	12.0 ²	12.0 ⁴	....	9.8 ¹⁶	11.0 ¹⁶
25 Ink*.....	bot	57.0 ²	69.3 ⁴	....	71.0 ¹⁶	61.5 ¹⁴
26 Kids.....	each	79.6 ¹²	89.2 ¹⁴	....	60.7 ¹⁶	93.7 ¹⁷
27 Lambs.....	each	223.5 ¹⁶	261.0 ¹⁷	....	128.6 ¹²	168.8 ¹²
28 Lard.....	lb	11.5 ²	11.5 ²	....	12.9 ²	16.3 ²
29 Nails, large*.....	lb	....	8.0 ¹	....	....	4.0 ²
30 Olive oil.....	lb	14.1 ¹⁴	15.0 ²	12.0 ¹	11.0 ¹⁶	12.2 ¹⁶
31 Paper, writing.....	qu	59.2 ¹²	60.6 ¹²	....	42.5 ¹⁶	51.4 ¹⁶
32 Peaches.....	roo	36.0 ¹	....	....	48.0 ⁴	52.0 ⁴
33 Pears.....	roo	64.1 ¹	....	....	72.5 ¹⁴	52.2 ¹²
34 Peas, garden.....	robo	168.0 ²	177.0 ¹⁰	....	172.0 ¹⁶	147.0 ¹¹
35 Pepper.....	lb	126.0 ²	132.0 ¹	....	90.0 ⁷	95.6 ²
36 Pigs.....	each	40.0 ²	36.0 ⁴	....	58.0 ²	66.0 ⁴
37 Pork.....	lb	9.3 ¹⁰	8.2 ¹⁷	....	8.3 ²⁰	7.9 ¹²
38 Quail.....	each	21.0 ¹¹	22.5 ¹²	....	24.5 ¹⁷	30.5 ²²
39 Rice.....	lb	11.5 ²	9.7 ⁴	....	8.5 ⁷	11.3 ²
40 Saffron.....	lb	1275.0 ²	1320.0 ⁷	....	1000.0 ¹⁶	1117.0 ¹²
41 Salt*.....	robo	36.8 ¹²	60.0 ²	....	34.7 ¹⁶	25.5 ¹⁶
42 Sardines, fresh.....	roo	48.0 ¹	....	....	116.3 ¹²	115.3 ²
43 Sardines, pickled.....	dos	51.3 ²	40.0 ²	....	41.1 ¹²	48.0 ¹²
44 Sealing wax.....	lb	144.0 ²	168.0 ¹	....	94.8 ¹²	107.0 ¹²
45 Serge*.....	codo	54.0 ²	....	....	48.0 ²	49.5 ²
46 Sheepskins.....	each	....	43.9 ²	....	27.3 ⁷	30.0 ¹²
47 Shoes, men's*.....	pair	84.0 ²⁰	84.0 ²²	....	....	96.0 ²²
48 Sugar.....	lb	207.0 ²	224.0 ¹	224.0 ²	163.5 ¹⁶	214.8 ¹²
49 Vinegar.....	p	24.0 ¹⁴	34.2 ¹⁰	....	28.9 ¹⁶	28.5 ¹⁶
50 Wax.....	12 lb	807.8 ¹⁰	910.5 ¹⁰	....	519.8 ¹²	666.5 ²²
51 Wickers.....	gross	264.0 ²	288.0 ²	....	204.0 ¹⁶	229.5 ¹²
52 Wine, red.....	p	53.9 ¹²	85.0 ¹²	....	53.3 ²²	28.6 ¹²
53 Wine, white.....	p	66.0 ¹⁶	114.0 ¹⁶	....	73.5 ²²	55.5 ²²

* Not included in the general index numbers in Table 23.

A 1351-1400—CONTINUED

	Units	1388	1389	1390	1391	1392
1 Almonds.....	lb	18.8 ¹⁰	24.8 ¹¹	25.2 ⁸	18.3 ¹⁰	29.8 ¹⁰
2 Beef.....	lb c	14.8 ²⁰	15.8 ²⁴	14.9 ²⁰	15.7 ¹⁷	13.5 ¹⁸
3 Bran.....	robo	24.0 ⁸	25.5 ⁸	26.0 ¹⁰	23.6 ¹²	25.0 ¹¹
4 Butter.....	lb	....	28.1 ⁸	26.3 ⁶	26.0 ⁸	42.7 ⁵
5 Candles, tallow.....	lb	15.5 ¹⁷	15.5 ¹⁷	15.3 ²⁵	17.4 ²⁰	16.7 ²²
6 Candle-wicks.....	12 lb	174.0 ¹⁸	154.5 ¹⁶	257.0 ¹⁷	201.0 ¹²	189.0 ¹⁶
7 Cardamom.....	lb	....	420.0 ²	384.0 ⁸	458.0 ⁴	568.0 ⁸
8 Cheese.....	lb	11.1 ¹⁴	9.6 ¹⁰	9.9 ¹⁸	10.7 ¹¹	11.4 ¹⁷
9 Cinnamon.....	lb	163.3 ⁹	161.0 ⁷	195.0 ⁷	178.0 ⁵	300.0 ⁶
10 Cloth*.....	codo	27.3 ¹¹	28.4 ¹⁵	24.9 ¹⁸	28.0 ⁴	....
11 Cloves.....	lb	420.0 ⁸	435.0 ⁸	402.0 ⁴	600.0 ⁸	1056.0 ⁶
12 Conger eel, dried.....	lb	34.1 ²	40.5 ¹¹	35.5 ⁷	41.3 ⁴	40.5 ⁶
13 Conger eel, fresh.....	lb	16.0 ²	19.0 ¹¹	16.9 ⁶	18.6 ⁴	19.0 ⁶
14 Figs.....	lb	9.0 ⁵	17.1 ¹	16.0 ⁵	8.0 ⁴	....
15 Filberts.....	lb	8.5 ⁵	15.7 ¹	16.0 ⁸	15.0 ⁸	12.0 ²
16 Geese*.....	each	60.0 ⁷	72.0 ¹	72.0 ⁵	....	....
17 Ginger.....	lb	177.9 ¹⁶	170.3 ¹⁴	192.0 ¹¹	186.0 ¹²	348.0 ¹¹
18 Grapes.....	st	12.0 ¹	16.5 ¹⁹	13.9 ⁹	14.4 ⁹	19.5 ⁸
19 Hake, dried.....	each	47.3 ¹⁶	50.4 ²	37.9 ¹⁴	40.5 ⁹	36.8 ¹²
20 Hake, fresh.....	lb	13.4 ¹²	15.0 ¹⁶	13.5 ¹⁴	12.5 ¹⁸	15.8 ¹⁰
21 Hares.....	each	33.8 ⁹	27.8 ¹²	27.4 ⁸	31.1 ²	....
22 Hogs.....	each	1380.0 ²	....	1007.0 ⁷	1120.0 ⁸	....
23 Honey.....	lb	13.0 ⁶	13.0 ²	9.0 ²	11.7 ⁴	14.0 ¹
24 Horseshoes.....	each	12.0 ¹⁴	12.0 ²	....	....	....
25 Ink*.....	bot	60.8 ⁶	64.0 ⁴	72.0 ⁶	72.0 ⁵	72.0 ⁵
26 Kids.....	each	107.9 ¹⁴	107.5 ²⁵	103.8 ²²	92.2 ²²	96.0 ²⁰
27 Lambs.....	each	187.9 ¹⁸	263.6 ²²	253.5 ²⁵	217.5 ²⁴	360.0 ²¹
28 Lard.....	lb	19.3 ⁵	18.0 ²	....	13.5 ²	12.0 ²
29 Nails, large*.....	lb	....	10.0 ¹	....	....	12.0 ²
30 Olive oil.....	lb	14.3 ¹⁷	12.2 ¹⁰	14.5 ¹⁹	14.7 ¹⁵	12.0 ²¹
31 Paper, writing.....	qu	54.0 ¹⁶	54.0 ¹⁷	50.0 ⁶	49.3 ⁸	53.3 ¹⁶
32 Peaches.....	100	46.3 ⁴	42.5 ⁷	92.0 ⁸	36.0 ¹	57.0 ⁴
33 Pears.....	100	39.7 ⁸	46.0 ¹⁸	103.0 ¹⁸	102.1 ²	84.6 ¹
34 Peas, garden.....	robo	183.3 ¹¹	156.0 ²	192.0 ⁵	192.0 ²	246.0 ⁵
35 Pepper.....	lb	103.0 ⁴	126.0 ²	132.0 ²	147.0 ²	184.0 ⁶
36 Pigs.....	each	72.0 ⁴	90.0 ²	83.0 ⁹	66.7 ²	81.0 ¹
37 Pork.....	lb	13.1 ¹⁸	14.2 ¹⁶	8.4 ¹⁴	11.3 ¹²	11.3 ¹⁰
38 Quail.....	each	27.0 ¹¹	24.0 ¹⁴	24.0 ¹⁶	....	36.0 ¹⁴
39 Rice.....	lb	15.0 ⁴	9.0 ²	13.0 ⁷	12.3 ⁴	13.5 ²
40 Saffron.....	lb	1440.0 ⁶	1416.0 ¹⁰	1340.0 ⁵	1300.0 ⁵	1293.0 ⁶
41 Salt*.....	robo	24.7 ¹²	37.8 ¹⁴	41.0 ²⁷	67.1 ¹⁴	37.5 ⁹
42 Sardines, fresh.....	100	55.8 ²	63.8 ¹⁰	66.0 ⁹	75.0 ⁸	73.4 ⁹
43 Sardines, pickled.....	doz	53.2 ¹⁰	67.8 ²	52.0 ¹⁵	48.0 ⁴	49.7 ²
44 Sealing wax.....	lb	144.0 ²	144.0 ²	144.0 ²	144.0 ¹	144.0 ²
45 Serge*.....	codo	60.0 ⁵	63.0 ²	69.0 ⁴	....	72.0 ²
46 Sheepskins.....	each	51.7 ²	55.0 ⁵	52.7 ⁴	....	46.8 ¹
47 Shoes, men's*.....	pair	96.0 ¹⁸	96.0 ²⁷	96.0 ²⁵	72.0 ⁷	72.0 ²
48 Sugar.....	lb	191.0 ¹¹	188.0 ⁵	204.0 ¹⁵	259.3 ¹⁰	374.0 ⁶
49 Vinegar.....	p	22.5 ¹⁸	35.6 ¹⁶	60.6 ¹⁸	51.1 ¹²	63.7 ¹⁴
50 Wax.....	12 lb	621.8 ¹⁰	646.5 ¹¹	654.0 ¹⁴	657.0 ¹⁴	715.5 ¹⁸
51 Wickers.....	gross	288.0 ¹	360.0 ⁵	288.0 ⁴	....	294.0 ²
52 Wine, red.....	p	39.4 ¹⁷	61.5 ¹⁷	95.3 ²⁴	65.5 ²⁰	86.3 ²⁷
53 Wine, white.....	p	63.5 ²¹	76.5 ²⁸	129.0 ²²	95.3 ¹⁷	120.4 ²⁴

* Not included in the general index numbers in Table 23.

A 1351-1400 — CONTINUED

	Units	1393	1394	1395	1396	1397
Almonds.....	lb	25.3 ⁶	23.6 ¹⁰	21.3 ¹²	18.4 ¹³	20.8 ¹³
Beef.....	lb c	12.8 ¹⁰	14.4 ¹⁷	14.9 ⁸	16.2 ¹²	12.0 ¹⁰
Bran.....	robo	24.0 ¹¹	22.6 ¹³	24.8 ⁸	23.5 ¹⁰	20.7 ⁶
Butter.....	lb	33.0 ⁴	29.0 ¹⁰	39.2 ⁸	42.0 ⁸	37.7 ³
Candles, tallow.....	lb	15.8 ²⁹	17.7 ²⁵	17.4 ¹⁶	16.0 ²⁰	16.0 ²¹
Candle-wicks.....	12 lb	183.0 ¹³	215.0 ¹²	190.5 ⁸	206.3 ¹¹	246.0 ¹⁰
Cardamom.....	lb	312.0 ³	608.0 ²	284.0 ¹	.....	.....
Cheese.....	lb	12.6 ¹⁰	9.8 ¹⁶	10.5 ¹⁰	10.6 ¹³	10.4 ¹⁷
Cinnamon.....	lh	216.0 ⁸	229.5 ¹²	258.0 ⁹	277.3 ⁸	337.0 ¹⁰
Cloth*.....	codo	.....	.....	.....	.....	28.0 ²
Cloves.....	lb	612.0 ⁴	717.3 ⁷	588.0 ²	960.0 ³	799.5 ⁷
Conger eel, dried.....	lb	44.0 ¹¹	39.3 ¹²	43.5 ⁸	40.7 ¹⁴	36.0 ⁹
Conger eel, fresh.....	lb	20.7 ¹¹	18.5 ¹²	20.1 ⁴	22.1 ³	21.4 ⁸
Figs.....	lb	11.0 ⁷	11.0 ¹²	8.0 ⁸	8.8 ⁹	15.0 ²
Filberts.....	lb	12.0 ⁷	10.7 ¹⁷	9.7 ¹⁰	11.2 ⁶	17.0 ²
Geese*.....	each	60.0 ³	57.0 ¹⁰	.....	60.0 ¹	60.0 ⁵
Ginger.....	lb	284.3 ¹⁵	336.7 ¹⁶	523.5 ¹²	438.0 ⁸	490.5 ¹³
Grapes.....	st	15.0 ¹⁰	11.5 ¹²	8.0 ⁸	11.5 ⁹	18.3 ⁷
Hake, dried.....	each	39.0 ⁹	40.5 ¹⁶	45.8 ¹⁷	57.6 ⁸	48.8 ¹²
Hake, fresh.....	lb	14.7 ⁷	14.3 ¹²	17.8 ⁸	16.5 ⁸	14.5 ⁵
Hares.....	each	.....	28.4 ⁵	25.8 ²	.....	31.9 ⁴
Hogs.....	each	.....	.....	.....	.....	.....
Honey.....	lb	11.0 ²	9.0 ⁵	9.9 ¹⁴	10.3 ¹⁰	8.8 ¹⁴
Horsehoses.....	each	.....	12.0 ⁶	.....	12.0 ¹	12.0 ²
Ink*.....	bot	72.0 ¹	72.0 ¹⁵	72.5 ⁵	72.0 ⁴	72.0 ⁸
Kids.....	each	98.6 ²⁰	98.6 ¹⁹	86.1 ¹⁸	79.5 ²²	83.4 ²²
Lambs.....	each	246.0 ²¹	336.0 ¹⁸	240.0 ¹⁷	296.0 ²¹	235.0 ²³
Lard.....	lb	15.0 ³	12.4 ⁵	10.0 ¹	18.0 ⁸	19.0 ³
Nails, large*.....	lb	12.0 ⁹	.....	.....	.....	.....
Olive oil.....	lb	12.3 ¹⁰	12.8 ²⁴	12.8 ¹⁶	16.3 ²⁰	11.0 ¹⁷
Paper, writing.....	qu	51.0 ³	52.1 ¹⁷	59.5 ¹¹	56.6 ¹⁴	59.6 ¹⁶
Peaches.....	100	55.5 ⁴	42.0 ⁴	48.0 ⁴	.....	84.0 ⁴
Pears.....	100	49.2 ¹	73.7 ¹⁰	.....	.....	75.3 ³
Peas, garden.....	robo	273.0 ¹⁷	286.5 ²²	270.0 ⁴	208.0 ⁸	228.0 ¹⁵
Pepper.....	lb	156.0 ¹⁰	165.7 ¹²	166.7 ⁸	143.5 ⁷	152.5 ¹⁴
Pigs.....	each	51.0 ⁶	88.0 ⁴	.....	84.0 ³	72.0 ³
Pork.....	lb	12.0 ¹⁶	9.4 ²⁰	9.4 ¹⁸	9.4 ¹⁶	8.2 ²²
Quail.....	each	.....	36.0 ¹⁸	28.0 ⁸	.....	23.5 ¹⁵
Rice.....	lb	14.0 ⁸	13.0 ¹⁰	17.5 ⁴	16.2 ³	15.3 ¹²
Saffron.....	lb	930.0 ⁶	892.3 ¹²	808.0 ⁸	716.0 ⁸	820.0 ¹⁵
Salt*.....	robo	40.0 ¹²	26.7 ¹⁴	24.0 ⁸	24.0 ⁹	22.9 ¹²
Sardines, fresh.....	100	66.0 ³	.....	44.0 ³	100.0 ⁹	72.2 ⁹
Sardines, pickled.....	dos	48.0 ³	48.0 ¹⁴	46.0 ¹¹	48.0 ⁴	48.0 ⁴
Sealing wax.....	lb	144.0 ¹	152.0 ¹²	168.0 ²	156.0 ²	160.0 ⁷
Serge*.....	codo	72.0 ²	72.0 ²	.....	.....	71.8 ⁷
Sheepskins.....	each	.....	39.7 ⁹	48.0 ²	46.8 ²	42.0 ⁷
Shoes, men's*.....	pair	72.0 ²	72.0 ²	96.0 ¹	96.0 ²	.....
Sugar.....	lb	267.0 ²	287.8 ¹²	302.0 ⁷	224.0 ⁵	314.0 ²
Vinegar.....	p	53.2 ⁹	34.5 ¹⁶	24.9 ¹²	29.6 ¹²	34.5 ¹²
Wax.....	12 lb	776.0 ¹²	999.0 ¹⁶	1044.0 ⁷	911.0 ¹⁰	876.0 ⁸
Wickers.....	gross	288.0 ²	336.0 ²	328.0 ²	293.3 ²	328.0 ²
Wine, red.....	p	69.0 ²¹	47.5 ²⁴	30.0 ²⁰	57.0 ²⁰	64.5 ¹⁸
Wine, white.....	p	102.8 ²⁰	67.8 ¹⁶	51.0 ¹⁶	75.0 ²⁰	72.0 ¹⁸

* Not included in the general index numbers in Table 23.

A 1351-1400 — CONTINUED

	Units	1398	1399	1400
1 Almonds.....	lb	20.0 ¹⁷	25.3 ¹⁸	18.1 ¹⁸
2 Beef.....	lb c	13.0 ¹⁸	15.3 ²⁰	15.0 ²²
3 Bran.....	robo	20.8 ¹²	23.8 ¹⁵	24.1 ¹⁸
4 Butter.....	lb	34.0 ⁷	36.4 ⁸	33.0 ⁸
5 Candles, tallow.....	lb	14.5 ¹⁶	14.3 ²²	15.6 ²⁶
6 Candle-wicks.....	12 lb	214.5 ¹⁴	238.5 ²⁰	217.5 ¹⁸
7 Cardamom.....	lb	586.0 ⁸	600.0 ⁴	504.0 ²
8 Cheese.....	lb	10.4 ¹⁸	10.6 ¹⁶	11.8 ¹⁶
9 Cinnamon.....	lb	309.6 ⁷	290.0 ⁷	257.3 ¹¹
10 Cloth*.....	codo	36.0 ²	33.0 ⁸	36.0 ²
11 Cloves.....	lb	581.0 ⁸	444.0 ⁸	573.3 ⁸
12 Conger eel, dried.....	lb	44.0 ¹⁷	42.0 ¹⁰	40.0 ²⁰
13 Conger eel, fresh.....	lb	18.4 ¹⁰	23.1 ²	17.4 ⁷
14 Figs.....	lb	12.5 ¹¹	9.0 ¹⁴	10.0 ¹¹
15 Filberts.....	lb	10.5 ⁴	14.9 ¹⁰	12.0 ⁴
16 Geese*.....	each	58.5 ⁸	54.0 ⁸	67.6 ⁸
17 Ginger.....	lb	331.6 ⁸	340.0 ¹¹	248.3 ¹¹
18 Grapes.....	st	10.0 ⁹	11.3 ⁸	13.0 ¹⁸
19 Hake, dried.....	each	67.0 ¹⁴	57.2 ²²	81.4 ¹⁹
20 Hake, fresh.....	lb	14.9 ⁶	18.0 ²	19.3 ¹²
21 Hares.....	each	24.5 ⁸	24.5 ⁸	26.3 ¹
22 Hogs.....	each	.....	.....	.....
23 Honey.....	lb	9.3 ¹⁹	8.6 ¹⁴	9.1 ¹⁴
24 Horseshoes.....	each	12.0 ¹¹	12.0 ¹²	12.0 ¹⁴
25 Ink*.....	bot	72.0 ¹⁴	71.3 ¹⁸	70.5 ¹⁴
26 Kids.....	each	87.0 ¹⁸	85.5 ²⁰	97.5 ²³
27 Lambs.....	each	237.0 ²⁹	219.2 ²⁰	183.0 ²⁸
28 Lard.....	lb	13.9 ⁷	10.0 ⁶	11.3 ⁵
29 Nails, large*.....	lb	.....	.....	.....
30 Olive oil.....	lb	11.3 ¹⁸	11.5 ¹⁸	14.5 ²⁰
31 Paper, writing.....	qu	53.9 ¹⁸	57.0 ¹⁸	60.0 ¹⁸
32 Peaches.....	100	99.0 ²	35.3 ⁸	42.1 ²
33 Pears.....	100	126.7 ⁸	43.0 ⁸	68.0 ⁴
34 Peas, garden.....	robo	284.0 ²²	316.0 ¹⁸	258.0 ¹⁸
35 Pepper.....	lb	129.1 ⁶	132.0 ⁹	130.3 ⁹
36 Pigs.....	each	78.0 ⁵	76.4 ¹²	76.3 ¹¹
37 Pork.....	lb	9.6 ¹²	8.5 ¹⁷	10.4 ¹⁷
38 Quail.....	each	.....	24.0 ²⁴	33.0 ²⁸
39 Rice.....	lb	13.5 ¹²	15.5 ¹²	12.1 ¹⁴
40 Saffron.....	lb	1395.0 ¹⁸	1770.7 ⁶	1289.5 ⁸
41 Salt*.....	robo	39.7 ¹⁴	42.0 ¹⁸	41.6 ²²
42 Sardines, fresh.....	100	102.3 ¹²	57.7 ¹²	57.8 ¹⁸
43 Sardines, pickled.....	doz	40.5 ⁷	48.0 ⁴	49.7 ⁷
44 Sealing wax.....	lb	166.0 ¹²	163.5 ¹⁶	168.0 ¹⁸
45 Serge*.....	codo	72.0 ⁸	72.0 ²	72.0 ⁸
46 Sheepskins.....	each	39.3 ⁸	42.0 ¹¹	38.3 ¹²
47 Shoes, men's*.....	pair	96.0 ⁴	96.0 ¹⁸	96.0 ²⁰
48 Sugar.....	lb	247.0 ⁹	253.7 ¹⁰	250.5 ¹²
49 Vinegar.....	p	30.0 ¹⁶	30.5 ¹²	38.3 ²⁰
50 Wax.....	12 lb	783.8 ¹¹	835.5 ¹⁸	793.0 ¹⁶
51 Wickers.....	gross	312.0 ⁸	326.3 ¹²	256.0 ⁸
52 Wine, red.....	p	41.6 ¹⁸	69.0 ²²	34.5 ²⁸
53 Wine, white.....	p	66.0 ¹⁷	72.0 ¹⁸	67.5 ²²

* Not included in the general index numbers in Table 23.

APPENDICES

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B 1401-1451

(in pence)

COMMONITIES			1401	1402
English	Spanish	Units		
Almonds.....	Almendras.....	lb	20.1 ⁴	24.6 ¹¹
Barbel*.....	Barbos.....	each	....	....
Beef.....	Carne de vaca.....	lb c	13.3 ¹³	14.7 ¹⁹
Bran.....	Salvado.....	robo	24.0 ²	18.7 ¹²
Butter.....	Mantequilla.....	lb	28.0 ²	....
Calves.....	Terneros.....	each	480.0 ¹	562.5 ¹²
Candles, tallow.....	Velas de sebo.....	lb	16.0 ¹⁴	15.0 ²⁰
Candle-wicks.....	Babil.....	12 lb	256.0 ⁷	252.0 ¹²
Cardamom.....	Grana de paraiso.....	lb	....	412.7 ⁴
Cheese.....	Queso.....	lb	10.3 ¹⁰	11.6 ²²
Cherries, sweet.....	Cerezas.....	lb	....	7.8 ⁴
Cherries, sour.....	Guindas.....	lb	....	....
Chestnuts.....	Castañas.....	lb	6.0 ⁴	6.0 ²
Cinnamon.....	Canela.....	lb	....	204.1 ⁴
Cloth*.....	Tela.....	codo	42.0 ¹	39.0 ²
Cloves.....	Clavos.....	lb	....	454.7 ²
Conger eel, dried.....	Congrio seco.....	lb	41.8 ⁷	40.5 ²
Conger eel, fresh.....	Congrio fresco.....	lb	19.1 ¹	19.4 ²
Cuminseed.....	Cominos.....	lb	39.0 ²	34.1 ²
Dates.....	Dátiles.....	lb	....	45.2 ¹
Figs.....	Higos.....	lb	10.0 ¹	7.6 ²
Filberts.....	Avellanas.....	lb	....	10.0 ²
Firewood.....	Leña.....	g	36.0 ²⁰	28.5 ¹²
Geese*.....	Ansarón.....	each	....	....
Ginger.....	Jengibre.....	lb	288.0 ¹	211.1 ⁴
Grapes.....	Uvas.....	st	11.8 ²	14.0 ⁹
Hake, dried.....	Merluza seca.....	each	53.7 ²	52.6 ¹²
Hake, fresh.....	Merluza fresca.....	lb	17.0 ⁴	19.3 ²
Herring.....	Crach.....	lb	19.0 ²	25.6 ²
Honey.....	Miel.....	lb	9.3 ²	8.9 ¹¹
Horsehocs.....	Herraduras.....	each	12.0 ²	15.8 ¹²
Ink*.....	Tinta.....	bot	66.0 ²	70.5 ¹²
Kids.....	Cabritos.....	each	95.0 ²²	90.5 ²²
Lambs.....	Carneros.....	each	253.1 ²²	172.5 ²²
Lard.....	Manteca.....	lb	12.0 ²	16.0 ¹
Lemons.....	Limones.....	roo	80.0 ¹	....
Linen, fine*.....	Bretaña.....	codo	....	....
Nails, large*.....	Trabaderos.....	lb	....	....
Olive oil.....	Aceite.....	lb	16.0 ²	13.5 ¹²
Oranges.....	Naranjas.....	roo	108.0 ¹	....
Paper, writing.....	Papel.....	qu	60.0 ²	60.0 ²²
Peaches.....	Duramos.....	roo	....	39.7 ²
Peas, garden.....	Arvejas.....	robo	168.0 ²	216.0 ¹²
Pepper.....	Pimienta.....	lb	....	127.1 ²
Pigs.....	Lechones.....	each	....	72.0 ²
Pitchers, earthenware*.....	Picheras de tierra.....	each	....	....
Pork.....	Tocino.....	lb	9.5 ²	11.0 ²
Porpoise.....	Delfín.....	lb.	14.6 ¹²	16.3 ⁷
Pots, earthenware*.....	Ollas de tierra.....	each	....	20.0 ²

* Not included in the general index numbers in Table 23.

MONEY, PRICES, AND WAGES

B 1401-1451 — CONTINUED

COMMODITIES			1401	1402
English	Spanish	Units		
50 Quail.....	Perdices.....	each	33.0 ⁶	34.5 ¹⁷
51 Rabbits.....	Conejos.....	each	....	....
52 Raisins.....	Pasas.....	12 lb	96.0 ¹	82.4 ³
53 Ray.....	Muldes.....	lb	14.0 ³	14.0 ³
54 Rice.....	Arroz.....	lb	10.7 ³	8.8 ⁵
55 Saffron.....	Azafrán.....	lb	1542.2 ¹	1800.0 ⁵
56 Salmon.....	Salmón.....	lb	42.5 ²	42.7 ⁵
57 Salt*.....	Sal.....	robo	42.0 ⁵	43.0 ¹³
58 Sardines, fresh.....	Sardinas frescas.....	100	63.6 ³	66.5 ¹⁰
59 Sardines, pickled.....	Sardinas arençadas.....	doz	55.7 ⁵	48.2 ³
60 Sea bream.....	Besugo.....	lb	....	....
61 Sealing wax.....	Cera gomada.....	lb	168.0 ²	168.0 ¹⁰
62 Sheepskins.....	Pergaminos.....	each	43.0 ⁵	46.5 ¹³
63 Shoes, men's*.....	Zapatos de hombre.....	pair	96.0 ⁵	96.0 ²³
64 Squabs.....	Palominos.....	pair	....	....
65 Sugar.....	Azúcar.....	lb	252.0 ³	181.2 ⁴
66 Vinegar.....	Vinagre.....	p	43.0 ⁵	40.5 ¹³
67 Wax.....	Cera.....	12 lb	855.0 ⁷	832.0 ¹¹
68 Wickers.....	Bergas.....	gross	296.0 ⁶	204.0 ¹
69 Wine, red.....	Vino tinto.....	p	45.8 ²³	49.5 ⁴⁶
70 Wine, white.....	Vino blanco.....	p	66.0 ²³	66.0 ³¹

* Not included in the general index numbers in Table 23.

APPENDICES

B 1401-1451 — CONTINUED

	Units	1403	1404	1405	1406	1407
Almonds.....	lb	21.8 ¹⁸	....	24.4 ¹⁸	17.0 ¹⁸	21.5 ¹⁴
Barbel*	each	....	....	60.0 ⁴	68.0 ⁸	48.0 ⁸
Beef.....	lb c	15.0 ²⁸	....	16.3 ²⁸	17.5 ²⁰	17.1 ¹⁸
Bran.....	robo	23.3 ⁴	....	36.3 ¹⁸	25.0 ¹²	23.7 ⁹
Butter.....	lb	32.9 ⁸	....	36.0 ⁸	39.0 ¹⁸	42.0 ¹⁰
Calves.....	each	654.0 ¹⁰	....	594.0 ⁸	621.0 ¹⁸	....
Candles, tallow.....	lb	15.5 ²⁸	....	16.0 ¹⁸	18.3 ²⁰	22.7 ¹²
Candle-wicks.....	12 lb	236.0 ¹⁰	....	204.0 ⁸	234.0 ¹⁷	219.0 ¹⁷
Cardamom.....	lb	408.0 ²	....	488.0 ⁹	525.3 ¹²	456.0 ⁵
Cheese.....	lb	12.6 ¹⁸	....	15.0 ²²	12.6 ¹⁸	15.5 ¹²
Cherries, sweet.....	lb	5.0 ²	....	7.5 ⁴	10.5 ⁷	6.5 ⁴
Cherries, sour.....	lb	....	....	4.0 ²	....	8.0 ²
Chestnuts.....	lb	6.0 ⁴	....	7.0 ⁷	9.0 ²	8.0 ⁸
Cinnamon.....	lb	216.0 ²	....	250.0 ¹⁰	272.0 ¹⁸	242.0 ⁸
Cloth*	codo	41.0 ⁴	....	39.0 ⁵	....	40.7 ⁴
Cloves.....	lb	480.0 ²	....	508.0 ⁹	552.0 ¹²	456.0 ⁴
Conger eel, dried.....	lb	42.5 ²	....	48.0 ⁹	46.4 ²⁰	44.4 ⁹
Conger eel, fresh.....	lb	20.4 ⁸	....	25.4 ⁸	21.0 ⁸	16.2 ⁸
Cuminseed.....	lb	34.8 ²	....	34.8 ¹	25.2 ⁴	46.4 ¹
Dates.....	lb	....	....	....	....	....
Figs.....	lb	8.0 ²	....	8.0 ²	8.0 ⁸	12.0 ²
Filberts.....	lb	9.4 ⁴	....	7.8 ⁸	11.0 ⁴	11.7 ⁷
Firewood.....	g	36.0 ¹²	....	34.6 ¹⁸	39.7 ²⁸	37.1 ²⁸
Geese*	each	60.0 ¹	....	78.0 ⁷	90.0 ¹²	96.0 ²
Ginger.....	lb	210.7 ⁸	....	225.0 ¹¹	276.0 ¹⁸	256.0 ⁷
Grapes.....	st	11.4 ²	....	12.0 ²	16.8 ¹⁸	16.0 ⁴
Hake, dried.....	each	65.2 ⁷	....	70.2 ¹	52.6 ¹	48.0 ¹²
Hake, fresh.....	lb	22.3 ⁷	....	24.0 ¹	18.0 ¹	24.0 ²
Herring.....	lb	25.6 ⁹	....	31.4 ⁷	27.0 ¹²	29.6 ⁴
Honey.....	lb	8.3 ²	....	10.0 ¹⁴	9.4 ⁹	13.5 ²
Horseshoes.....	each	12.3 ²⁰	....	12.8 ²⁴	13.2 ¹⁸	12.0 ¹²
Ink*	bot	60.0 ¹⁸	....	....	60.0 ⁷	60.0 ²
Kids.....	each	79.5 ²⁴	....	78.0 ¹⁸	99.8 ¹²	91.0 ¹²
Lambs.....	each	293.0 ²²	....	282.3 ¹⁴	276.1 ²¹	288.0 ¹²
Lard.....	lb	11.5 ⁴	....	12.0 ⁴	13.0 ²	24.0 ¹
Lemons.....	roo	99.7 ²	....	69.0 ²	72.0 ²	60.0 ²
Linen, fine*	codo	47.0 ²	....	....	....	....
Nails, large*	lb	....	....	....	12.0 ²	....
Olive oil.....	lb	15.4 ²²	....	14.0 ¹⁶	13.5 ¹⁷	15.8 ¹²
Oranges.....	roo	109.8 ⁴	....	118.7 ⁴	98.0 ⁴	128.0 ²
Paper, writing.....	qu	59.3 ¹⁸	54.0 ²	60.0 ¹	53.8 ¹²	54.5 ²
Peaches.....	roo	74.5 ⁴	....	....	55.0 ⁸	86.4 ¹
Peas, garden.....	robo	275.3 ²⁸	....	376.0 ¹²	301.5 ²⁷	264.0 ¹²
Pepper.....	lb	120.0 ⁸	....	106.0 ⁸	116.0 ¹⁴	109.0 ⁸
Pigs.....	each	100.0 ¹¹	....	84.0 ⁴	66.3 ⁴	84.0 ⁸
Pitchers, earthenware*	each	12.0 ²	....	10.0 ²	12.0 ⁸	16.0 ¹
Pork.....	lb	11.0 ²²	....	14.6 ¹⁶	12.8 ²⁰	13.2 ¹²
Porpoise.....	lb	17.0 ⁸	....	19.8 ²	17.4 ⁸	21.2 ¹
Pots, earthenware*...	each	36.0 ¹	....	21.0 ⁷	18.7 ¹²	23.1 ¹²

Not included in the general index numbers in Table 23.

MONEY, PRICES, AND WAGES

B 1401-1451 — CONTINUED

	Units	1403	1404	1405	1406	1407
50 Quail.....	each	35.0 ²³	....	24.0 ¹⁶	25.5 ²⁰	33.1 ¹
51 Rabbits.....	each	....	....	....	24.0 ¹¹	21.5 ⁴
52 Raisins.....	12 lb	72.0 ²	....	126.7 ¹	96.0 ¹	....
53 Ray.....	lb	16.0 ²	....	....	14.0 ²	17.3 ²
54 Rice.....	lb	14.0 ¹⁸	....	10.4 ¹⁴	11.9 ¹²	15.3 ⁹
55 Saffron.....	lb	1498.0 ²	....	1253.0 ²	956.0 ¹²	1576.0 ⁷
56 Salmon.....	lb	57.0 ¹⁸	....	46.5 ⁷	45.9 ¹¹	39.5 ⁷
57 Salt*.....	robo	62.4 ²⁸	....	54.5 ¹¹	56.0 ¹⁰	56.0 ⁸
58 Sardines, fresh.....	100	59.7 ¹¹	....	115.2 ²¹	44.5 ²²	61.2 ¹
59 Sardines, pickled.....	doz	48.0 ¹¹	....	64.0 ¹¹	60.0 ⁷	72.0 ²
60 Sea bream.....	lb	18.0 ²	....	19.0 ⁸	17.5 ⁸	18.0 ¹
61 Sealing wax.....	lb	163.5 ¹⁸	....	....	142.7 ¹²	....
62 Sheepskins.....	each	49.8 ¹⁶	42.0 ¹	48.0 ²	46.1 ¹¹	52.0 ²
63 Shoes, men's*.....	pair	96.0 ¹⁶	....	....	96.0 ¹²	....
64 Squabs.....	pair	....	....	21.3 ¹⁰	23.5 ⁹	16.0 ²
65 Sugar.....	lb	228.5 ¹⁴	....	240.0 ¹⁸	288.0 ¹²	242.0 ¹
66 Vinegar.....	p	36.9 ²⁶	....	34.5 ¹⁸	48.0 ¹⁸	54.2 ⁷
67 Wax.....	12 lb	730.5 ¹⁴	....	664.0 ²⁰	606.5 ²²	624.3 ²
68 Wickers.....	gross	219.0 ⁸	....	228.0 ⁶	222.0 ⁸	228.0 ²
69 Wine, red.....	p	42.8 ⁴²	41.4 ²	46.7 ²⁰	73.5 ²⁰	84.0 ²
70 Wine, white.....	p	80.3 ⁴²	....	69.9 ²⁰	99.0 ²²	106.1 ²

* Not included in the general index numbers in Table 23.

B 1401-1451 — CONTINUED

	Units	1408	1409	1410	1411	1412
Almonds.....	lb	26.7 ¹⁸	19.8 ⁹	23.2 ⁵	30.8 ¹⁰	26.3 ¹⁸
Barbel*.....	each	72.0 ¹	96.0 ²	60.0 ¹	72.0 ⁴	102.0 ²
Beef.....	lb c	18.0 ¹⁰	17.3 ⁸	17.2 ¹⁹	17.6 ²¹	17.5 ²⁴
Bran.....	robo	24.0 ⁷	28.0 ⁷	28.5 ¹⁴	28.5 ⁵	23.3 ¹⁸
Butter.....	lb	41.0 ⁹	49.6 ¹	43.9 ⁴	46.7 ⁸	33.3 ⁵
Calves.....	each	582.0 ⁹	660.0 ²	594.0 ⁵	690.0 ⁵	676.5 ⁸
Candles, tallow.....	lb	16.7 ¹⁴	16.0 ¹²	16.0 ²²	16.0 ¹⁷	16.8 ²⁷
Candle-wicks.....	12 lb	213.0 ⁵	234.0 ⁵	234.0 ⁹	240.0 ⁷	252.0 ¹⁷
Cardamom.....	lb	480.0 ⁵	436.0 ⁹	432.0 ¹⁰	450.0 ²⁰	448.0 ⁹
Cheese.....	lb	12.9 ¹⁴	15.0 ⁴	15.1 ¹⁷	13.8 ²⁵	13.6 ²⁹
Cherries, sweet.....	lb	10.5 ⁴	....	7.0 ⁴	9.0 ⁸	....
Cherries, sour.....	lb	6.5 ⁴	....	5.0 ⁴	4.7 ⁷	....
Chestnuts.....	lb	....	8.0 ¹	8.0 ²	6.0 ⁴	6.0 ²
Cinnamon.....	lb	332.0 ⁷	365.0 ¹²	345.8 ¹²	350.0 ¹⁴	270.0 ¹²
Cloth*.....	codo	....	....	42.0 ²	....	39.0 ⁷
Cloves.....	lb	468.0 ⁴	600.0 ²	432.0 ¹¹	506.0 ¹⁵	591.3 ⁸
Conger eel, dried.....	lb	47.0 ⁵	49.0 ⁷	50.5 ¹⁸	44.0 ¹⁰	47.0 ¹⁰
Conger eel, fresh.....	lb	23.4 ⁴	22.2 ⁵	22.0 ⁵	25.9 ⁸	26.7 ¹
Cuminseed.....	lb	49.9 ²	46.4 ¹	34.5 ⁸	32.6 ¹⁰	23.5 ⁵
Dates.....	lb	....	....	36.0 ²	36.0 ⁴	75.8 ⁴
Figs.....	lb	11.8 ⁷	10.0 ⁵	7.3 ⁷	10.0 ⁵	14.5 ¹²
Filberts.....	lb	11.7 ⁵	11.0 ⁵	11.3 ⁷	12.0 ⁸	11.3 ⁶
Firewood.....	g	35.5 ²⁹	34.6 ²²	31.0 ²²	32.2 ²⁴	34.7 ⁹
Geese*.....	each	84.0 ¹⁰	55.0 ⁹	49.0 ⁹	69.5 ¹²	54.0 ¹¹
Ginger.....	lb	356.0 ²	357.0 ¹⁴	350.5 ¹⁵	359.8 ¹⁵	350.8 ¹²
Grapes.....	st	19.3 ⁸	6.0 ⁴	12.0 ⁵	18.7 ⁸	12.0 ²
Hake, dried.....	each	45.3 ²	71.6 ⁷	60.0 ¹	72.8 ¹²	69.0 ²²
Hake, fresh.....	lb	15.5 ²	24.5 ⁷	24.8 ¹⁰	24.9 ⁹	23.6 ¹²
Herring.....	lb	....	20.2 ²	29.3 ¹²	29.7 ⁷	23.3 ⁴
Honey.....	lb	11.5 ¹²	10.0 ⁴	12.0 ²	11.7 ⁵	....
Horseshoes.....	each	13.8 ¹²	21.0 ⁴	20.4 ²²	18.5 ²²	16.2 ²⁷
Ink*.....	bot	60.0 ²	72.0 ²	72.0 ¹⁴	65.0 ¹⁰	69.0 ¹²
Kids.....	each	88.5 ¹²	92.0 ¹²	89.3 ¹⁴	92.6 ¹⁷	86.8 ¹²
Lambs.....	each	357.0 ²²	316.3 ¹¹	312.0 ¹²	315.0 ²⁰	265.8 ¹²
Lard.....	lb	20.0 ⁴	18.0 ⁵	17.0 ⁵	16.3 ⁵	18.0 ²
Lemons.....	roo	54.0 ¹	....	60.0 ²	....	32.0 ¹
Linen, fine*.....	codo	....	....	49.1 ⁴	41.0 ²	42.5 ¹
Nails, large*.....	lb	....	....	....	8.0 ¹	....
Olive oil.....	lb	15.0 ¹⁴	16.0 ¹²	16.0 ²²	15.1 ²⁰	16.2 ²⁰
Oranges.....	roo	108.0 ²	122.0 ²	175.5 ⁷	152.8 ⁷	162.0 ⁵
Paper, writing.....	qu	54.5 ⁵	59.3 ¹²	59.0 ¹²	52.3 ²⁰	60.3 ²²
Peaches.....	roo	....	....	64.0 ¹	72.0 ¹	64.8 ¹
Peas, garden.....	robo	217.7 ⁵	384.0 ⁵	256.0 ⁵	240.0 ¹⁰	228.0 ¹¹
Pepper.....	lb	108.0 ⁷	150.3 ¹²	178.5 ¹²	202.0 ²¹	200.0 ¹²
Pigs.....	each	72.0 ²	96.0 ²	85.5 ¹²	75.3 ¹¹	90.0 ⁷
Pitchers, earthenware*.....	each	....	....	14.0 ⁴	17.0 ²	24.0 ²
Pork.....	lb	13.3 ¹²	13.8 ¹²	15.6 ²²	11.9 ²²	10.2 ¹⁰
Porpoise.....	lb	18.8 ²	19.2 ²	18.4 ¹²	17.8 ¹⁰	19.0 ²
Pots, earthenware*.....	each	16.4 ²	....	22.1 ²	25.2 ²	16.8 ¹²

* Not included in the general index numbers in Table 23.

MONEY, PRICES, AND WAGES

B 1401-1451 — CONTINUED

	Units	1408	1409	1410	1411	1412
50 Quail.....	each	34.5 ⁹	21.3 ⁸	....	21.0 ¹⁴	24.0 ¹
51 Rabbits.....	each	23.0 ⁹	28.0 ⁸	22.8 ²²	22.0 ¹⁶	16.5 ¹
52 Raisins.....	12 lb	....	81.8 ¹	84.5 ¹	144.0 ²	103.3 ¹
53 Ray.....	lb	16.0 ⁸	21.0 ²	16.5 ⁴	18.0 ⁵	....
54 Rice.....	lb	12.0 ¹²	10.9 ⁶	13.3 ¹⁰	14.8 ¹⁶	18.5 ¹
55 Saffron.....	lb	1400.0 ⁵	1568.0 ¹¹	1566.0 ¹⁰	1220.0 ¹⁸	1146.3 ¹
56 Salmon.....	lb	....	53.7 ¹	41.0 ⁵	40.2 ⁹	35.8 ¹
57 Salt*.....	robo	60.0 ¹²	48.3 ⁷	42.8 ¹⁰	58.7 ¹⁸	50.9 ¹
58 Sardines, fresh.....	100	94.0 ⁴	50.9 ¹	63.7 ¹²	66.5 ¹⁸	69.3 ¹
59 Sardines, pickled.....	doz	72.0 ¹¹	72.0 ¹²	48.0 ²⁶	72.0 ²²	51.4 ¹
60 Sea bream.....	lb	18.5 ⁴	19.3 ⁵	19.7 ⁵	18.0 ²	17.0 ¹
61 Sealing wax.....	lb	144.0 ²	144.0 ²	141.0 ¹²	146.0 ¹⁴	144.0 ¹
62 Sheepskins.....	each	48.7 ⁶	45.0 ⁷	48.0 ¹⁸	49.3 ¹⁸	55.8 ¹
63 Shoes, men's*.....	pair	....	96.0 ¹	96.0 ²	96.0 ²	96.0 ¹
64 Squabs.....	pair	24.0 ¹	19.0 ⁹	17.0 ¹²	17.8 ⁹	16.5 ¹
65 Sugar.....	lb	264.0 ⁶	222.0 ⁸	215.0 ¹⁸	202.0 ¹⁷	216.8 ¹
66 Vinegar.....	p	49.7 ¹⁶	38.7 ⁶	39.4 ⁸	45.7 ¹²	48.9 ¹
67 Wax.....	12 lb	619.6 ²¹	670.0 ¹⁰	704.3 ²¹	731.3 ²⁰	774.0 ¹
68 Wickers.....	gross	220.0 ⁴	216.0 ⁴	216.0 ²	216.0 ⁵	218.7 ¹
69 Wine, red.....	p	91.6 ²⁶	41.2 ¹²	69.0 ²⁰	101.0 ²²	111.0 ¹
70 Wine, white.....	p	118.8 ¹¹	70.6 ²⁴	95.3 ²⁴	141.0 ²²	126.0 ¹

* Not included in the general index numbers in Table 23.

B 1401-1451 --- CONTINUED

	Units	1413	1414	1415	1416	1417
1 Almonds.....	lb	....	23.7 ^d	24.8 ⁷	30.1 ⁸	....
2 Barbel ^o	each	....	36.0 ³	83.4 ³	58.3 ⁵	....
3 Beef.....	lb c	....	17.6 ¹⁰	17.3 ¹⁴	18.3 ²¹	....
4 Bran.....	robo	....	27.0 ¹¹	23.4 ⁷	24.0 ¹³	....
5 Butter.....	lb	....	36.0 ⁴	40.0 ¹	42.8 ³	....
6 Calves.....	each	....	669.0 ¹¹	811.5 ⁸	687.0 ⁸	....
7 Candles, tallow.....	lb	....	20.9 ¹⁷	17.3 ¹⁴	18.0 ¹⁷	....
8 Candle-wicks.....	12 lb	....	276.0 ¹³	304.0 ⁷	242.0 ¹¹	....
9 Cardamom.....	lb	....	588.0 ³	428.5 ²	432.0 ¹	....
10 Cheese.....	lb	....	14.8 ²⁰	12.4 ¹⁰	13.0 ¹³	....
11 Cherries, sweet.....	lb	....	11.5 ⁶	9.3 ⁴	10.0 ³	....
12 Cherries, sour.....	lb	....	8.0 ²	6.0 ⁴	....	....
13 Chestnuts.....	lb	....	....	6.0 ¹	6.0 ¹	....
14 Cinnamon.....	lb	....	....	....	334.0 ⁶	....
15 Cloth ^o	codo	....	43.0 ³	48.0 ³	39.0 ²	....
16 Cloves.....	lb	....	576.0 ³	412.5 ¹	....	....
17 Conger eel, dried.....	lb	....	52.5 ³	49.5 ²	58.7 ⁶	....
18 Conger eel, fresh.....	lb	....	23.6 ⁴	29.0 ¹	21.6 ³	....
19 Cuminseed.....	lb	....	60.8 ⁴	47.4 ³	48.5 ²	....
20 Dates.....	lb	....	....	....	36.0 ³	....
21 Figs.....	lb	....	14.0 ⁵	....	10.7 ³	....
22 Filberts.....	lb	11.3 ³	....	....	12.0 ²	....
23 Firewood.....	g	....	32.5 ²⁰	35.8 ⁴	42.3 ⁵	....
24 Geese ^o	each	....	48.0 ¹²	54.0 ⁷	66.0 ⁶	....
25 Ginger.....	lb	....	336.0 ⁴	311.3 ³	437.3 ³	....
26 Grapes.....	st	....	....	....	24.0 ¹	....
27 Hake, dried.....	each	....	60.0 ¹	....	60.0 ²	....
28 Hake, fresh.....	lb	....	27.0 ⁷	....	....	....
29 Herring.....	lb	....	32.6 ⁴	32.9 ¹	32.4 ³	....
30 Honey.....	lb	....	13.0 ²	12.0 ⁷	12.0 ³	....
31 Horseshoes.....	each	....	16.1 ²³	16.0 ²¹	16.1 ²¹	....
32 Ink ^o	bot	....	72.0 ¹⁴	72.0 ¹⁸	72.0 ³	....
33 Kids.....	each	....	86.3 ¹⁶	96.0 ¹³	98.0 ¹³	....
34 Lambs.....	each	....	307.0 ²¹	264.0 ¹¹	323.0 ¹³	....
35 Lard.....	lb	....	12.0 ¹	24.0 ²	18.0 ²	....
36 Lemons.....	100	....	....	....	50.0 ²	....
37 Linen, fine ^o	codo	....	40.8 ³	48.0 ¹	40.0 ¹	....
38 Nails, large ^o	lb	....	....	....	....	....
39 Olive oil.....	lb	....	19.3 ¹⁴	16.0 ³	17.0 ¹⁴	....
40 Oranges.....	100	....	199.5 ³	144.0 ⁴	204.7 ⁴	....
41 Paper, writing.....	qu	60.0 ³	59.8 ²⁰	58.3 ³	59.7 ¹³	....
42 Peaches.....	100	....	120.0 ³	137.5 ⁴	....	....
43 Peas, garden.....	robo	....	228.0 ⁹	228.0 ⁴	216.0 ⁴	....
44 Pepper.....	lb	....	....	225.0 ¹	240.0 ¹	....
45 Pigs.....	each	....	87.8 ¹⁶	90.0 ⁶	87.0 ⁴	....
46 Pitchers, earthenware ^o	each	....	24.0 ¹	....	....	....
47 Pork.....	lb	....	11.3 ³	....	12.0 ²	....
48 Porpoise.....	lb	....	23.1 ⁴	19.7 ⁴	19.5 ⁹	....
49 Pots, earthenware ^o	each	24.0 ³	21.0 ¹⁷	18.8 ⁶	19.5 ⁷	....

* Not included in the general index numbers in Table 23.

B 1401-1451 — CONTINUED

	Units	1413	1414	1415	1416	1417
50 Quail.....	each	....	27.8 ¹⁹	33.5 ¹⁸	28.0 ¹⁷	....
51 Rabbits.....	each	....	18.8 ¹⁸	....	24.0 ⁸	....
52 Raisins.....	12 lb	....	120.0 ¹	....	120.0 ⁶	....
53 Ray.....	lb	....	20.0 ¹	....	17.0 ⁶	....
54 Rice.....	lb	....	19.8 ¹⁰	16.8 ¹⁰	14.6 ¹⁹	....
55 Saffron.....	lb	....	1224.0 ⁷	825.0 ¹	810.0 ¹	....
56 Salmon.....	lb	....	....	....	....	....
57 Salt*.....	robo	....	46.7 ¹⁰	38.5 ⁷	35.4 ¹⁸	....
58 Sardines, fresh.....	100	....	66.7 ⁶	66.0 ¹¹	61.5 ¹⁰	....
59 Sardines, pickled.....	doz	....	60.0 ⁷	....	54.7 ¹²	....
60 Sea bream.....	lb	....	24.0 ¹	....	24.0 ¹	....
61 Sealing wax.....	lb	....	158.7 ⁸	156.0 ⁸	163.0 ⁷	....
62 Sheepskins.....	each	46.8 ¹	49.7 ⁹	46.0 ⁸	38.7 ⁸	....
63 Shoes, men's*.....	pair	....	96.0 ¹⁸	96.0 ¹²	96.0 ²⁶	....
64 Squabs.....	pair	....	20.0 ²⁰	....	....	....
65 Sugar.....	lb	....	253.5 ¹²	212.5 ⁷	199.1 ¹¹	....
66 Vinegar.....	p	....	44.3 ¹⁶	37.9 ⁶	48.0 ¹⁴	....
67 Wax.....	12 lb	....	929.9 ¹⁶	960.0 ¹⁰	1049.6 ¹⁰	....
68 Wickers.....	gross	....	216.0 ⁷	216.0 ⁸	216.0 ⁷	....
69 Wine, red.....	p	....	69.0 ¹⁸	41.7 ¹⁸	77.3 ¹⁹	....
70 Wine, white.....	p	....	85.0 ¹⁷	80.4 ⁸	111.8 ¹⁸	....

* Not included in the general index numbers in Table 23.

B 1401-1451 — CONTINUED

	Units	1418	1419	1420	1421	1422
1 Almonds.....	lb	26.2 ¹⁴	21.6 ¹⁸	....	22.8 ¹⁸	24.0 ⁹
2 Barbel*	each	50.5 ⁷	36.0 ⁴	....	30.0 ⁴	36.7 ¹⁷
3 Beef.....	lb c	18.4 ²⁹	18.3 ¹⁸	....	18.0 ¹⁷	17.7 ¹⁸
4 Bran.....	robo	24.0 ¹¹	25.3 ¹²	....	24.0 ⁸	24.0 ⁴
5 Butter.....	lb	30.0 ⁴	35.8 ⁹	....	44.1 ⁸	38.5 ⁸
6 Calves.....	each	842.0 ¹¹	920.0 ⁸	....	704.0 ¹⁸	720.0 ⁴
7 Candles, tallow.....	lb	16.6 ¹⁶	18.0 ¹⁶	....	17.5 ¹⁸	17.3 ¹²
8 Candle-wicks.....	12 lb	217.3 ²¹	230.0 ¹⁸	....	213.0 ⁸	164.0 ⁸
9 Cardamom.....	lb	....	....	....	384.0 ⁸	....
0 Cheese.....	lb	13.9 ¹⁸	14.3 ²⁰	....	13.4 ¹⁸	16.5 ¹¹
1 Cherries, sweet.....	lb	12.0 ⁸	12.0 ⁴	....	9.0 ⁴	12.0 ¹
2 Cherries, sour.....	lb	10.0 ⁴	9.0 ⁴	....	9.0 ⁸	....
3 Chestnuts.....	lb	....	6.0 ⁸	....	8.0 ¹	....
4 Cinnamon.....	lb	306.0 ⁸	266.5 ¹⁸	....	240.0 ⁸	240.0 ¹
5 Cloth*	codo	42.8 ¹⁰	36.0 ¹	....	37.0 ⁸	39.5 ⁴
6 Cloves.....	lb	396.0 ⁸	480.0 ⁷	....	456.0 ⁸	....
7 Conger eel, dried.....	lb	56.0 ⁸	60.0 ¹⁸	....	57.0 ⁹	60.0 ⁸
8 Conger eel, fresh.....	lb	26.6 ¹¹	31.0 ¹	....	27.2 ⁸	28.2 ⁸
9 Cuminseed.....	lb	45.6 ⁷	41.8 ⁸	....	43.6 ⁸	53.5 ⁸
0 Dates.....	lb	40.0 ⁸	36.0 ⁸	....	48.0 ⁸	42.0 ¹
1 Figs.....	lb	10.1 ⁸	10.3 ⁷	....	10.0 ⁸	8.6 ⁸
2 Filberts.....	lb	9.4 ⁷	11.0 ⁴	....	12.0 ⁸	....
3 Firewood.....	g	39.7 ⁸	35.7 ¹⁸	....	33.3 ¹⁷	28.3 ⁸
4 Geese*	each	60.0 ⁹	65.8 ⁸	....	64.0 ¹⁰	72.0 ⁸
5 Ginger.....	lb	420.0 ⁸	273.8 ¹⁸	....	252.0 ⁸	264.0 ⁸
6 Grapes.....	at	....	19.5 ⁸	....	....	12.0 ⁴
7 Hake, dried.....	each	92.1 ⁴	68.4 ²⁷	....	71.0 ⁴	74.0 ⁸
8 Hake, fresh.....	lb	31.5 ⁴	23.4 ²⁴	....	24.3 ⁴	25.3 ²
9 Herring.....	lb	30.6 ¹⁸	28.2 ⁸	....	25.6 ⁸	....
0 Honey.....	lb	12.2 ¹⁰	12.3 ¹⁸	....	10.2 ⁸	6.0 ⁴
1 Horseshoes.....	each	16.0 ¹⁸	17.5 ²¹	....	15.8 ⁸	....
2 Ink*	bot	72.0 ¹⁴	....	....	70.5 ¹⁸	72.0 ¹⁸
3 Kids.....	each	106.3 ¹⁴	113.3 ¹⁸	....	84.8 ¹⁸	97.8 ¹⁸
4 Lambs.....	each	310.5 ²⁸	288.8 ²⁷	....	264.8 ¹⁸	268.1 ¹⁸
5 Lard.....	lb	15.0 ⁸	20.3 ⁹	....	19.5 ⁸	12.0 ⁸
6 Lemons.....	roo	75.3 ⁸	79.0 ⁸	....	60.0 ⁸	91.5 ⁸
7 Linen, fine*	codo	41.9 ⁸	39.0 ⁸	....	....	....
8 Nails, large*	lb	....	....	....	....	....
9 Olive oil.....	lb	16.8 ¹¹	16.8 ¹⁸	....	14.7 ¹⁸	16.0 ⁷
0 Oranges.....	roo	156.8 ⁷	200.0 ⁸	....	158.0 ⁸	150.0 ⁸
1 Paper, writing.....	qu	52.6 ¹²	48.0 ¹⁸	....	51.8 ¹⁸	55.2 ¹⁴
2 Peaches.....	roo	....	86.0 ¹	....	83.5 ⁸	66.0 ¹
3 Peas, garden.....	robo	217.0 ¹¹	309.8 ¹⁷	....	288.0 ⁴	408.0 ⁸
4 Pepper.....	lb	196.0 ⁴	212.0 ¹⁸	....	309.0 ⁸	204.0 ¹
5 Pigs.....	each	84.7 ⁷	96.0 ¹	....	96.0 ⁸	90.0 ⁸
6 Pitchers, earthenware*	each	....	24.0 ¹	....	....	....
7 Pork.....	lb	12.0 ²⁴	14.0 ²²	....	11.9 ¹⁴	11.8 ⁸
8 Porpoise.....	lb	20.2 ⁸	19.2 ¹	....	16.6 ⁸	13.4 ²
9 Pots, earthenware*..	each	20.8 ¹⁸	21.4 ⁸	....	17.5 ¹⁷	22.8 ¹²

* Not included in the general index numbers in Table 23.

MONEY, PRICES, AND WAGES

B 1401-1451 — CONTINUED

	Units	1418	1419	1420	1421	1422
50 Quail.....	each	24.0 ¹⁸	28.4 ¹⁵	....	31.0 ²⁰	28.9 ¹⁴
51 Rabbits.....	each	24.0 ⁹	24.5 ⁸	....	24.8 ¹⁶	22.3 ¹¹
52 Raisins.....	12 lb	79.3 ⁵	108.0 ⁴	....	90.0 ⁷	88.0 ¹
53 Ray.....	lb	21.5 ⁵	22.7 ²	....	20.0 ¹	....
54 Rice.....	lb	14.0 ¹³	12.0 ¹⁶	....	13.8 ¹⁶	14.5 ¹⁴
55 Saffron.....	lb	2166.0 ³	1467.3 ¹⁰	....	1200.0 ¹	1260.0 ¹
56 Salmon.....	lb	....	52.0 ²	....	64.4 ⁵	60.4 ⁶
57 Salt*.....	robo	48.0 ¹⁸	45.0 ⁴	....	61.3 ⁵	59.0 ⁸
58 Sardines, fresh.....	100	85.7 ¹⁹	100.0 ⁴	....	64.7 ¹⁰	74.5 ²
59 Sardines, pickled.....	doz	84.0 ⁷	72.0 ¹²	....	72.0 ¹	54.0 ⁵
60 Sea bream.....	lb	....	22.5 ²	....	....	....
61 Sealing wax.....	lb	....	....	....	120.0 ¹⁰	124.3 ⁶
62 Sheepskins.....	each	44.0 ⁴	....	....	48.0 ²	....
63 Shoes, men's*.....	pair	96.0 ¹⁷	....	....	96.0 ¹⁶	96.0 ¹⁰
64 Squabs.....	pair	24.0 ¹²	22.8 ¹²	....	25.3 ⁹	19.0 ⁷
65 Sugar.....	lb	189.1 ¹¹	174.0 ¹⁸	....	148.5 ⁶	168.0 ⁸
66 Vinegar.....	p	54.0 ¹⁸	64.0 ¹⁴	....	54.0 ¹⁸	65.1 ⁵
67 Wax.....	12 lb	792.8 ¹⁸	785.3 ²²	....	633.1 ⁵	721.7 ⁵
68 Wickers.....	gross	220.0 ⁹	228.0 ⁸	....	200.0 ⁴	216.0 ¹
69 Wine, red.....	p	72.0 ²⁰	94.5 ¹⁸	....	54.0 ²²	69.4 ²²
70 Wine, white.....	p	92.3 ¹⁸	131.4 ¹⁶	....	67.9 ²¹	129.3 ⁸

* Not included in the general index numbers in Table 23.

B 1401-1451 — CONTINUED

	Units	1423	1424	1425	1426	1427
1 Almonds.....	lb	26.1 ⁸	23.9 ⁰	24.6 ⁵	36.9 ¹⁴	31.9 ⁴
2 Barbel ⁹	each	29.3 ¹³	69.0 ⁴	33.0 ⁷	57.0 ⁸	....
3 Beef.....	lb c	18.9 ¹⁷	18.0 ¹⁶	20.0 ⁰	17.8 ¹⁹	19.0 ³
4 Bran.....	robo	24.0 ⁷	24.0 ⁵	30.0 ⁵	38.3 ¹⁴	24.0 ¹
5 Butter.....	lb	49.6 ¹	....	37.2 ¹	43.9 ¹¹	42.0 ¹
6 Calves.....	each	622.5 ⁵	870.0 ⁵	949.5 ⁵	480.0 ⁵	456.0 ²
7 Candles, tallow.....	lb	18.8 ¹⁸	17.0 ⁹	18.0 ⁴	18.0 ¹⁸	18.0 ¹¹
8 Candle-wicks.....	12 lb	219.0 ⁵	192.0 ³	280.0 ³	259.5 ¹⁶	270.8 ¹⁴
9 Cardamom.....	lb	....	432.0 ³	1008.0 ¹	504.0 ¹	....
0 Cheese.....	lb	15.6 ¹⁸	16.4 ⁹	15.4 ⁹	15.0 ²⁵	12.1 ²
1 Cherries, sweet.....	lb	13.0 ⁴	....	....	9.9 ⁴	....
2 Cherries, sour.....	lb	12.0 ¹	....	....	12.0 ²	....
3 Chestnuts.....	lb	....	....	....	8.0 ²	24.0 ¹
4 Cinnamon.....	lb	264.0 ⁶	408.0 ³	432.0 ⁵	440.0 ¹²	408.0 ³
5 Cloth [*]	codo	38.8 ⁹	45.0 ⁴	43.5 ²	....	60.0 ¹
6 Cloves.....	lb	408.0 ¹	480.0 ²	....	504.0 ⁸	....
7 Conger eel, dried.....	lb	60.0 ²	60.0 ¹	60.0 ¹	57.0 ¹⁸	57.0 ²
8 Conger eel, fresh.....	lb	28.2 ²	19.9 ²	29.0 ²	27.2 ⁹	26.8 ²
9 Cuminseed.....	lb	....	....	42.2 ²	45.8 ⁹	....
0 Dates.....	lb	....	....	....	45.7 ²	....
1 Figs.....	lb	6.8 ²	....	7.2 ²	13.7 ²	24.0 ¹
2 Filberts.....	lb	....	....	12.0 ²	12.0 ⁶	24.0 ¹
3 Firewood.....	g	34.3 ²⁵	36.0 ²	36.0 ⁵	36.0 ¹⁷	34.5 ⁴
4 Geese [*]	each	89.5 ¹¹	76.4 ⁴	84.0 ⁵	54.0 ¹⁰	60.0 ²
5 Ginger.....	lb	270.0 ⁴	288.0 ²	548.0 ⁴	460.0 ¹²	396.0 ²
6 Grapes.....	st	....	....	....	18.0 ¹	....
7 Hake, dried.....	each	58.5 ²	61.4 ¹	70.2 ⁵	72.0 ²	52.6 ¹
8 Hake, fresh.....	lb	20.0 ²	21.0 ¹	24.0 ⁵	19.3 ⁵	18.0 ¹
9 Herring.....	lb	25.4 ²	29.2 ¹	33.5 ²	28.2 ⁵	26.4 ⁴
0 Honey.....	lb	12.0 ⁴	10.0 ⁵	7.5 ⁵	9.9 ¹⁸	....
1 Horsehoses.....	each	16.0 ⁸	16.0 ²	17.0 ²	16.0 ²⁰	16.3 ¹⁰
2 Ink [*]	bot	....	72.0 ¹¹	72.0 ⁹	72.0 ¹	....
3 Kids.....	each	94.0 ¹²	96.8 ¹⁶	102.0 ¹⁰	101.3 ¹⁸	102.0 ¹⁸
4 Lambs.....	each	277.3 ¹⁴	271.9 ⁷	238.9 ¹	288.0 ¹⁶	288.0 ¹⁶
5 Lard.....	lb	12.0 ²	....	16.8 ⁴	16.0 ⁶	16.0 ¹
6 Lemons.....	roo	96.0 ²	....	....	78.0 ²	....
7 Linen, fine [*]	codo	....	....	....	48.0 ²	42.0 ¹
8 Nails, large [*]	lb	12.0 ⁴	....	....	....	....
9 Olive oil.....	lb	14.0 ¹²	16.7 ⁶	12.0 ⁴	14.0 ¹⁸	15.0 ²
0 Oranges.....	roo	126.0 ²	144.0 ¹	166.2 ²	186.3 ⁸	....
1 Paper, writing.....	qu	52.1 ¹⁸	54.6 ¹²	59.1 ¹²	58.0 ²⁰	....
2 Peaches.....	roo	56.7 ¹	....	....	75.0 ²	....
3 Peas, garden.....	robo	266.0 ¹⁴	240.0 ⁵	288.0 ¹	288.0 ¹⁸	309.8 ¹
4 Pepper.....	lb	216.0 ²	216.0 ²	225.1 ⁴	233.0 ¹⁴	204.0 ²
5 Pigs.....	each	88.0 ⁸	....	87.0 ²	82.0 ⁵	84.0 ¹
6 Pitchers, earthenware [*]	each	....	21.0 ¹	24.0 ⁴	14.7 ⁴	21.5 ⁴
7 Pork.....	lb	12.0 ⁵	15.5 ⁹	15.5 ¹²	12.8 ¹¹	12.3 ²
8 Porpoise.....	lb	18.5 ⁴	19.2 ¹	15.4 ¹	19.4 ⁵	23.2 ²
9 Pots, earthenware [*]	each	23.9 ⁸	18.7 ¹²	20.3 ⁵	21.7 ¹²	21.8 ⁹

* Not included in the general index numbers in Table 23.

B 1401-1451 — CONTINUED

	Units	1423	1424	1425	1426	1427
50 Quail.....	each	34.5 ¹²	32.2 ¹⁶	34.8 ¹⁶	36.0 ¹⁷	39.0 ¹⁰
51 Rabbits.....	each	24.0 ¹²	23.5 ¹¹	24.0 ¹¹	24.0 ⁴	24.0 ⁸
52 Raisins.....	12 lb	83.8 ²	....	96.0 ¹	180.0 ²	....
53 Ray.....	lb	17.0 ²	18.3 ⁴	26.0 ¹	18.7 ⁷	....
54 Rice.....	lb	14.0 ¹²	16.0 ⁴	22.3 ⁸	36.0 ¹¹	28.0 ²
55 Saffron.....	lb	984.0 ⁵	1440.0 ²	1542.2 ¹	1520.0 ⁹	1080.0 ²
56 Salmon.....	lb	....	....	....	82.2 ²	67.1 ¹
57 Salt*.....	robo	60.0 ⁸	72.0 ⁵	68.0 ⁴	69.0 ⁵	....
58 Sardines, fresh.....	roo	58.8 ²	63.4 ⁷	54.6 ²	52.0 ⁵	34.7 ¹
59 Sardines, pickled.....	doz	74.5 ¹	....	74.5 ⁴	72.0 ⁶	72.0 ⁴
60 Sea bream.....	lb	....	....	20.5 ⁴	20.0 ⁴	....
61 Sealing wax.....	lb	120.0 ⁴	120.0 ¹	140.0 ⁴	141.0 ¹¹	....
62 Sheepskins.....	each	45.1 ⁴	42.0 ²	47.5 ⁵	46.5 ¹²	....
63 Shoes, men's*.....	pair	96.0 ¹⁶	96.0 ¹⁷	96.0 ¹¹	96.0 ¹²	....
64 Squabs.....	pair	21.5 ²	21.0 ¹²	24.0 ⁴	21.8 ⁵	27.0 ⁸
65 Sugar.....	lb	138.0 ²	144.0 ¹	210.0 ⁴	180.8 ²²	211.5 ⁷
66 Vinegar.....	p	40.8 ¹²	35.1 ⁵	35.1 ⁹	48.0 ¹⁴	59.3 ¹
67 Wax.....	12 lb	615.0 ²	558.0 ⁴	639.0 ⁴	618.0 ²⁹	598.5 ¹⁵
68 Wickers.....	gross	192.0 ²	160.0 ²	162.0 ²	192.0 ⁵	....
69 Wine, red.....	p	36.1 ²²	56.3 ²⁰	69.0 ¹⁵	63.0 ²²	73.0 ²⁴
70 Wine, white.....	p	58.2 ²²	95.7 ¹⁴	83.9 ¹⁴	87.1 ¹⁵	119.9 ¹¹

* Not included in the general index numbers in Table 23.

B 1401-1451 — CONTINUED

	Units	1428	1429	1430	1431	1432
1 Almonds.....	lb	23.3 ¹	21.0 ¹¹	26.3 ¹²	51.0 ¹⁶	....
1 Barbel ^a	each	....	30.0 ³	....	53.5 ¹	....
1 Beef.....	lb c	22.0 ¹	18.9 ⁷	19.5 ¹²	25.2 ¹⁴	....
1 Bran.....	robo	....	24.0 ²	24.0 ¹⁵	43.5 ¹⁵	....
5 Butter.....	lb	....	38.8 ⁵	....	46.0 ¹²	....
5 Calves.....	each	....	....	760.0 ⁶	....	....
7 Candles, tallow.....	lb	18.0 ¹⁵	23.0 ¹²	22.2 ¹²	21.7 ²	....
3 Candle-wicks.....	12 lb	246.5 ⁹	246.8 ¹²	225.0 ¹⁰	474.0 ¹⁶	....
3 Cardamom.....	lb	....	....	....	....	....
3 Cheese.....	lb	18.2 ¹	16.2 ⁹	20.0 ¹¹	21.7 ²¹	....
1 Cherries, sweet.....	lb	11.0 ²	11.7 ²	10.5 ⁴	10.5 ²	....
3 Cherries, sour.....	lb	....	....	6.0 ¹	....	....
3 Chestnuts.....	lb	....	14.3 ⁴	....	12.5 ¹	....
4 Cinnamon.....	lb	....	402.0 ⁶	432.0 ⁵	468.7 ⁸	....
5 Cloth ^a	codo	51.0 ⁴	....	....	60.0 ¹	....
5 Cloves.....	lb	....	505.4 ²	....	606.0 ²	....
7 Conger eel, dried.....	lb	....	52.5 ¹¹	61.2 ¹²	80.0 ¹²	....
7 Conger eel, fresh.....	lb	....	28.6 ¹	34.8 ¹	36.4 ⁵	....
9 Cuminseed.....	lb	....	46.4 ¹	46.8 ⁹	81.0 ²	....
3 Dates.....	lb	....	35.4 ¹	63.2 ¹	72.0 ¹	....
1 Figs.....	lb	....	9.0 ²	12.0 ²	16.0 ⁹	....
1 Filberts.....	lb	....	6.0 ²	14.9 ²	23.8 ²	....
3 Firewood.....	g	34.0 ²	34.0 ⁹	36.0 ¹⁰	42.0 ¹⁰	....
4 Geese ^a	each	....	60.0 ⁴	....	111.2 ²	....
5 Ginger.....	lb	....	459.8 ⁸	397.3 ⁷	497.3 ²	....
5 Grapes.....	at	....	24.0 ¹	....	12.0 ²	....
7 Hake, dried.....	each	52.6 ¹	56.1 ¹²	65.5 ²	81.3 ¹⁴	....
8 Hake, fresh.....	lb	18.0 ¹	18.2 ¹¹	22.4 ²	27.8 ¹²	....
9 Herring.....	lb	32.8 ¹	29.6 ²	19.7 ⁴	39.2 ⁷	....
3 Honey.....	lb	....	15.0 ⁷	16.0 ⁹	17.8 ¹⁷	....
1 Horseshoes.....	each	16.0 ¹⁰	18.0 ⁴	19.3 ¹²	19.6 ²²	....
1 Ink ^a	bot	....	....	72.0 ²	....	....
3 Kids.....	each	107.0 ¹²	108.0 ¹²	114.0 ¹⁶	146.0 ¹²	....
4 Lambs.....	each	288.0 ¹⁶	288.0 ¹⁷	288.0 ¹⁸	354.0 ¹²	....
5 Lard.....	lb	....	19.5 ⁴	19.0 ²	18.0 ⁴	....
6 Lemons.....	roo	....	69.7 ¹	109.0 ²	135.0 ⁴	....
7 Linen, fine ^a	codo	....	48.0 ¹	....	....	....
8 Nails, large ^a	lb	....	15.0 ²	14.0 ¹	....	19.0 ⁵
9 Olive oil.....	lb	18.0 ²	19.0 ¹²	18.4 ⁶	23.3 ¹¹	....
9 Oranges.....	roo	....	173.9 ⁴	163.5 ⁹	202.0 ²	....
1 Paper, writing.....	qu	....	57.6 ²	56.9 ⁹	79.6 ¹²	....
1 Peaches.....	roo	....	....	....	60.0 ²	....
3 Peas, garden.....	robo	....	....	....	384.0 ²	....
4 Pepper.....	lb	....	180.0 ²	172.0 ⁶	352.0 ¹²	....
5 Pigs.....	each	....	96.0 ¹	72.0 ²	....	....
6 Pitchers, earthenware ^a	each	18.0 ¹	15.0 ²	27.0 ²	24.0 ²	....
7 Pork.....	lb	15.0 ⁴	11.8 ⁷	11.7 ¹²	....	....
8 Porpoise.....	lb	20.3 ¹	....	....	24.4 ⁵	....
9 Pots, earthenware ^a ...	each	12.0 ²	12.9 ¹²	19.8 ¹²	27.0 ¹¹	....

^a Not included in the general index numbers in Table 23.

MONEY, PRICES, AND WAGES

B 1401-1451 — CONTINUED

	Units	1428	1429	1430	1431	1432
50 Quail.....	each	33.4 ¹⁶	33.9 ¹⁷	32.0 ¹⁶	33.0 ⁹	....
51 Rabbits.....	each	....	24.0 ⁷	26.0 ⁸	34.5 ⁹	....
52 Raisins.....	12 lb	....	120.0 ²	180.0 ¹	252.0 ⁵	....
53 Ray.....	lb	....	18.0 ⁴	24.0 ¹	24.0 ¹	....
54 Rice.....	lb	....	19.5 ¹¹	21.0 ⁸	55.0 ¹⁸	....
55 Saffron.....	lb	....	1128.0 ³	....	1717.1 ⁸	....
56 Salmon.....	lb	....	80.5 ¹	61.4 ⁴	....	....
57 Salt*.....	robo	....	82.0 ⁴	105.3 ¹¹	117.7 ¹³	....
58 Sardines, fresh.....	100	....	55.7 ⁴	69.5 ²	105.0 ⁶	....
59 Sardines, pickled.....	doz	....	....	....	82.2 ⁷	....
60 Sea bream.....	lb	....	22.0 ²	23.3 ³	19.0 ⁴	....
61 Sealing wax.....	lb	204.0 ³	144.0 ³	174.5 ⁹	209.0 ¹¹	....
62 Sheepskins.....	each	....	42.0 ³	42.5 ⁵	72.0 ³	....
63 Shoes, men's*.....	pair	....	96.0 ⁹	....	110.7 ²⁰	....
64 Squabs.....	pair	27.0 ⁸	24.0 ⁶	21.3 ⁸	30.3 ¹²	....
65 Sugar.....	lb	253.0 ¹²	252.0 ¹¹	267.0 ¹⁶	464.3 ¹⁶	....
66 Vinegar.....	p	....	....	46.7 ²	91.9 ³	....
67 Wax.....	12 lb	653.3 ¹⁴	817.5 ¹⁷	922.5 ¹²	1399.5 ²⁰	....
68 Wickers.....	gross	216.0 ³	240.0 ³	....	208.0 ⁵	....
69 Wine, red.....	p	85.5 ²³	45.2 ²⁴	58.9 ¹⁷	91.5 ¹⁶	....
70 Wine, white.....	p	121.6 ⁹	97.2 ¹⁶	91.5 ¹⁹	131.3 ¹⁸	113.9 ¹

* Not included in the general index numbers in Table 23.

APPENDICES

B 1401-1451 — CONTINUED

	Units	1433	1434	1435	1436	1437
1 Almonds.....	lb	32.6 ¹⁵	....	25.3 ¹	28.9 ¹⁷	34.5 ¹⁶
2 Barbel*.....	each	48.0 ⁶¹	....	....	56.4 ⁹	54.2 ⁴
3 Beef.....	lb c	22.0 ¹³	18.0 ⁴	....	19.0 ⁴	21.1 ¹³
4 Bran.....	robo	46.8 ¹⁸	....	....	36.8 ⁹	....
5 Butter.....	lb	49.6 ¹¹	....	....	48.0 ⁸	48.0 ⁸
6 Calves.....	each	....	1080.0 ³	....	1440.0 ³	1566.0 ³
7 Candles, tallow.....	lb	20.0 ¹⁷	18.0 ¹	....	21.3 ¹⁶	20.0 ¹⁶
8 Candle-wicks.....	12 lb	284.7 ¹¹	....	....	297.0 ¹³	288.0 ¹³
9 Cardamom.....	lb	....	....	....	....	....
10 Cheese.....	lb	13.8 ¹	17.2 ¹	....	16.2 ¹⁵	16.4 ²⁰
11 Cherries, sweet.....	lb	13.0 ⁴	....	....	10.3 ⁴	12.1 ⁴
12 Cherries, sour.....	lb	6.0 ¹	....	....	6.5 ⁴	7.3 ⁸
13 Chestnuts.....	lb	11.1 ¹	....	....	....	11.1 ¹
14 Cinnamon.....	lb	325.0 ¹⁴	....	....	244.0 ¹¹	296.0 ⁶
15 Cloth*.....	codo	....	....	....	45.0 ³	48.0 ³
16 Cloves.....	lb	360.0 ³	....	....	504.0 ⁷	450.0 ⁸
17 Conger eel, dried.....	lb	72.0 ⁶	....	....	54.0 ¹¹	60.0 ¹⁷
18 Conger eel, fresh.....	lb	32.8 ¹	....	....	20.8 ⁵	29.5 ⁴
19 Cuminseed.....	lb	47.7 ¹	....	....	40.6 ³	44.0 ⁶
20 Dates.....	lb	48.0 ¹	....	....	28.3 ¹	24.0 ³
21 Figs.....	lb	12.0 ⁴	....	....	14.8 ³	9.0 ⁷
22 Filberts.....	lb	18.0 ³	....	....	12.0 ¹	13.5 ³
23 Firewood.....	g	....	30.0 ¹	....	36.0 ¹	39.0 ³
24 Geese*.....	each	120.0 ³	....	....	81.0 ³	96.0 ¹
25 Ginger.....	lb	325.0 ¹³	....	545.0 ¹	238.4 ¹	234.7 ⁶
26 Grapes.....	st	24.0 ¹	....	....	18.0 ¹	18.0 ¹
27 Hake, dried.....	each	66.6 ²¹	52.6 ¹	52.6 ³	56.1 ¹⁶	57.3 ¹⁶
28 Hake, fresh.....	lb	22.8 ¹⁷	18.0 ¹	18.0 ³	19.2 ¹⁸	19.6 ¹⁸
29 Herring.....	lb	....	....	....	33.5 ⁵	26.6 ⁷
30 Honey.....	lb	13.0 ¹⁰	....	12.0 ¹	12.3 ¹⁶	17.3 ¹⁷
31 Horseshoes.....	each	20.0 ²⁰	....	....	....	....
32 Ink*.....	bot	....	....	....	....	....
33 Kids.....	each	124.5 ¹²	144.0 ³	120.0 ¹	162.0 ¹⁴	157.5 ¹⁶
34 Lambs.....	each	343.5 ²⁰	336.0 ⁴	372.0 ²	310.3 ²¹	336.0 ¹⁸
35 Lard.....	lb	19.5 ³	....	....	21.0 ³	18.0 ³
36 Lemons.....	roo	....	....	....	120.0 ³	168.0 ³
37 Linen, fine*.....	codo	48.0 ¹	....	....	60.0 ⁴	51.0 ³
38 Nails, large*.....	lb	24.0 ³	....	....	....	....
39 Olive oil.....	lb	20.2 ¹²	....	18.0 ³	16.1 ¹⁸	18.2 ¹⁸
40 Oranges.....	roo	202.0 ⁵	....	....	176.0 ⁵	198.0 ⁴
41 Paper, writing.....	qu	61.9 ¹¹	....	....	56.2 ⁹	56.1 ¹³
42 Peaches.....	roo	....	....	....	....	175.8 ⁵
43 Peas, garden.....	robo	344.4 ³	290.3 ³	....	464.8 ⁶	373.9 ⁴
44 Pepper.....	lb	162.0 ¹³	....	168.0 ¹	204.0 ⁶	212.0 ⁶
45 Pigs.....	each	....	....	96.0 ¹	....	84.0 ³
46 Pitchers, earthenware*.....	each	22.5 ⁴	....	....	22.7 ³	21.0 ³
47 Pork.....	lb	17.0 ³	13.0 ³	18.0 ¹	15.0 ¹⁶	14.0 ¹⁶
48 Porpoise.....	lb	22.2 ⁴	....	....	18.6 ³	20.8 ¹¹
49 Pots, earthenware*.....	each	21.8 ¹⁸	22.0 ¹	....	22.2 ¹³	21.0 ¹¹

* Not included in the general index numbers in Table 23.

MONEY, PRICES, AND WAGES

B 1401-1451 — CONTINUED

	Units	1433	1434	1435	1436	1437
50 Quail.....	each	37.1 ¹⁵	....	....	39.0 ¹⁰	37.5 ²⁰
51 Rabbits.....	each	26.2 ⁹	24.0 ⁴	24.0 ⁴	24.0 ⁸	23.3 ⁹
52 Raisins.....	12 lb	144.0 ⁸	....	....	165.3 ⁴	....
53 Ray.....	lb	16.0 ¹	....	....	18.0 ¹	21.5 ²
54 Rice.....	lb	22.0 ¹⁴	....	30.0 ¹	23.0 ¹⁰	24.0 ¹⁴
55 Saffron.....	lb	2138.8 ¹¹	....	....	1927.8 ⁴	2304.0 ⁴
56 Salmon.....	lb	....	....	....	54.0 ⁵	58.7 ⁸
57 Salt*.....	robo	120.0 ¹⁸	....	....	60.0 ¹²	52.0 ⁸
58 Sardines, fresh.....	100	....	44.0 ²	....	....	50.9 ¹
59 Sardines, pickled.....	doz	72.0 ⁵	....	....	63.0 ²	75.6 ¹⁰
60 Sea bream.....	lb	20.0 ⁴	....	....	17.3 ⁸	15.8 ⁶
61 Sealing wax.....	lb	156.0 ¹⁰	....	....	138.0 ¹⁰	150.0 ⁷
62 Sheepskins.....	each	48.0 ²	....	....	48.0 ¹¹	48.0 ¹¹
63 Shoes, men's*.....	pair	120.0 ¹⁴	....	....	....	....
64 Squabs.....	pair	27.0 ⁶	24.0 ⁴	....	27.2 ⁶	33.0 ⁸
65 Sugar.....	lb	208.9 ¹⁸	....	174.0 ²	149.0 ⁹	167.5 ¹⁴
66 Vinegar.....	p	64.7 ¹	....	....	....	....
67 Wax.....	12 lb	760.5 ¹⁵	648.0 ⁴	684.0 ¹	713.0 ¹⁶	781.6 ¹⁶
68 Wickers.....	gross	192.0 ²	....	....	192.0 ¹	....
69 Wine, red.....	p	97.5 ¹⁸	105.6 ⁸	90.1 ⁵	73.2 ¹⁶	75.8 ¹⁶
70 Wine, white.....	p	129.8 ¹⁹	119.9 ⁷	127.9 ⁶	88.0 ¹⁵	101.3 ¹⁹

* Not included in the general index numbers in Table 23.

B 1401-1451 — CONTINUED

	Units	1438	1439	1440	1441	1442
Almonds.....	lb	30.0 ¹⁶	28.6 ¹⁶	34.4 ¹¹	26.6 ¹²	28.0 ¹⁷
Barbel*.....	each	93.0 ⁶	51.1 ⁶	53.5 ²	53.5 ¹	75.0 ¹⁷
Beef.....	lb c	20.5 ¹⁴	26.7 ¹⁸	21.0 ¹⁶	19.6 ¹²	19.8 ¹¹
Bran.....	robo	....	....	....	22.3 ²	....
Butter.....	lb	49.6 ¹	....	53.1 ⁸	47.1 ¹²	45.1 ¹²
Calves.....	each	....	1080.0 ²	1174.0 ⁶	753.0 ¹¹	840.0 ²
Candles, tallow.....	lb	20.0 ¹²	19.8 ¹⁶	20.0 ¹⁶	20.0 ¹⁶	20.0 ¹⁷
Candle-wicks.....	12 lb	288.0 ⁷	....	....	....	288.0 ¹
Cardamom.....	lb	....	....	560.0 ²	720.0 ¹	....
Cheese.....	lb	15.3 ¹⁰	15.9 ¹²	17.1 ²²	17.6 ¹⁶	15.3 ⁷
Cherries, sweet.....	lb	9.0 ⁴	10.0 ⁴	10.0 ²	12.0 ¹	6.5 ⁴
Cherries, sour.....	lb	8.3 ⁴	6.0 ¹	7.5 ²	....	6.0 ²
Chestnuts.....	lb	8.1 ¹	8.0 ⁴	6.0 ²	7.5 ⁷	7.2 ⁵
Cinnamon.....	lb	337.5 ¹²	372.0 ⁸	345.0 ¹²	333.0 ¹⁶	336.0 ¹²
Cloth*.....	codo	42.0 ²	42.0 ¹	....	....	....
Cloves.....	lb	528.0 ⁸	512.0 ⁵	606.0 ¹⁰	606.0 ¹⁶	600.0 ¹²
Conger eel, dried.....	lb	57.5 ¹²	60.8 ¹²	60.0 ¹²	57.5 ¹⁰	54.0 ²
Conger eel, fresh.....	lb	26.6 ²	23.3 ⁵	21.9 ¹⁰	25.0 ¹⁰	24.9 ⁶
Cuminseed.....	lb	48.0 ⁶	47.7 ¹	....	....	....
Dates.....	lb	48.0 ¹	54.0 ⁷	47.3 ⁵	75.0 ⁹	44.2 ⁵
Figs.....	lb	12.0 ⁴	18.0 ⁶	11.5 ⁵	11.5 ¹⁰	12.0 ²
Filberts.....	lb	12.0 ⁵	12.0 ⁵	12.0 ⁵	12.0 ⁷	12.0 ⁴
Firewood.....	g	35.3 ¹⁴	35.3 ⁹	29.0 ¹⁵	38.0 ¹¹	....
Geese*.....	each	....	117.0 ⁶	79.5 ⁶	80.0 ¹⁰	72.0 ⁴
Ginger.....	lb	220.5 ¹⁴	198.0 ⁸	159.0 ¹²	149.3 ¹²	185.5 ¹²
Grapes.....	st	23.0 ⁴	21.0 ¹⁰	18.0 ²	30.0 ²	21.0 ⁶
Hake, dried.....	each	51.2 ¹⁷	50.6 ²²	53.2 ²²	54.7 ²²	57.4 ²²
Hake, fresh.....	lb	17.5 ¹⁷	17.3 ²²	18.2 ²²	18.7 ²²	21.0 ²¹
Herring.....	lb	31.1 ⁶	29.9 ²	31.5 ²	32.0 ¹⁰	37.5 ⁴
Honey.....	lb	16.1 ¹⁷	17.7 ¹⁷	20.0 ¹²	18.4 ⁷	16.0 ²
Horseshoes.....	each	....	....	18.0 ²	18.0 ¹⁰	....
Ink*.....	bot	....	....	....	....	....
Kids.....	each	142.5 ¹⁶	144.0 ¹²	146.0 ¹²	160.0 ¹²	148.0 ¹²
Lambs.....	each	334.5 ¹²	336.0 ¹⁷	354.8 ¹²	345.0 ¹²	336.0 ¹²
Lard.....	lb	24.0 ²	22.5 ²	24.0 ⁴	22.0 ⁴	21.0 ²
Lemons.....	roo	151.9 ⁴	157.5 ²	....	113.3 ²	144.0 ²
Linen, fine*.....	codo	51.0 ²	54.0 ¹	53.5 ⁷	....	54.0 ⁴
Nails, large*.....	lb	....	16.0 ¹²	....	....	16.0 ⁴
Olive oil.....	lb	20.4 ¹²	17.0 ¹⁶	19.0 ¹²	21.3 ¹²	18.8 ¹²
Oranges.....	roo	231.5 ²	184.5 ²	172.0 ²	192.0 ²	184.0 ²
Paper, writing.....	qu	58.4 ¹⁰	58.4 ⁷	62.2 ¹²	56.8 ¹²	54.0 ¹⁰
Peaches.....	roo	93.0 ²	84.5 ²	100.0 ¹	126.0 ⁴	100.0 ²
Peas, garden.....	robo	426.0 ²	344.4 ¹	240.0 ²	258.3 ²	309.2 ²
Pepper.....	lb	212.0 ²	174.7 ⁷	156.0 ¹²	145.5 ¹²	120.0 ¹
Figs.....	each	96.0 ¹	102.0 ⁴	85.0 ²	101.5 ²	99.8 ¹²
Pitchers, earthenware*.....	each	....	24.0 ¹	18.0 ¹⁰	14.4 ²	18.8 ²
Pork.....	lb	17.1 ¹⁷	17.4 ²²	16.9 ²²	15.0 ¹⁷	17.6 ¹²
Porpoise.....	lb	21.6 ⁴	19.7 ⁴	20.9 ⁴	23.0 ²	....
Pots, earthenware*.....	each	23.5 ¹¹	18.0 ²	21.9 ¹²	23.6 ¹²	18.1 ¹²

* Not included in the general index numbers in Table 23.

MONEY, PRICES, AND WAGES

B 1401-1451 — CONTINUED

	Units	1438	1439	1440	1441	1442
50 Quail.....	each	30.0 ⁸	35.3 ¹¹	33.8 ¹²	37.6 ¹⁶	32.9 ¹⁷
51 Rabbits.....	each	27.8 ¹¹	31.0 ⁷	29.3 ¹²	27.8 ⁸	25.5 ¹⁰
52 Raisins.....	12 lb	....	132.7 ²	192.0 ²	96.0 ⁶	120.0 ⁸
53 Ray.....	lb	15.3 ²	16.0 ⁹	17.7 ⁴	21.0 ⁵	22.0 ²
54 Rice.....	lb	25.3 ¹⁶	23.5 ¹⁶	22.5 ¹⁷	21.3 ¹⁶	21.2 ¹⁶
55 Saffron.....	lb	2506.1 ⁸	1856.0 ⁷	1670.8 ⁸	1872.0 ¹⁴	1550.8 ¹²
56 Salmon.....	lb	64.8 ⁶	57.7 ⁸	64.8 ⁸	59.0 ⁵	78.7 ⁴
57 Salt*.....	robo	63.0 ⁶	54.0 ⁴	60.0 ⁴	64.0 ⁷	....
58 Sardines, fresh.....	100	68.8 ⁸	....	75.5 ⁶	74.1 ⁹	62.4 ¹²
59 Sardines, pickled.....	doz	72.0 ⁷	72.0 ¹⁰	72.0 ⁹	72.0 ⁷	72.0 ⁷
60 Sea bream.....	lb	15.0 ⁴	15.3 ⁴	....	16.1 ⁸	20.0 ⁸
61 Sealing wax.....	lb	166.5 ¹¹	172.7 ⁸	154.5 ⁷	156.0 ¹²	156.0 ¹⁰
62 Sheepskins.....	each	48.0 ¹¹	48.0 ⁸	48.0 ¹¹	48.0 ¹⁶	48.0 ¹⁰
63 Shoes, men's*.....	pair	....	....	....	....	....
64 Squabs.....	pair	20.0 ⁷	23.8 ⁷	18.0 ⁸	29.0 ⁹	28.7 ¹²
65 Sugar.....	lb	159.0 ¹⁸	170.3 ¹⁴	137.0 ¹²	142.0 ¹⁶	133.0 ¹⁴
66 Vinegar.....	p	68.9 ¹	....	71.1 ¹	....	....
67 Wax.....	12 lb	863.3 ¹⁵	1090.7 ¹¹	948.8 ¹⁴	1037.6 ¹⁶	1057.5 ¹⁹
68 Wickers.....	gross	....	....	....	....	300.0 ¹
69 Wine, red.....	p	81.0 ¹⁶	83.1 ¹⁷	66.3 ¹⁷	45.8 ¹⁶	57.3 ²⁰
70 Wine, white.....	p	111.8 ¹⁷	107.1 ²⁸	92.0 ²⁷	68.3 ²⁴	81.8 ²⁰

* Not included in the general index numbers in Table 23.

B 1401-1451 — CONTINUED

	Units	1443	1444	1445	1446	1447
1 Almonds.....	lb	28.9 ¹⁴	32.2 ¹⁴	....	....	....
2 Barbel*	each	64.0 ⁶	48.0 ³	....	....	....
3 Beef.....	lb c	21.4 ¹¹	22.3 ¹¹	....	....	....
4 Bran.....	robo	....	....	....	....	....
5 Butter.....	lb	49.6 ⁴	49.6 ⁴	....	....	....
6 Calves.....	each	1184.0 ⁵	744.0 ²	....	....	....
7 Candles, tallow.....	lb	20.0 ¹⁶	20.0 ¹⁶	....	....	....
8 Candle-wicks.....	12 lb	....	....	....	....	....
9 Cardamom.....	lb	....	960.0 ¹	....	....	....
10 Cheese.....	lb	18.8 ¹⁰	18.3 ¹¹	....	....	....
11 Cherries, sweet.....	lb	13.0 ⁴	14.0 ⁴	....	....	....
12 Cherries, sour.....	lb	9.0 ⁴	8.0 ¹	....	....	....
13 Chestnuts.....	lb	....	8.0 ⁶	....	....	....
14 Cinnamon.....	lb	319.0 ¹⁶	324.5 ¹⁸	....	....	....
15 Cloth*	codo	52.0 ¹	....	....	....	....
16 Cloves.....	lb	1146.0 ¹⁴	972.0 ¹⁴	....	....	....
17 Conger eel, dried.....	lb	48.0 ¹	48.0 ¹	....	....	....
18 Conger eel, fresh.....	lb	22.5 ³	21.6 ²	....	....	....
19 Cuminseed.....	lb	....	....	....	....	....
20 Dates.....	lb	54.0 ⁹	48.0 ⁸	....	....	....
21 Figs.....	lb	12.0 ³	11.0 ⁶	....	....	....
22 Filberts.....	lb	12.0 ³	12.0 ⁹	....	....	....
23 Firewood.....	g	37.0 ⁴	....	33.0 ²	....	....
24 Geese*	each	72.0 ⁶	84.0 ⁹	....	....	....
25 Ginger.....	lb	194.0 ¹⁸	218.0 ¹⁴	....	....	....
26 Grapes.....	st	22.6 ⁴	24.0 ¹	....	....	....
27 Hake, dried.....	each	57.0 ¹⁸	60.0 ⁶	....	....	....
28 Hake, fresh.....	lb	19.8 ¹⁸	18.9 ¹⁸	....	....	....
29 Herring.....	lb	32.8 ¹⁰	31.2 ¹⁰	....	....	....
30 Honey.....	lb	16.0 ⁴	17.3 ⁸	....	....	....
31 Horsehoes.....	each	....	....	....	....	....
32 Ink*	bot	....	....	....	....	....
33 Kids.....	each	148.0 ¹⁸	144.0 ¹⁸	....	....	....
34 Lambs.....	each	336.0 ¹⁶	336.0 ¹⁶	....	....	....
35 Lard.....	lb	24.0 ³	17.0 ³	....	....	....
36 Lemons.....	100	176.0 ³	....	....	....	....
37 Linen, fine*	codo	48.0 ¹	48.0 ²	....	....	....
38 Nails, large*	lb	18.0 ¹	18.0 ¹	19.3 ⁹	....	....
39 Olive oil.....	lb	20.6 ¹⁴	19.3 ¹⁸	....	....	....
40 Oranges.....	100	220.0 ⁷	250.0 ⁷	....	....	....
41 Paper, writing.....	qu	54.0 ¹⁸	54.0 ⁹	....	....	....
42 Peaches.....	100	23.3 ⁸	126.9 ⁴	....	....	....
43 Peas, garden.....	robo	....	344.4 ¹	....	....	....
44 Pepper.....	lb	120.0 ¹	....	....	....	....
45 Pigs.....	each	115.6 ⁹	111.7 ¹¹	....	....	....
46 Pitchers, earthenware*	each	19.5 ⁴	18.0 ²	....	....	....
47 Pork.....	lb	17.7 ¹¹	15.3 ⁷	....	....	....
48 Porpoise.....	lb	24.2 ⁴	24.1 ²	....	....	....
49 Pots, earthenware*	each	21.0 ⁴	23.3 ⁶	12.0 ¹	....	....

* Not included in the general index numbers in Table 23.

MONEY, PRICES, AND WAGES

B 1401-1451 — CONTINUED

	Units	1443	1444	1445	1446	1447
50 Quail.....	each	38.3 ¹⁷	38.0 ¹⁸	....	....	....
51 Rabbits.....	each	31.1 ¹¹	30.3 ¹²	....	....	....
52 Raisins.....	12 lb	119.7 ⁵	216.0 ⁸	....	....	....
53 Ray.....	lb	20.0 ⁴	....	....	....	....
54 Rice.....	lb	22.8 ¹²	23.3 ¹⁶	....	....	....
55 Saffron.....	lb	1628.0 ¹⁴	1793.9 ¹⁸	....	....	....
56 Salmon.....	lb	63.2 ⁸	69.0 ⁷	....	....	....
57 Salt*.....	robo	....	....	....	....	....
58 Sardines, fresh.....	100	63.9 ¹⁰	93.1 ⁴	....	....	....
59 Sardines, pickled.....	doz	72.0 ⁵	72.0 ⁹	....	....	....
60 Sea bream.....	lb	22.3 ³	19.0 ⁴	....	....	....
61 Sealing wax.....	lb	156.0 ¹¹	155.0 ¹⁰	....	....	....
62 Sheepskins.....	each	48.0 ¹⁰	48.0 ¹⁰	....	....	....
63 Shoes, men's*.....	pair	....	....	....	....	....
64 Squabs.....	pair	31.9 ¹⁶	27.0 ⁵	....	....	....
65 Sugar.....	lb	130.5 ¹⁴	136.0 ¹⁶	....	....	....
66 Vinegar.....	p	90.7 ³	....	....	....	....
67 Wax.....	12 lb	879.0 ¹¹	1017.6 ¹⁸	954.0 ⁹	....	....
68 Wickers.....	gross	....	....	....	....	....
69 Wine, red.....	p	92.3 ¹⁶	79.9 ¹⁶	....	....	....
70 Wine, white.....	p	114.0 ²²	107.6 ¹⁷	....	....	....

* Not included in the general index numbers in Table 23.

APPENDICES

B 1401-1451 — CONTINUED

	Units	1448	1449	1450	1451
1 Almonds.....	lb	....	....	....	24.4 ⁸
2 Barbel*	each	....	....	....	....
3 Beef.....	lb c'	....	....	....	20.3 ⁸
4 Bran.....	robo	....	....	....	....
5 Butter.....	lb	....	....	....	....
6 Calves.....	each	....	....	....	....
7 Candles, tallow.....	lb	....	....	....	....
8 Candle-wicks.....	12 lb	....	....	....	....
9 Cardamom.....	lb	....	....	....	960.0 ²
10 Cheese.....	lb	....	....	....	12.9 ⁶
11 Cherries, sweet.....	lb	....	....	....	10.5 ⁴
12 Cherries, sour.....	lb	....	....	....	12.0 ²
13 Chestnuts.....	lb	....	....	....	....
14 Cinnamon.....	lb	....	....	....	336.0 ⁸
15 Cloth*	codo	....	....	....	....
16 Cloves.....	lb	....	....	....	684.0 ⁴
17 Conger eel, dried.....	lb	....	....	....	42.0 ⁸
18 Conger eel, fresh.....	lb	....	....	....	26.2 ¹
19 Cuminseed.....	lb	....	....	....	....
20 Dates.....	lb	....	....	....	....
21 Figs.....	lb	....	....	....	12.0 ⁵
22 Filberts.....	lb	....	....	....	....
23 Firewood.....	g	....	....	48.0 ¹	28.5 ⁶
24 Geese*	each	....	....	....	....
25 Ginger.....	lb	....	....	....	336.0 ⁷
26 Grapes.....	st	....	....	....	19.1 ²
27 Hake, dried.....	each	....	....	....	44.7 ¹⁸
28 Hake, fresh.....	lb	....	....	....	15.3 ⁵
29 Herring.....	lb	....	....	....	43.8 ²
30 Honey.....	lb	....	....	....	18.0 ²
31 Horseshoes.....	each	....	....	....	....
32 Ink*	bot	....	....	....	....
33 Kids.....	each	....	....	....	128.0 ⁶
34 Lambs.....	each	....	....	....	336.0 ²
35 Lard.....	lb	....	....	....	....
36 Lemons.....	roo	....	....	....	144.0 ¹
37 Linen, fine*	codo	....	....	....	48.0 ⁴
38 Nails, large*	lb	....	18.0 ¹	....	....
39 Olive oil.....	lb	....	....	....	16.6 ¹²
40 Oranges.....	roo	....	....	....	144.0 ¹
41 Paper, writing.....	qu	....	....	....	53.1 ¹⁶
42 Peaches.....	roo	....	....	....	66.3 ²
43 Peas, garden.....	robo	....	....	....	456.0 ¹
44 Pepper.....	lb	....	....	....	120.0 ⁵
45 Pigs.....	each	....	....	....	84.0 ¹
46 Pitchers, earthenware*	each	....	....	....	....
47 Pork.....	lb	....	....	....	19.3 ²¹
48 Porpoise.....	lb	....	....	....	....
49 Pots, earthenware*	each	....	....	....	34.7 ⁶

* Not included in the general index numbers in Table 23.

MONEY, PRICES, AND WAGES

B 1401-1451 — CONTINUED

	Units	1448	1449	1450	1451
50 Quail.....	each	....	....	....	30.0 ⁶
51 Rabbits.....	each	....	....	....	24.0 ⁸
52 Raisins.....	12 lb	....	....	....	150.0 ⁸
53 Ray.....	lb	....	....	....	....
54 Rice.....	lb	....	....	....	24.0 ⁷
55 Saffron.....	lb	....	....	....	1680.7 ⁷
56 Salmon.....	lb	....	....	....	50.3 ¹⁰
57 Salt*.....	robo	....	....	....	....
58 Sardines, fresh.....	100	....	....	....	62.5 ¹
59 Sardines, pickled.....	doz	....	....	....	60.0 ¹⁸
60 Sea bream.....	lb	....	....	....	....
61 Sealing wax.....	lb	....	....	....	180.0 ⁷
62 Sheepskins.....	each	....	....	....	48.0 ⁷
63 Shoes, men's*.....	pair	....	....	....	96.0 ⁸
64 Squabs.....	pair	....	....	....	27.0 ⁴
65 Sugar.....	lb	....	....	....	144.0 ⁸
66 Vinegar.....	p	....	....	....	45.4 ²
67 Wax.....	12 lb	....	....	....	864.0 ¹¹
68 Wickers.....	gross	....	....	....	....
69 Wine, red.....	p	....	....	....	81.4 ¹⁹
70 Wine, white.....	p	....	....	....	108.8 ¹⁸

* Not included in the general index numbers in Table 23.

APPENDIX VI

INDEX NUMBERS OF GROUP PRICES IN VALENCIA

WITH I and II representing the periods 1413-1450 and 1451-1500 respectively, the commodities forming the various groups are as follows:

Food	Agricultural	Non-Agricultural
Beef..... I -	1 Beef..... I -	1 Bricks..... I II
Cheese..... I II	2 Carob beans... I -	2 Firewood..... I II
Conger eel..... - II	3 Cheese..... I II	3 Iron gratings... I -
Fish, fresh..... I -	4 Flax..... I II	4 Lime..... I II
Hake..... I II	5 Hens..... I II	5 Nails, large... I II
Hens..... I II	6 Mutton..... I -	6 Plaster of Paris. I II
Mutton..... I -	7 Olive oil..... I II	7 Salt..... I II
Olive oil..... I II	8 Onions..... - II	8 Sand..... I -
Onions..... - II	9 Rice..... I -	9 Wax candles... I II
Rice..... I -	10 Straw..... I II	
Salt..... I II	11 Wheat..... I II	Animal Products
Sardines..... I II	12 Wine..... I II	1 Beef..... I II
Tuna fish..... I -		2 Cheese..... I II
Wheat..... I II		3 Kid..... I II
Wine..... I II		4 Mutton..... I II
		5 Pork, salt..... I II
		6 Veal..... I II
Building Materials		Fish
Bricks..... I II		1 Conger eel..... - II
Iron gratings... I II		2 Fish, fresh..... I -
Lime..... I II		3 Hake..... I II
Nails, large... I II		4 Sardines..... I II
Plaster of Paris. I II		5 Tuna fish..... I -
Sand..... I II		

MONEY, PRICES, AND WAGES

INDEX NUMBERS

Base = 1421-1430

Year	Agri- cultural	Non-Agri- cultural	Building Materials	Fish	Wheat	Animal Product
1413.....	116.3 ^{8*}	98.1 ⁷	97.4 ⁵	....	136.7 ³	....
1414.....	104.0 ⁴	....	....	105.2 ⁴	97.9 ⁴	101.0 ³
1415.....	102.9 ³	100.2 ⁶	93.9 ⁵	137.8 ²	....	....
1416.....	103.6 ⁵	103.7 ⁹	98.2 ⁶	....	....	....
1417.....	85.9 ⁹	103.2 ⁸	97.7 ⁵	....	71.1 ²	85.5 ²
1418.....	90.2 ⁷	105.4 ⁷	100.7 ⁴	....	....	....
1419.....	105.6 ⁴	94.5 ⁵	92.4 ⁵	....	....	....
1420.....	84.4 ¹¹	97.4 ⁷	96.2 ⁴	117.1 ³	94.7 ¹⁶	95.1 ³
1421.....	93.0 ⁶	96.5 ⁶	98.6 ²	....	121.5 ¹⁰	....
1422.....	92.8 ¹¹	108.0 ⁷	116.4 ⁴	78.5 ²	106.8 ¹⁰	93.1 ²
1423.....	92.6 ⁹	90.1 ⁶	88.4 ⁶	....	93.9 ¹⁴	89.5 ²
1424.....	93.1 ¹⁰	102.1 ⁷	102.3 ⁵	132.6 ²	97.4 ¹⁴	94.1 ²
1425.....	99.4 ⁹	99.9 ⁹	101.5 ⁶	84.1 ²	101.0 ¹⁶	99.8 ⁴
1426.....	105.5 ¹⁰	96.9 ⁹	97.4 ⁹	....	105.3 ¹⁶	94.9 ⁴
1427.....	114.1 ¹⁰	97.0 ⁷	97.2 ⁴	102.1 ⁴	106.1 ¹⁶	102.7 ⁴
1428.....	110.8 ¹⁰	102.0 ⁸	100.4 ⁵	99.6 ²	84.9 ¹⁴	119.5 ²
1429.....	95.3 ⁹	100.9 ⁸	96.0 ⁵	105.3 ²	75.2 ¹¹	109.4 ⁴
1430.....	97.5 ¹⁰	106.6 ⁸	106.6 ⁵	....	107.3 ⁶	99.4 ²
1431.....	98.5 ⁹	96.7 ⁹	96.5 ⁴	107.8 ²	102.2 ⁵	101.1 ²
1432.....	101.0 ⁹	102.4 ⁹	100.2 ⁶	114.2 ⁴	124.5 ¹⁰	100.2 ⁴
1433.....	103.9 ⁶	97.0 ⁷	95.6 ⁵	104.8 ²	105.3 ⁹	104.9 ²
1434.....	98.8 ⁵	96.4 ⁹	95.0 ⁵	126.7 ²	98.3 ⁹	95.8 ²
1435.....	110.0 ⁹	100.0 ⁷	94.3 ⁴	115.3 ⁴	137.0 ¹⁴	103.7 ²
1436.....	109.2 ¹⁰	96.0 ⁸	94.6 ⁵	95.4 ²	116.6 ⁹	110.4 ²
1437.....	....	106.0 ⁷	106.5 ⁵	....	....	....
1438.....	107.4 ⁹	100.2 ⁹	96.2 ⁵	105.0 ⁴	102.2 ¹²	117.7 ⁵
1439.....	104.9 ⁹	95.6 ⁸	94.6 ⁵	105.6 ⁴	116.2 ¹⁶	121.5 ²
1440.....	105.9 ⁸	103.8 ⁷	96.1 ⁴	136.9 ⁴	110.6 ¹¹	110.4 ²
1441.....	95.1 ⁹	105.2 ⁸	108.3 ⁵	99.9 ⁵	98.9 ¹¹	109.6 ⁴
1442.....	101.7 ¹⁰	105.2 ⁷	104.2 ⁴	82.8 ⁴	113.4 ¹⁵	102.9 ⁴
1443.....	106.0 ⁷	105.5 ⁴	103.8 ⁵	91.1 ²	105.4 ¹²	105.3 ²
1444.....	102.4 ⁹	103.9 ⁷	103.4 ⁵	80.0 ²	99.3 ¹⁵	98.8 ²
1445.....	....	100.4 ⁵	100.4 ⁵	....	....	....
1446.....	101.0 ¹¹	105.7 ⁸	105.9 ⁴	92.0 ²	115.1 ¹⁵	110.0 ⁴
1447.....	100.9 ⁸	102.4 ⁷	101.9 ⁴	115.4 ²	91.1 ¹¹	....
1448.....	80.9 ⁹	98.6 ⁷	101.8 ⁴	127.8 ⁴	88.3 ¹²	96.3 ⁴
1449.....	93.1 ⁷	99.6 ⁶	99.3 ⁵	143.0 ²	119.7 ¹¹	82.9 ²
1450.....	88.3 ⁷	86.9 ⁶	83.7 ²	187.0 ²	101.1 ¹⁵	....
1451.....	89.6 ⁶	91.3 ²	....	110.4 ⁵	90.5 ⁷	....
1452.....	97.7 ⁶	90.6 ²	....	99.4 ²	98.3 ¹⁰	....
1453.....	94.0 ⁶	94.9 ⁵	105.7 ⁴	129.3 ²	97.6 ¹⁶	....
1454.....	91.8 ²	97.2 ⁷	108.3 ²	121.2 ²	84.0 ²²	91.6 ²
1455.....	92.7 ⁷	95.7 ⁶	98.3 ⁵	126.3 ²	87.0 ²¹	99.7 ²
1456.....	101.2 ⁷	96.7 ⁵	95.1 ²	106.0 ²	111.0 ²¹	95.2 ²

* The exponents indicate the number of price relatives included in each index number. The exponents of the wheat relatives represent the number of quotations available for each year.

APPENDICES

Year	Agri-cultural	Non-Agri-cultural	Building Materials	Fish	Wheat	Animal Products
157.....	101.3 ⁸⁸	86.0 ⁶	82.5 ⁴	127.7 ³	103.1 ²⁰	86.6 ²
158.....	86.6 ⁸	91.5 ⁷	96.3 ⁶	125.9 ²	88.8 ²¹	....
159.....	97.3 ⁷	93.7 ⁷	83.6 ⁴	....	92.5 ²¹	87.7 ²
160.....	98.3 ⁷	92.1 ⁵	95.6 ⁵	78.5 ²	87.2 ²⁴	99.1 ²
161.....	88.2 ⁵	95.5 ⁶	88.5 ⁵	....	80.6 ¹⁷	....
162.....	93.7 ⁶	92.4 ⁷	86.8 ⁵	....	106.0 ¹⁰	97.1 ²
163.....	91.3 ⁶	95.7 ⁶	87.7 ²	....	113.1 ¹⁶	....
164.....	95.9 ⁶	92.3 ⁴	91.8 ²	....	115.9 ⁶	92.2 ²
165.....	88.7 ⁵	91.9 ⁶	89.0 ⁴	....	99.0 ¹⁰	98.7 ²
166.....	85.3 ⁰	94.2 ²	....	....	80.5 ¹⁴	85.5 ²
167.....	100.3 ⁷	103.2 ⁵	89.5 ²	44.8 ²	102.6 ¹⁵	89.5 ²
168.....	92.4 ⁷	92.6 ²	90.6 ²	87.9 ²	100.4 ¹⁵	95.2 ²
169.....	97.1 ⁶	83.7 ⁵	86.0 ²	87.4 ²	108.2 ⁴	....
170.....	106.1 ⁵	93.5 ⁶	89.3 ²	97.9 ²	104.9 ⁵	....
171.....	105.1 ⁶	91.9 ⁶	86.5 ⁶	69.0 ²	94.1 ¹⁶	....
172.....	104.1 ⁶	82.3 ⁴	72.2 ⁴	91.5 ²	85.6 ²	....
173.....	103.1 ⁶	87.7 ²	80.3 ⁴	89.7 ²	133.1 ⁹	....
174.....	113.7 ⁶	96.3 ⁶	98.1 ²	....	156.8 ¹⁶	....
175.....	96.9 ⁵	80.7 ⁴	79.0 ²	83.6 ²	106.4 ²	....
176.....	92.4 ⁶	97.4 ⁴	83.6 ²	121.8 ²	96.7 ¹⁰	....
177.....	79.9 ⁴	....	....	130.0 ²	95.7 ²	....
178.....	94.5 ⁶	....	....	134.4 ²	124.8 ¹⁰	....
179.....	103.9 ⁶	88.4 ⁴	84.5 ²	107.2 ²	114.6 ¹⁶	....
180.....	111.6 ⁶	77.4 ²	73.5 ²	79.9 ²	90.2 ¹⁵	....
181.....	97.4 ⁷	76.4 ⁶	74.9 ²	83.2 ²	85.6 ¹²	97.9 ²
182.....	105.0 ⁶	78.7 ⁴	73.6 ²	109.9 ²	88.7 ¹¹	....
183.....	106.8 ⁶	94.1 ²	....	65.4 ²	99.9 ¹²	....
184.....	107.0 ⁶	87.7 ²	82.3 ⁴	80.0 ²	111.2 ¹²	104.3 ²
185.....	101.9 ⁶	75.5 ⁶	68.8 ²	118.7 ²	119.7 ¹⁵	92.2 ²
186.....	96.8 ⁶	90.8 ⁵	85.8 ⁴	99.6 ²	105.2 ¹¹	....
187.....	92.9 ⁶	76.5 ⁴	75.2 ⁴	78.1 ²	102.5 ¹⁴	....
188.....	96.2 ⁷	73.9 ⁵	75.8 ²	91.3 ²	96.9 ¹¹	....
189.....	92.7 ²	79.8 ⁶	73.8 ⁴	101.1 ²	110.3 ¹²	91.4 ²
190.....	103.6 ²	81.4 ²	77.8 ²	....	....	94.4 ⁴
191.....	98.3 ⁵	84.1 ⁶	73.6 ⁴	89.9 ²	111.9 ¹²	105.0 ⁴
192.....	102.7 ⁶	87.7 ⁶	75.0 ⁴	....	79.6 ¹²	103.3 ²
193.....	94.5 ⁷	85.7 ⁵	65.8 ²	....	86.3 ²	103.6 ⁴
194.....	102.4 ⁷	83.9 ⁶	68.3 ²	....	93.2 ²	95.0 ²
195.....	98.0 ²	85.6 ²	79.5 ²	79.9 ²	91.6 ¹⁶	95.1 ²
196.....	105.7 ⁷	75.6 ²	71.9 ⁴	....	93.6 ¹²	....
197.....	106.8 ⁷	83.7 ²	67.9 ²	....	97.9 ¹⁴	118.1 ²
198.....	108.9 ⁷	77.3 ⁶	69.4 ⁴	....	103.8 ⁶	....
199.....	97.4 ⁶	74.5 ⁴	67.5 ⁴	....	93.4 ²	....
200.....	79.7 ²	69.6 ⁴	63.1 ²	....	91.5 ¹¹	....

* The exponents indicate the number of price relatives included in each index number. The exponents of the wheat relatives represent the number of quotations available for each year.

APPENDIX VII

INDEX NUMBERS OF AGRICULTURAL AND NON-AGRICULTURAL
PRICES IN ARAGON

The agricultural group comprises (1) barley, (2) oats, (3) olive oil, (4) rye and (5) wheat; and (1) large nails, (2) writing paper, and (3) plaster of Paris make up the non-agricultural series.

Base = 1421-1430

Year	Agri- cultural	Non-Agri- cultural	Year	Agri- cultural	Non-Agri- cultural
1401.....	120.1 ^{5*}	....	1427.....	92.5 ²	....
1402.....	122.8 ⁴	112.1 ²	1429.....	100.3 ⁵	....
1403.....	....	104.3 ²	1430.....	86.2 ²	102.9 ¹
1404.....	75.1 ²	....	1431.....	75.7 ²	....
1405.....	....	117.2 ¹	1432.....	81.1 ⁵	102.9 ¹
1407.....	64.6 ²	113.5 ²	1433.....	78.1 ⁵	102.9 ¹
1408.....	78.5 ⁵	117.6 ¹	1434.....	86.7 ⁵	102.9 ¹
1409.....	66.3 ⁵	117.6 ¹	1435.....	84.8 ⁵	95.6 ¹
1410.....	....	110.3 ¹	1436.....	81.0 ⁴	90.2 ¹
1412.....	128.6 ⁴	....	1437.....	90.3 ⁵	102.9 ¹
1413.....	181.3 ⁴	102.9 ¹	1438.....	82.8 ⁴	115.4 ¹
1414.....	72.6 ²	110.3 ¹	1439.....	90.4 ²	112.5 ¹
1416.....	65.4 ⁵	92.9 ²	1440.....	96.6 ⁴	98.8 ²
1417.....	75.5 ⁵	114.6 ²	1441.....	90.0 ²	114.0 ¹
1418.....	73.1 ⁴	102.3 ²	1442.....	....	97.2 ¹
1419.....	....	98.4 ²	1443.....	102.6 ⁴	98.4 ¹
1421.....	105.4 ⁴	....	1444.....	95.5 ⁴	102.9 ¹
1422.....	....	98.4 ¹	1445.....	117.6 ⁴	94.4 ²
1423.....	99.4 ⁴	100.8 ²	1446.....	75.6 ⁴	94.0 ²
1424.....	107.5 ²	98.6 ²	1447.....	62.9 ⁴	91.2 ²
1425.....	114.5 ⁴	....	1448.....	65.5 ⁴	92.0 ²
1426.....	90.8 ²	....	1449.....	73.2 ⁵	93.8 ²

* The exponents indicate the number of price relatives included in each index number.

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Year	Agri-cultural	Non-Agri-cultural	Year	Agri-cultural	Non-Agri-cultural
1450.....	80.4 ^{2*}	89.2 ²	1474.....	....	88.2 ¹
1451.....	80.1 ²	101.5 ¹	1475.....	....	86.5 ¹
1452.....	123.7 ²	106.6 ²	1478.....	....	93.8 ¹
1453.....	....	89.9 ²	1479.....	75.7 ²	90.2 ²
1454.....	67.8 ²	92.5 ²	1480.....	65.7 ²	90.4 ²
1455.....	71.1 ²	....	1481.....	89.9 ²	80.8 ²
1456.....	86.8 ²	88.8 ²	1482.....	80.8 ²	81.3 ²
1457.....	80.1 ²	84.6 ¹	1483.....	81.1 ²	88.2 ¹
1459.....	92.2 ²	88.2 ¹	1484.....	111.6 ²	72.1 ¹
1460.....	74.6 ²	88.2 ¹	1485.....	70.7 ²	75.8 ²
1461.....	....	93.8 ¹	1486.....	73.3 ²	70.1 ¹
1462.....	....	94.9 ²	1487.....	93.0 ²	69.0 ²
1463.....	....	94.1 ²	1488.....	91.1 ⁴	72.2 ²
1464.....	111.4 ⁴	91.0 ²	1489.....	71.5 ⁴	76.3 ²
1465.....	109.5 ²	92.2 ²	1490.....	77.9 ⁴	68.6 ²
1466.....	99.2 ²	100.7 ²	1491.....	99.4 ⁴	74.2 ²
1467.....	88.1 ²	88.9 ²	1492.....	79.8 ⁴	69.4 ²
1468.....	78.0 ²	88.2 ¹	1493.....	115.7 ⁴	67.1 ²
1469.....	68.1 ⁴	88.2 ¹	1494.....	75.7 ⁴	75.1 ²
1470.....	154.0 ⁴	88.2 ¹	1495.....	88.3 ²	75.9 ²
1471.....	139.4 ⁴	85.0 ²	1496.....	76.1 ²	73.5 ²
1472.....	....	88.2 ¹	1497.....	85.1 ²	84.3 ²
1473.....	....	88.2 ¹	1498.....	78.5 ²	72.9 ²
			1499.....	....	70.3 ¹

* The exponents indicate the number of price relatives included in each index number.

APPENDICES

Fish	Spices	Building Materials
1 Conger eel, dried I II	1 Cardamom..... I II	1 Adobes..... I II
2 Conger eel, fresh I II	2 Cinnamon..... I II	2 Glue..... - II
3 Hake, dried.... I II	3 Cloves..... I II	3 Iron..... I II
4 Hake, fresh.... I II	4 Cuminseed..... I II	4 Lead..... I II
5 Herring..... - II	5 Ginger..... I II	5 Lime..... I II
6 Porpoise..... I II	6 Pepper..... I II	6 Nails, large... I II
7 Ray..... I II	7 Saffron..... I II	7 Plaster of Paris. I II
8 Salmon..... I II		8 Resin..... I II
9 Sardines, fresh . I II		9 Rooftiles..... I II
10 Sardines, pickled I II		10 Tin..... I II
11 Sea bream..... - II		

INDEX NUMBERS

Base = 1421-1430

Year	Agri-cultural	Non-Agri-cultural	Building Materials	Fish	Animal Products	Spices	Fruits and Nuts	Poultry Products
1351....	21.7 ^{4*}	28.3 ³	42.9 ²	....	....	....	....	....
1352....	54.2 ⁴	....	....	....	55.8 ⁴	....	....	....
1353....	....	....	....	....	....	....	....	....
1354....	....	....	....	....	....	....	....	....
1355....	....	....	....	....	....	....	....	....
1356....	41.3 ⁸	53.8 ⁸	....	....	41.9 ⁶	....	....	....
1357....	46.8 ⁶	37.3 ⁴	42.5 ⁴	....	50.5 ²	21.1 ²	....	....
1358....	37.9 ¹²	47.4 ¹⁷	48.3 ⁴	41.0 ²	60.7 ²	28.1 ⁴	33.2 ²	....
1359....	43.7 ⁴	....	....	....	....	....	....	....
1360....	47.7 ⁷	40.0 ⁸	40.7 ²	29.3 ²	62.5 ⁵	30.8 ⁴	....	59.0 ²
1361....	47.9 ¹²	35.9 ¹⁴	....	20.4 ²	63.9 ⁷	22.0 ⁷	....	59.1 ²
1362....	35.1 ¹²	52.9 ¹⁶	56.7 ²	27.8 ²	42.8 ⁹	26.5 ⁵	....	....
1363....	38.7 ¹²	49.5 ¹⁷	....	31.4 ²	48.5 ¹¹	27.4 ⁵	28.5 ²	50.8 ⁴
1364....	41.1 ¹²	44.1 ¹⁷	51.0 ²	29.1 ²	56.3 ⁹	23.5 ²	....	64.1 ²
1365....	....	....	55.8 ²	....	....	....	....	....
1366....	38.8 ¹⁴	53.5 ¹⁹	42.7 ²	45.1 ⁶	42.6 ⁶	39.7 ⁹	39.6 ⁴	68.0 ²
1367....	57.7 ²⁰	66.7 ¹⁹	62.0 ²	53.6 ⁶	65.1 ¹²	46.7 ⁴	73.2 ²	103.3 ⁴
1368....	52.8 ¹²	62.0 ¹⁷	....	71.6 ⁴	70.5 ¹²	33.5 ²	58.2 ²	82.6 ⁴
1369....	46.6 ²¹	57.9 ²⁰	....	47.5 ²	61.0 ¹²	40.4 ²	46.4 ²	78.8 ⁴
1370....	....	....	42.0 ²	....	....	....	....	....
1371....	....	....	60.5 ⁴	....	....	....	....	....
1372....	62.2 ²²	64.7 ¹⁸	56.0 ²	49.9 ⁴	79.5 ¹²	50.0 ²	52.8 ⁶	72.7 ⁴
1373....	63.2 ¹²	78.8 ²	....	63.4 ²	75.2 ⁷	....	54.1 ²	83.7 ⁴
1374....	61.6 ²²	71.2 ¹²	....	57.5 ²	77.9 ¹²	54.3 ²	47.8 ⁴	69.6 ²
1375....	69.0 ²¹	76.5 ¹⁸	72.7 ⁴	62.4 ⁶	64.4 ¹²	91.6 ²	52.1 ²	79.1 ⁴

* The exponents indicate the number of price relatives included in each index number.

MONEY, PRICES, AND WAGES

Year	Agri-cultural	Non-Agri-cultural	Building Materials	Fish	Animal Products	Spices	Fruits and Nuts	Poultry Products
1376....	74.1 ^{19*}	82.6 ¹⁹	56.6 ²	66.5 ⁴	73.2 ¹¹	89.6 ⁶	73.3 ⁴	78.0 ⁴
1377....	74.4 ¹⁹	81.6 ¹⁸	78.0 ³	50.5 ³	85.2 ¹³	89.3 ⁶	59.2 ³	78.8 ³
1378....	....	....	79.5 ²	....	....	....	....	....
1379....	64.2 ¹⁶	83.1 ¹⁴	60.7 ²	52.7 ³	73.5 ⁷	100.9 ⁴	46.4 ³	89.2 ³
1380....	....	76.6 ⁴	117.5 ⁴	....	....	....	....	....
1381....	....	....	....	....	....	....	....	....
1382....	....	....	....	....	....	....	....	....
1383....	69.4 ²⁰	88.4 ²⁰	80.0 ⁴	71.6 ⁴	80.4 ¹²	87.4 ⁶	68.3 ⁶	90.0 ⁴
1384....	78.5 ²¹	89.3 ²¹	130.5 ⁴	70.2 ⁷	82.8 ¹⁴	85.5 ⁶	85.3 ³	93.2 ⁴
1385....	....	....	118.9 ³	....	....	....	....	....
1386....	64.3 ²⁴	71.8 ²¹	....	76.6 ³	67.4 ¹⁴	56.3 ⁶	61.5 ⁶	69.8 ⁴
1387....	70.7 ²⁴	85.3 ²²	79.1 ⁵	79.5 ⁹	88.0 ¹⁴	72.1 ⁶	55.9 ⁷	86.8 ⁴
1388....	82.5 ²⁴	80.7 ²¹	....	69.5 ⁹	98.5 ¹²	68.6 ⁶	62.8 ⁷	88.2 ⁴
1389....	89.8 ²⁴	84.5 ²²	88.3 ⁶	80.8 ³	92.5 ¹²	70.8 ⁶	81.2 ³	91.0 ⁴
1390....	96.8 ²⁴	82.7 ²¹	....	70.9 ⁹	86.9 ¹²	72.7 ⁶	109.1 ⁷	90.5 ⁴
1391....	83.9 ²⁴	85.5 ¹⁹	....	75.2 ³	86.8 ¹²	86.2 ⁷	70.8 ⁷	89.1 ³
1392....	96.4 ²³	103.4 ²⁰	....	74.4 ⁹	94.2 ¹²	113.2 ⁷	90.7 ⁷	85.9 ³
1393....	85.3 ²³	89.4 ¹⁹	111.8 ³	74.3 ⁹	85.2 ¹¹	80.7 ⁷	75.6 ⁷	85.8 ⁴
1394....	78.9 ²⁴	96.5 ²¹	....	64.8 ³	87.3 ¹²	89.6 ⁷	75.6 ³	84.8 ⁴
1395....	75.0 ²²	96.7 ²¹	....	74.2 ⁹	84.7 ¹²	84.7 ⁷	64.5 ⁷	85.9 ³
1396....	83.8 ²²	103.9 ¹⁹	....	85.8 ⁹	92.2 ¹¹	97.1 ⁶	73.7 ⁴	85.8 ⁴
1397....	85.2 ²⁴	101.6 ²¹	....	72.0 ⁹	86.0 ¹²	98.6 ⁶	96.8 ⁷	85.8 ⁴
1398....	81.6 ²⁴	97.0 ²¹	....	81.4 ³	83.0 ¹²	90.8 ⁷	83.9 ³	85.3 ⁴
1399....	81.0 ²⁴	93.1 ²²	....	82.2 ³	81.1 ¹²	92.7 ⁷	71.0 ³	83.7 ⁴
1400....	77.2 ²⁴	95.9 ²²	....	89.7 ⁹	82.6 ¹²	79.7 ⁷	67.7 ³	89.7 ⁴
1401....	78.6 ²⁶	92.5 ²¹	....	77.2 ¹⁰	77.4 ¹¹	94.4 ³	74.0 ⁷	129.0 ³
1402....	78.9 ²⁸	86.3 ²⁵	96.1 ⁴	80.7 ¹⁰	83.8 ¹²	79.2 ⁷	72.2 ⁹	85.9 ³
1403....	82.5 ³⁰	89.0 ²⁸	95.5 ²	86.8 ¹¹	88.7 ¹²	76.7 ⁷	73.0 ¹⁰	78.3 ⁶
1404....	....	....	94.5 ²	....	....	....	....	....
1405....	84.2 ²⁰	95.3 ²⁵	....	106.2 ¹⁰	91.8 ¹²	77.7 ⁷	71.2 ¹⁰	85.3 ⁶
1406....	85.7 ²⁰	89.8 ²⁸	106.1 ⁴	81.2 ¹¹	94.0 ¹⁴	77.1 ⁷	77.8 ¹⁰	90.9 ⁶
1407....	98.2 ²⁹	89.4 ²⁷	....	89.0 ¹¹	107.7 ¹²	83.6 ⁷	83.8 ¹⁰	84.5 ⁶
1408....	96.7 ²⁸	94.5 ²⁶	....	93.3 ⁹	98.1 ¹²	91.0 ⁷	86.7 ³	86.9 ⁶
1409....	90.5 ²⁷	96.2 ²⁸	....	93.6 ¹¹	102.4 ¹²	98.8 ⁷	68.9 ⁷	81.7 ⁶
1410....	89.5 ²²	93.3 ²⁷	105.4 ⁷	90.2 ¹¹	104.4 ¹²	90.8 ⁷	74.7 ¹²	78.0 ⁶
1411....	96.6 ²¹	95.5 ²⁸	73.7 ³	95.6 ¹¹	99.3 ¹²	91.1 ⁷	88.0 ¹¹	79.5 ⁶
1412....	95.8 ²⁹	93.2 ²⁷	....	90.7 ¹⁰	93.4 ¹²	86.4 ⁷	90.3 ¹⁰	79.0 ⁶
1413....	....	....	84.7 ⁴	....	....	....	....	....

* The exponents indicate the number of price relatives included in each index number.

APPENDICES

Year	Agri-cultural	Non-Agri-cultural	Building Materials	Fish	Animal Products	Spices	Fruits and Nuts	Poultry Products
414....	102.8 ²⁷	104.8 ²⁵	114.3 ⁵	105.0 ¹⁰	94.2 ¹³	108.3 ⁵	113.8 ⁷	90.4 ⁵
415....	95.0 ²⁵	103.5 ¹⁹	....	105.5 ⁵	103.5 ¹²	86.0 ⁶	95.2 ⁶	86.5 ⁵
416....	96.1 ²⁰	102.2 ²⁴	....	97.2 ⁹	98.1 ¹³	93.8 ⁶	93.2 ¹⁰	98.2 ⁴
417....	....	....	....	....	....	....	....	....
418....	97.7 ²⁹	105.5 ²⁴	109.5 ⁷	119.8 ⁹	97.0 ¹²	106.8 ⁶	90.0 ⁹	97.1 ⁵
419....	103.0 ²¹	101.6 ²⁸	104.4 ⁵	109.4 ¹¹	104.9 ¹²	92.1 ⁵	93.1 ¹²	97.8 ⁴
420....	....	....	....	....	....	....	....	....
421....	92.3 ²¹	95.3 ²⁷	....	101.1 ¹⁰	99.0 ¹²	89.6 ⁷	87.6 ¹¹	96.9 ⁶
422....	97.0 ²²	92.0 ²²	....	100.6 ⁶	94.8 ¹²	89.1 ⁵	89.3 ⁹	96.8 ⁵
423....	90.5 ²⁷	92.8 ²⁸	93.8 ⁷	97.1 ²	98.8 ¹²	81.8 ⁵	93.1 ⁸	103.5 ⁵
424....	95.9 ¹²	92.6 ²⁵	97.3 ⁵	97.3 ⁸	97.2 ¹¹	96.5 ⁵	91.3 ²	99.6 ⁵
425....	97.1 ²⁵	108.2 ²⁶	87.2 ⁵	105.9 ¹⁰	105.0 ¹⁴	126.0 ⁵	86.3 ⁵	104.1 ⁵
426....	105.0 ²³	101.3 ²⁸	97.4 ²	100.3 ¹¹	96.5 ¹²	109.2 ⁷	107.2 ¹²	97.0 ⁵
427....	114.5 ²¹	99.7 ²¹	103.1 ²	93.6 ⁹	94.2 ¹²	99.5 ⁴	171.8 ⁴	101.1 ⁴
428....	112.9 ¹⁰	106.2 ¹⁴	131.0 ²	99.2 ⁴	109.0 ⁵	....	94.7 ²	104.5 ²
429....	98.1 ²⁷	104.5 ²⁵	111.8 ²	97.8 ⁹	103.9 ¹¹	102.3 ⁵	91.7 ¹⁰	97.2 ⁵
430....	107.0 ²⁵	107.4 ²²	114.1 ²	104.8 ⁹	106.1 ¹¹	101.5 ⁴	110.2 ⁹	101.3 ⁵
431....	148.3 ²²	139.9 ²²	120.6 ²	130.5 ¹⁰	131.3 ⁹	147.2 ⁵	142.3 ¹¹	112.1 ⁵
432....	....	....	111.6 ⁵	....	....	....	....	....
433....	120.9 ²²	104.0 ²²	113.8 ⁴	106.3 ⁵	114.3 ¹⁰	99.9 ⁵	110.8 ¹⁰	119.2 ⁵
434....	124.5 ⁹	90.6 ²	....	81.0 ²	115.0 ²	....	....	154.6 ⁴
435....	125.4 ¹⁰	97.3 ⁷	....	84.0 ²	120.9 ⁵	112.1 ²	....	191.4 ²
436....	116.6 ²²	95.5 ²²	....	90.6 ¹⁰	124.3 ¹²	95.3 ⁵	104.2 ¹⁰	162.0 ⁵
437....	123.5 ²⁹	100.1 ²⁵	90.0 ²	96.4 ¹¹	119.6 ¹²	102.4 ⁵	118.5 ¹¹	168.0 ⁵
438....	122.3 ²⁹	98.3 ²²	....	95.1 ¹¹	116.8 ¹²	110.5 ⁵	111.3 ¹¹	174.2 ⁴
439....	119.3 ²⁹	98.2 ²²	99.9 ⁴	90.1 ¹⁰	126.5 ¹²	99.0 ⁵	111.2 ¹²	156.2 ⁵
440....	117.3 ²⁹	97.9 ²²	125.8 ⁴	99.1 ¹⁰	122.7 ¹²	94.4 ⁵	104.1 ¹¹	149.7 ⁵
441....	116.1 ²⁹	102.1 ²²	....	99.7 ¹¹	118.0 ¹²	99.8 ⁵	118.0 ¹¹	156.5 ⁵
442....	109.5 ²⁹	103.8 ²⁴	113.0 ⁵	103.1 ¹⁰	116.5 ¹²	89.5 ²	101.3 ¹²	156.0 ⁵
443....	129.0 ²²	105.6 ²⁴	119.4 ²	100.3 ¹¹	129.1 ¹²	113.4 ⁵	120.2 ¹¹	158.3 ⁵
444....	121.7 ²²	110.8 ²²	....	103.7 ¹⁰	117.4 ¹²	132.2 ⁵	121.0 ¹¹	157.6 ⁵
445....	....	....	103.4 ⁵	....	....	....	....	....
446....	....	....	112.5 ²	....	....	....	....	....
447....	....	....	....	....	....	....	....	....
448....	....	....	....	....	....	....	....	....
449....	....	....	97.0 ²	....	....	....	....	....
450....	....	....	....	....	....	....	....	....
451....	117.2 ²⁴	99.3 ²¹	....	91.4 ²	110.6 ⁹	113.6 ⁵	111.6 ⁹	159.9 ⁵

* The exponents indicate the number of price relatives included in each index number.

APPENDIX IX

ANNUAL SALARIES IN VALENCIA

THE series marked with a single asterisk have been supplied by the Cathedral; those with a double asterisk, by the Hospital dels Inocents; and all others, by the municipality. Sporadic earlier quotations are available, but only in 1451-1500 do the Hospital series warrant tabulation.

There are numerous interpolations, particularly in the municipal series, which constitute the bulk of the total. The municipal payrolls are missing in 1352-1355, 1359-1366, and 1462-1483. There were no other long hiatuses. As has been explained,¹ interpolations have been made only when terminal quotations were identical.

Equivalences of the penny in fine gold and silver are listed in Table 2, p. 38 *supra*.

A 1351-1400

(in pence)

	Years	Salary	Years	Salary
1 Administrator..... (administrador)	1367-1398	12,000	1400	7,200
2 Advocate..... (advocat)	1356-1393	12,000	1395-1400	9,600
3 City councilor..... (jurat)	1351-1400	12,000		
4 Civil judge..... (asesor justicia civil)	1351-1400	12,000		
5 Guard, granary..... (guarda almodí)	1351-1400	6,000		
6 Guard, harvest..... (guarda verema)	1369-1400	4,320		
7 Guard, wine..... (guarda vi)	1357-1400	12,000		
8 Notary, judicial..... (notari sala)	1351	18,000	1356-1400	19,200
9 Social worker..... (procurador miserables)	1351-1400	3,600		
10 Syndic..... (sindich)	1351-1400	14,400		
11 Syndic, assistant..... (subsindich)	1367-1400	4,800		
12 Treasurer..... (racional)	1371-1400	12,000		
13 Trumpeter..... (trompeter)	1351-1358	1,440	1367-1400	2,160
14 Verger..... (verguer)	1351-1378	4,320	1380-1400	6,000

¹ *Vide supra*, p. 64.

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B 1401-1450

(in pence)

	Years	Salary	Years	Salary	Years	Salary
1 Administrator..... (administrador)	1401-1416	7,200	1418-1450	7,200		
2 Advocate..... (advocat)	1401-1416	9,600	1418-1450	9,600		
3 City councillor..... (jurat)	1401-1408	12,000	1412-1416	24,000	1418-1450	24,000
4 Civil judge..... (assessor justicia civil)	1401-1416	12,000	1418-1450	12,000		
5 Construction foreman*..... (sotsobrer)	1404-1416	4,800	1418-1450	4,800		
6 Guard, granary.... (guarda almodí)	1401-1416	6,000	1418-1450	6,000		
7 Guard, harvest.... (guarda verema)	1401-1416	4,320	1418-1450	4,320		
8 Guard, wine..... (guarda vi)	1401-1416	12,000	1418-1450	12,000		
9 Janitor*..... (espolsador del cor)	1420-1444	1,080	1445-1450	1,200		
0 Messenger, granary (misatge almodí)	1416	2,880	1418-1450	2,880		
1 Notary, assistant.. (notari tenient)	1406-1416	12,000	1418-1450	12,000		
2 Notary, judicial... (notari sala)	1401-1415	19,200	1418-1450	24,000		
3 Notary of receipts . (notari albaráns)	1412-1416	12,000	1418-1450	18,000		
4 Receiver of wheat imports..... (receptor forment mar)	1412-1415	7,200	1416	12,000	1418-1450	12,000
5 Social worker..... (procurador miserables)	1401-1406	3,600	1412-1416	6,000	1418-1450	6,000
6 Syndic..... (sindich)	1401-1416	14,400	1418-1450	24,000		
7 Syndic, assistant... (subsindich)	1401-1416	4,800	1418-1450	8,400		
8 Treasurer..... (racional)	1401-1416	12,000	1418-1450	24,000		
9 Treasurer, assistant (racional, ajudant)	1415-1416	12,000	1418-1450	18,000		
0 Trumpeter..... (trompeter)	1401-1416	2,160	1418-1450	2,160		
1 Verger..... (verguer)	1401-1416	6,000	1418-1450	6,000		
2 Warehouseman.... (adrasaner)	1401-1416	7,200	1418-1442	7,200		

	C 1451-1500 (in pence)		Years	Salary	Years	Salary
	Years	Salary				
1 Administrator..... (administrador)	1451-1488	7,200	1489-1500	6,000		
2 Advocate..... (advocat)	1451-1500	9,600				
3 Barber-surgeon**... (cirujá-barber)....	1451-1452	1,056	1453	924	1454-1456	1,080
4 City councilor..... (jurat)	1457-1472	1,200	1474-1500	1,800		
5 Civil judge..... (assessor justicia civil)	1451-1500	24,000				
6 Construction fore- man**..... (sotsobrer)	1451-1500	12,000				
7 Guard, granary.... (guarda almodf)	1451-1488	4,800	1489-1500	4,800		
8 Guard, harvest.... (guarda verema)	1451-1488	6,000	1489-1500	3,600		
9 Guard, wine..... (guarda vi)	1451-1488	4,320	1489-1500	8,400		
10 Hospital superin- tendent**..... (hospitaler)	1451-1458	12,000	1462-1500	6,000		
11 Janitor*..... (espolsador del cor)	1451-1500	4,800				
12 Messenger, granary (misatge almodf)	1451-1488	1,200	1489-1497	1,440		
13 Notary, judicial... (notari sala)	1451-1500	2,880				
14 Notary of receipts . (notari albaráns)	1451-1500	24,000				
15 Organist**..... (organiste)	1451-1497	18,000				
16 Pastry cook**..... (pastador).....	1456-1499	720				
17 Physician**..... (metge).....	1451-1452	2,400	1453	1,374	1456-1457	1,440
18 Procurator, assist- ant**..... (procurador ajudant)	1458-1462	1,920	1465	1,680	1466-1500	1,800
19 Receiver of wheat imports..... (receptor forment mar)	1451-1453	1,080	1454-1455	1,200	1456	1,080
20 Social worker..... (procurador miserables)	1457-1500	1,200				
21 Syndic..... (sindich)	1451-1500	1,320				
22 Treasurer..... (racional)	1451-1497	24,000				
23 Treasurer, assistant (racional, ajudant)	1451-1488	12,000	1489-1497	9,600		
24 Trumpeter..... (trompeter)	1451-1500	6,000				
25 Verger..... (verguer)	1451-1486	2,160	1488-1500	1,200		

APPENDIX X

WAGES IN VALENCIA

the wage rates except those of linen finishers and weavers (in 1451-), which run in terms of a yard of cloth,¹ are quoted by the day.ivalences of the penny in fine gold and silver are listed in Table 2, 3 *supra*. The exponents indicate the number of quotations included in average or used as controls.

A 1392-1450 (in pence)

	1392	1393		
Carpenter, helper (fuster, pe6)	30.0 ¹	....	
Carpenter, master (fuster, mestre)	54.0 ⁸	54.0 ⁴		
Laborer, unskilled (pe6) . . . . .	....	30.0 ⁸		
Man and horse (home y cavall) . . . . .	....	....
Mason, helper (obrer de vila, pe6)	30.7 ¹²	30.2 ¹²		
Mason, journeyman (obrer de vila, oficial)	42.0 ¹	42.0 ¹		
Mason, master (obrer de vila, mestre)	54.0 ¹	54.0 ¹		
Mat-maker, journeyman (estorer, oficial) . . . . .	....	....
Mat-maker, master (estorer, mestre) . . . . .	....	48.0 ¹		
Stonecutter, helper (pedrapiquer, pe6) . . . . .	....	....
Stonecutter, master (pedrapiquer, mestre) . . . . .	....	48.0 ²		
	1395	1396	1397	1398
Carpenter, helper . . . . .	....	....	....	....
Carpenter, master	51.0 ⁴	55.8 ⁷	66.0 ²	54.0 ¹
Laborer, unskilled	30.8 ⁷	....	....	29.3 ⁸
Man and horse . . . . .	....	....	....	30.0 ¹
Mason, helper	30.0 ⁸	30.0 ¹²	32.3 ¹⁰	....
Mason, journeyman . . . . .	....	....	42.0 ¹	....
Mason, master	48.8 ⁵	51.5 ¹²	52.5 ²	54.0 ⁵
Mat-maker, journeyman . . . . .	....	....	....	....
Mat-maker, master . . . . .	....	48.0 ²	....	48.0 ¹
Stonecutter, helper . . . . .	....	....	....	36.0 ¹
Stonecutter, master	56.0 ¹	....	48.0 ¹	53.5 ²
	1399	1400	1401	1402
Carpenter, helper . . . . .	....	....	....	....
Carpenter, master	66.0 ¹	....	51.0 ²	54.0 ¹
Laborer, unskilled . . . . .	....	....	....	....
Man and horse . . . . .	....	....	....	30.0 ⁴
Mason, helper	30.0 ⁴	30.0 ⁸	....	24.0 ⁸
Mason, journeyman	40.7 ²	....	....	43.5 ⁸
Mason, master	48.0 ⁴	51.7 ⁸	....	54.0 ⁸
Mat-maker, journeyman . . . . .	....	....	36.0 ²	36.0 ²
Mat-maker, master . . . . .	....	....	48.0 ²	....
Stonecutter, helper . . . . .	....	33.0 ²	....	....
Stonecutter, master . . . . .	....	54.0 ⁶	....	....

The linen woven was a yard wide but that finished was of uncertain width (*supra*, p. 70).

MONEY, PRICES, AND WAGES

A 1392-1450 — CONTINUED

	1403	1404	1405	1406	1407
1 Carpenter, helper.....	24.0 ¹	24.0 ³	24.0 ²	....	36.0 ⁴
2 Carpenter, master.....	54.0 ³	56.0 ⁹	66.0 ⁴	60.0 ⁵	60.0 ⁶
3 Laborer, unskilled.....	....	....	30.0 ³	30.0 ¹	....
4 Man and horse.....	42.0 ¹	....	60.0 ⁴	....	60.0 ⁵
5 Mason, helper.....	....	30.0 ¹	....	32.0 ⁴	....
6 Mason, journeyman.....	....	....	....	....	....
7 Mason, master.....	....	....	....	54.0 ³	....
8 Mat-maker, journeyman.....	....	36.0 ⁴	36.0 ¹	36.0 ³	36.0 ⁶
9 Mat-maker, master.....	....	48.0 ¹	48.0 ¹	48.0 ¹	48.0 ⁶
10 Stonecutter, helper.....	29.3 ⁸	30.0 ¹²	24.0 ¹	27.0 ⁴	30.0 ⁸
11 Stonecutter, master.....	42.8 ⁸	45.2 ¹¹	48.0 ⁴	46.0 ⁴	47.0 ⁸
	1408	1409	1410	1411	1412
1 Carpenter, helper.....	....	....	....	30.0 ¹	....
2 Carpenter, master.....	....	66.0 ⁴	....	60.0 ⁴	66.0 ⁶
3 Laborer, unskilled.....	....	....	....	36.0 ¹	....
4 Man and horse.....	....	....	....	....	84.0 ⁴
5 Mason, helper.....	30.0 ²	30.0 ¹	33.0 ⁸	....	32.0 ⁶
6 Mason, journeyman.....	....	....	42.0 ⁴	....	42.0 ⁶
7 Mason, master.....	....	54.0 ¹	54.0 ⁴	....	66.0 ⁶
8 Mat-maker, journeyman.....	....	....	36.0 ¹	36.0 ⁴	....
9 Mat-maker, master.....	....	....	48.0 ¹	48.0 ¹	52.0 ⁶
10 Stonecutter, helper.....	24.0 ⁴	30.3 ⁸	36.0 ⁸	....	30.0 ¹²
11 Stonecutter, master.....	44.0 ⁸	44.0 ⁸	45.5 ⁸	....	44.0 ¹²
	1413	1414	1415	1416	1417
1 Carpenter, helper.....	....	....	30.0 ²	....	....
2 Carpenter, master.....	54.0 ²	54.0 ²	54.0 ⁸	60.0 ⁶	59.5 ⁶
3 Laborer, unskilled.....	....	....	....	....	33.0 ⁸
4 Man and horse.....	36.0 ¹	36.0 ¹	....	43.5 ⁴	....
5 Mason, helper.....	31.3 ¹⁴	....	30.0 ¹	30.0 ¹	30.0 ⁸
6 Mason, journeyman.....	42.0 ⁴	....	....	42.0 ⁴	....
7 Mason, master.....	54.0 ¹	54.0 ¹	54.0 ³	51.0 ⁴	54.0 ³
8 Mat-maker, journeyman.....	42.0 ³	....	40.0 ³	40.0 ³	40.0 ³
9 Mat-maker, master.....	52.0 ¹	....	52.0 ¹	52.0 ¹	52.0 ³
10 Stonecutter, helper.....	36.0 ¹²	28.0 ⁸	24.0 ⁸	36.0 ¹
11 Stonecutter, master.....	44.0 ³	47.3 ¹

APPENDICES

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A 1392-1450 — CONTINUED

	1418	1419	1420	1421	1422
Carpenter, helper.....	36.0 ⁶	36.0 ¹	36.0 ²	30.0 ²
Carpenter, master.....	64.0 ¹²	57.0 ⁹	58.5 ⁷	54.0 ⁷	....
Laborer, unskilled.....	36.0 ¹	....	30.0 ¹	....	....
Man and horse.....	42.0 ⁴	....	....	....	....
Mason, helper.....	36.0 ¹⁷	36.0 ¹²	36.0 ²	....	30.0 ⁴
Mason, journeyman.....	....	....	....	42.0 ²	42.0 ²
Mason, master.....	....	....	51.0 ³	....	54.0 ¹
Mat-maker, journeyman.....	40.0 ¹	40.0 ²	40.0 ²	40.0 ²	40.0 ²
Mat-maker, master.....	52.0 ¹	52.0 ¹	52.0 ¹	52.0 ¹	48.0 ¹
Stonecutter, helper.....	35.3 ⁸	36.0 ⁸	....	....	....
Stonecutter, master.....	51.0 ²⁰	50.3 ¹¹	....	....	....
	1423	1424	1425	1426	1427
Carpenter, helper.....	....	....	....	....	....
Carpenter, master.....	57.0 ⁶	55.9 ¹²	55.5 ⁵	59.3 ⁸	54.0 ¹
Laborer, unskilled.....	....	....	....	....	....
Man and horse.....	....	....	....	....	....
Mason, helper.....	33.0 ⁸	30.0 ²	36.0 ²	28.5 ⁶	35.0 ⁴
Mason, journeyman.....	42.0 ¹	43.0 ²	....	42.0 ¹	....
Mason, master.....	54.0 ²	59.0 ⁹	60.0 ⁷	....	49.0 ⁴
Mat-maker, journeyman.....	40.0 ⁴	40.0 ²	40.0 ²	36.0 ⁴	....
Mat-maker, master.....	52.0 ¹	52.0 ¹	52.0 ¹	48.0 ¹	....
Stonecutter, helper.....	....	....	36.0 ¹	....	30.0 ⁴
Stonecutter, master.....	....	48.0 ⁶	48.0 ⁶	....	51.0 ⁴
	1428	1429	1430	1431	1432
Carpenter, helper.....	....	30.0 ²	36.0 ⁴	....	30.0 ⁴
Carpenter, master.....	63.0 ¹⁰	63.0 ⁴	60.0 ²	57.5 ⁷	61.9 ¹²
Laborer, unskilled.....	....	....	36.0 ²	36.0 ²	....
Man and horse.....	40.5 ²	40.5 ⁴	42.0 ¹	39.0 ²	30.0 ⁴
Mason, helper.....	34.0 ¹²	33.0 ²	36.0 ⁶	32.7 ⁷	36.0 ¹²
Mason, journeyman.....	42.0 ¹	....	....	42.0 ¹	42.0 ⁶
Mason, master.....	48.7 ¹²	48.0 ²	54.0 ²	54.0 ⁴	54.0 ¹²
Mat-maker, journeyman.....	40.0 ⁴	....	40.0 ⁴	40.0 ⁴	40.0 ⁴
Mat-maker, master.....	54.0 ¹	....	50.5 ²	54.0 ²	54.0 ⁴
Stonecutter, helper.....	....	....	....	....	30.0 ⁴
Stonecutter, master.....	....	....	....	48.0 ¹	48.0 ¹²

MONEY, PRICES, AND WAGES

A 1392-1450 — CONTINUED

		1433	1434	1435	1436	1437
1	Carpenter, helper.....	30.0 ¹²	30.8 ⁷	....	34.0 ⁴	36.0 ⁴
2	Carpenter, master.....	57.5 ¹²	59.8 ¹⁰	60.0 ¹²	61.0 ¹²	61.0 ⁴
3	Laborer, unskilled.....	36.0 ⁸	....	....	36.0 ¹	29.3 ⁴
4	Man and horse.....	32.0 ⁶	47.0 ⁶	42.0 ²	37.4 ⁶	48.0 ⁶
5	Mason, helper.....	31.5 ⁸	36.0 ⁴	27.0 ²	31.3 ⁶	33.7 ¹
6	Mason, journeyman.....	....	42.0 ⁴	....	42.0 ²	....
7	Mason, master.....	56.0 ⁷	53.3 ⁸	54.0 ¹	52.0 ⁸	54.0 ⁴
8	Mat-maker, journeyman.....	40.0 ⁴	40.0 ⁴	40.0 ⁴	40.0 ⁴	40.0 ⁴
9	Mat-maker, master.....	54.0 ⁴	54.0 ⁴	54.0 ⁴	54.0 ⁴	54.0 ⁴
10	Stonecutter, helper.....	33.7 ¹¹	30.0 ²	24.5 ⁸	25.5 ⁵	....
11	Stonecutter, master.....	50.0 ¹¹	48.0 ⁵	48.0 ⁹	48.0 ¹²	48.0 ⁴
		1438	1439	1440	1441	1442
1	Carpenter, helper.....	36.0 ⁴	30.0 ⁸	30.0 ⁴	30.0 ⁸	30.0 ⁸
2	Carpenter, master.....	63.0 ¹⁶	60.0 ¹⁶	62.6 ²⁰	63.8 ¹⁶	62.0 ¹
3	Laborer, unskilled.....	24.0 ²	28.4 ⁴	30.0 ¹	36.0 ⁴	36.0 ⁴
4	Man and horse.....	38.0 ⁵	39.0 ⁴	40.0 ⁴	47.3 ⁵	42.0 ⁴
5	Mason, helper.....	31.7 ¹⁰	34.5 ¹⁶	34.0 ⁵	33.0 ⁴	34.5 ⁴
6	Mason, journeyman.....	42.0 ²	....	42.0 ⁴	42.0 ¹²	42.0 ²
7	Mason, master.....	....	....	54.0 ⁸	54.0 ⁸	54.0 ⁸
8	Mat-maker, journeyman.....	40.0 ⁴	....	40.0 ²	42.0 ⁴	40.0 ⁴
9	Mat-maker, master.....	54.0 ⁴	....	54.0 ¹	54.0 ⁴	54.0 ⁴
10	Stonecutter, helper.....	....	36.0 ⁴	....	....	....
11	Stonecutter, master.....	48.0 ⁹	49.5 ¹⁶	48.0 ⁶	48.0 ¹²	48.0 ¹
		1443	1444	1445	1446	1447
1	Carpenter, helper.....	36.0 ¹²	36.0 ¹²	36.0 ⁴	31.5 ⁸	....
2	Carpenter, master.....	62.6 ¹⁵	61.0 ¹¹	60.0 ⁸	64.0 ⁸	57.0 ⁸
3	Laborer, unskilled.....	36.0 ²	....	24.0 ²	26.0 ⁴	29.0 ⁶
4	Man and horse.....	45.0 ⁴	42.0 ⁸	48.0 ²	40.5 ⁴	41.3 ²
5	Mason, helper.....	....	36.0 ⁴	....	36.0 ¹	36.0 ¹
6	Mason, journeyman.....	42.0 ¹⁰	42.0 ¹⁶	....	....	42.0 ¹
7	Mason, master.....	54.0 ²	54.0 ⁴	54.0 ⁴	....	48.0 ¹
8	Mat-maker, journeyman.....	....	40.0 ⁴	40.0 ⁴	40.0 ⁴	40.0 ⁴
9	Mat-maker, master.....	....	54.0 ¹	54.0 ⁴	54.0 ⁴	54.0 ⁴
10	Stonecutter, helper.....	....	....	....	....	....
11	Stonecutter, master.....	48.0 ¹⁶	48.0 ¹²	48.0 ¹	....	48.0 ²
				1448	1449	1450
1	Carpenter, helper.....	....	....	....	....	....
2	Carpenter, master.....	....	....	62.3 ⁸	61.5 ¹⁰	63.0 ⁴
3	Laborer, unskilled.....	....	....	25.5 ¹²	24.0 ⁶	36.0 ¹
4	Man and horse.....	....	....	42.0 ¹	42.0 ²	42.0 ¹
5	Mason, helper.....	....	....	36.0 ¹	30.0 ²	....
6	Mason, journeyman.....	....	....	42.0 ¹	40.0 ¹	42.0 ¹
7	Mason, master.....	....	....	52.0 ⁷	54.0 ⁹	....
8	Mat-maker, journeyman.....	....	....	40.0 ⁶	40.0 ⁴	....
9	Mat-maker, master.....	54.0 ¹	54.0 ¹
10	Stonecutter, helper.....
11	Stonecutter, master.....

APPENDICES

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B 1453-1500

(in pence)

	1453	1454			
1 Carpenter, helper (fuster, peó)	36.0 ¹²			
2 Carpenter, master (fuster, mestre)	63.5 ¹²	60.0 ²⁸			
3 Laborer, unskilled (peó)	28.0 ⁹	27.8 ⁵			
4 Linen finisher (canejar lleng) * .....	....	....	
5 Linen weaver (teixir lleng)	5.5 ⁵	5.6 ⁴			
5 Man and horse (home y cavall) *	48.0 ¹	48.0 ²			
7 Mason, helper (obrer de vila, peó)	33.0 ⁶	36.0 ¹			
8 Mason, journeyman (obrer de vila, oficial) .....	....	42.0 ³			
9 Mason, master (obrer de vila, mestre)	54.0 ⁴	54.0 ²			
9 Mat-maker, journeyman (estorer, oficial)	40.0 ¹	40.0 ¹			
1 Mat-maker, master (estorer, mestre)	54.0 ¹	54.0 ¹			
2 Stonecutter, master (pedrapiquer, mestre) .....	....	54.0 ⁴			
	1455	1456	1457	1458	1459
1 Carpenter, helper	36.0 ⁴	36.0 ⁷	....	32.3 ⁹	36.0 ⁵
2 Carpenter, master	60.0 ²¹	60.0 ⁸	60.0 ²	63.0 ¹⁷	59.5 ¹⁵
3 Laborer, unskilled	27.0 ⁴	27.0 ²	26.5 ⁷	26.0 ²	26.0 ⁴
4 Linen finisher * .....	....	....	1.7 ⁹	1.7 ²	....
5 Linen weaver .....	....	6.0 ³	5.4 ⁵	6.0 ⁴	5.4 ⁴
6 Man and horse *	50.0 ²	48.0 ³	42.0 ³	42.0 ²	42.0 ³
7 Mason, helper	33.9 ¹⁰	30.0 ²	36.0 ²	....	36.0 ¹
8 Mason, journeyman	44.0 ⁴	42.0 ⁴	42.0 ²	42.0 ⁶	42.0 ³
9 Mason, master	54.0 ⁸	54.0 ⁵	54.0 ⁷	54.0 ⁶	54.0 ²
9 Mat-maker, journeyman	40.0 ¹	40.0 ¹	....	40.0 ¹	40.0 ²
1 Mat-maker, master	54.0 ¹	54.0 ¹	....	54.0 ¹	54.0 ¹
2 Stonecutter, master .....	....	....	48.0 ¹	....	48.0 ⁴
	1460	1461	1462	1463	1464
1 Carpenter, helper	32.0 ⁹	....	....	....	....
2 Carpenter, master	60.0 ¹⁷	58.8 ¹²	57.0 ²	60.0 ¹²	55.7 ²²
3 Laborer, unskilled	36.0 ²	36.0 ²	30.8 ¹¹	36.0 ²	36.0 ²
4 Linen finisher *	1.8 ⁷	....	2.0 ²	....	....
5 Linen weaver	5.3 ³	....	5.0 ⁴	5.0 ¹	....
6 Man and horse *	42.8 ²	42.0 ³	40.0 ⁴	42.0 ²	42.0 ²
7 Mason, helper	30.0 ²	32.0 ²	36.0 ⁴	36.0 ²	....
8 Mason, journeyman	42.0 ²	42.0 ²	42.0 ²	....	....
9 Mason, master	54.0 ⁷	....	54.0 ⁴	54.0 ⁴	....
9 Mat-maker, journeyman	40.0 ²	40.0 ²	40.0 ⁴	....	40.0 ²
1 Mat-maker, master	54.0 ¹	54.0 ¹	54.0 ¹	....	54.0 ¹
2 Stonecutter, master	48.0 ²	48.0 ²	48.0 ²	....	....

* Not included in the index numbers in Table 7.

MONEY, PRICES, AND WAGES

B 1453-1500 — CONTINUED

		1465	1466	1467	1468	1469
1	Carpenter, helper.....	36.0 ²	....	24.0 ⁴	....	24.0 ¹
2	Carpenter, master.....	54.0 ⁶	54.0 ⁶	54.0 ⁸	54.0 ¹⁴	51.0 ¹⁸
3	Laborer, unskilled.....	36.0 ³	36.0 ³	30.0 ²	24.0 ⁸	24.0 ³
4	Linen finisher*.....	2.0 ¹	....	....	....	2.0 ¹
5	Linen weaver.....	....	5.6 ⁵	6.3 ⁴	5.8 ⁴	5.4 ¹³
6	Man and horse*.....	40.0 ³	36.0 ²	39.0 ²	36.0 ⁴	36.0 ⁸
7	Mason, helper.....	36.0 ⁷	34.0 ¹⁰	24.0 ⁶	24.0 ⁸	24.0 ¹⁸
8	Mason, journeyman.....	42.0 ²	....	42.0 ⁴	42.0 ⁹	42.0 ¹⁸
9	Mason, master.....	54.0 ⁶	54.0 ²	....	54.0 ¹	52.0 ¹⁰
10	Mat-maker, journeyman.....	40.0 ²	....	40.0 ³	40.0 ¹	40.0 ²
11	Mat-maker, master.....	54.0 ¹	....	54.0 ¹	54.0 ¹	54.0 ¹
12	Stonecutter, master.....	....	48.0 ⁹	....	....	48.0 ¹³
		1470	1471	1472	1473	1474
1	Carpenter, helper.....	....	36.0 ¹	24.0 ⁴	....	....
2	Carpenter, master.....	52.3 ¹⁸	52.0 ¹³	54.0 ⁵	48.0 ¹	51.0 ³
3	Laborer, unskilled.....	36.0 ³	33.0 ⁷	36.0 ²	36.0 ³	36.0 ²
4	Linen finisher*.....	1.7 ³	1.5 ¹	1.8 ⁷	1.5 ¹	....
5	Linen weaver.....	4.8 ¹¹	4.7 ³	5.1 ¹⁶	4.9 ³	4.1 ⁹
6	Man and horse*.....	39.0 ⁷	36.0 ⁷	38.0 ⁴	36.0 ⁴	36.0 ³
7	Mason, helper.....	34.0 ¹⁶	36.0 ¹⁹	34.0 ⁷	36.0 ¹	36.0 ⁴
8	Mason, journeyman.....	....	42.0 ³	....	....	....
9	Mason, master.....	51.0 ¹¹	50.0 ¹⁶	48.0 ⁵	48.0 ¹	48.0 ⁴
10	Mat-maker, journeyman.....	40.0 ³	40.0 ¹	40.0 ¹	....	....
11	Mat-maker, master.....	54.0 ¹	54.0 ¹	54.0 ¹	....	....
12	Stonecutter, master.....	48.0 ¹²	48.0 ²	....	....	....
		1475	1476	1477	1478	1479
1	Carpenter, helper.....	....	....	....	....	....
2	Carpenter, master.....	54.0 ³	....	57.0 ⁸	....	....
3	Laborer, unskilled.....	36.0 ³	34.0 ⁴	36.0 ³	36.0 ³	36.0 ³
4	Linen finisher*.....	1.5 ⁴	....	1.5 ¹	1.8 ³	1.8 ⁴
5	Linen weaver.....	4.7 ⁴	4.9 ⁷	6.0 ¹	....	6.0 ³
6	Man and horse*.....	36.0 ³	36.0 ²	36.0 ³	36.0 ³	36.0 ³
7	Mason, helper.....	31.5 ⁹	30.0 ⁴	....	....	....
8	Mason, journeyman.....	....	....	....	....	42.0 ¹
9	Mason, master.....	48.0 ¹	51.0 ⁸	54.0 ¹	....	54.0 ¹
10	Mat-maker, journeyman.....	....	....	....	....	....
11	Mat-maker, master.....	....	....	....	....	....
12	Stonecutter, master.....	....	....	....	....	....

* Not included in the index numbers in Table 7.

APPENDICES

B 1453-1500 — CONTINUED

	1480	1481	1482	1483	1484
Carpenter, helper.....	24.0 ⁴	24.0 ⁴	....	....	....
Carpenter, master.....	54.0 ⁶	53.0 ⁶	52.5 ⁴	....	48.0 ⁴
Laborer, unskilled.....	24.0 ²	....	30.0 ²	24.0 ¹	24.0 ²
Linen finisher ^o.....	....	1.5 ⁴	1.9 ²	....	2.0 ²
Linen weaver.....	6.0 ²	5.0 ⁴	6.0 ¹	5.4 ²	6.0 ²
Man and horse ^o	36.0 ²	36.0 ⁴	36.0 ²	36.0 ¹	36.0 ²
Mason, helper.....	27.0 ¹¹	24.8 ¹²	24.0 ²	....	28.5 ¹²
Mason, journeyman.....	36.0 ²	36.0 ¹²	....	....	....
Mason, master.....	44.0 ²	42.0 ¹²	54.0 ²	....	52.0 ²
Mat-maker, journeyman.....	....	....	....	....	....
Mat-maker, master.....	....	....	....	....	....
Stonecutter, master.....	....	....	....	....	....
	1485	1486	1487	1488	1489
Carpenter, helper.....	....	....	....	....	....
Carpenter, master.....	48.0 ¹	54.0 ²	48.0 ¹	....	....
Laborer, unskilled.....	24.8 ²	24.0 ²	25.0 ²	24.0 ²	24.8 ⁷
Linen finisher ^o.....	....	1.5 ¹	2.0 ²	....	1.8 ²
Linen weaver.....	4.7 ⁵	4.9 ²	4.5 ²	....	5.2 ⁷
Man and horse ^o	36.0 ²	36.0 ²	37.0 ²	35.9 ¹⁰	36.0 ²
Mason, helper.....	24.0 ²	27.8 ⁷	30.0 ⁷	28.5 ⁷	27.0 ⁷
Mason, journeyman.....	....	39.8 ¹²	37.5 ¹⁰	42.0 ²	42.0 ¹
Mason, master.....	54.0 ²	50.0 ¹⁴	49.5 ¹¹	54.0 ²	54.0 ⁴
Mat-maker, journeyman.....	....	....	....	....	....
Mat-maker, master.....	....	....	....	....	....
Stonecutter, master.....	....	....	....	48.0 ²	48.0 ¹
	1490	1491	1492	1493	1494
Carpenter, helper.....	30.0 ¹	....	....	....	....
Carpenter, master.....	54.0 ¹	54.0 ²	54.0 ¹	....	....
Laborer, unskilled.....	....	....	30.0 ²	30.0 ²	30.0 ⁴
Linen finisher ^o.....	....	2.0 ¹	2.0 ¹	....	2.0 ²
Linen weaver.....	....	5.0 ²	6.4 ²	6.0 ²	5.1 ⁴
Man and horse ^o	36.0 ¹	36.0 ⁴	36.0 ²	36.0 ⁷	36.0 ²
Mason, helper.....	30.0 ⁴	30.0 ¹⁷	....	30.0 ¹²	30.0 ¹²
Mason, journeyman.....	....	....	....	42.0 ²	....
Mason, master.....	54.0 ⁴	52.0 ²	54.0 ²	54.0 ¹²	54.0 ²
Mat-maker, journeyman.....	....	....	....	....	....
Mat-maker, master.....	....	....	....	....	....
Stonecutter, master.....	48.0 ²	48.0 ²	....	48.0 ²	48.0 ²

^o Not included in the index numbers in Table 7.

MONEY, PRICES, AND WAGES

B 1453-1500 — CONTINUED

	1495	1496	1497	1498	1499
1 Carpenter, helper.....	30.0 ¹	36.0 ¹	....	30.0 ⁸	30.0 ¹⁶
2 Carpenter, master.....	48.0 ¹	48.0 ¹	....	54.0 ¹⁰	51.4 ¹⁷
3 Laborer, unskilled.....	30.0 ⁴	....	30.0 ⁴	....	30.0 ¹³
4 Linen finisher*.....	1.5 ⁴	....	....	1.5 ¹	1.5 ¹
5 Linen weaver.....	5.0 ⁸	5.2 ⁸	5.0 ⁸	5.5 ⁴	6.0 ⁴
6 Man and horse*.....	36.0 ⁸	36.0 ¹⁰	36.0 ¹²	36.0 ⁸	36.0 ⁸
7 Mason, helper.....	31.0 ¹⁴	30.0 ¹⁴	30.0 ⁸	32.0 ¹²	30.0 ¹¹
8 Mason, journeyman.....	....	42.0 ⁴	42.0 ⁸	42.0 ⁴	42.0 ¹
9 Mason, master.....	54.0 ⁷	54.0 ¹³	54.0 ⁷	54.0 ⁸	54.0 ¹
10 Mat-maker, journeyman.....	....	....	....	....	....
11 Mat-maker, master.....	....	....	....	....	....
12 Stonecutter, master.....	48.0 ¹⁶	48.0 ⁶	48.0 ¹²	48.0 ¹⁴	48.0 ¹⁶
					1500
1 Carpenter, helper.....	....	....	....	....	....
2 Carpenter, master.....	....	....	....	....	48.8 ⁸
3 Laborer, unskilled.....	....	....	....	....	30.0 ¹³
4 Linen finisher*.....	....	....	....	....	1.5 ³
5 Linen weaver.....	....	....	....	....	6.0 ⁹
6 Man and horse*.....	....	....	....	....	35.3 ¹¹
7 Mason, helper.....	....	....	....	....	....
8 Mason, journeyman.....	....	....	....	....	....
9 Mason, master.....	....	....	....	....	....
10 Mat-maker, journeyman.....	....	....	....	....	....
11 Mat-maker, master.....	....	....	....	....	....
12 Stonecutter, master.....	....	....	....	....	48.0 ¹⁶

* Not included in the index numbers in Table 7.

APPENDIX XI

WAGES IN ARAGON

ALL of the wage rates are quoted by the day. Equivalences of the penny in fine gold are listed in Table 11, p. 94 *supra*. For fragmentary data prior to 1381, *vide* Appendix XIII. The exponents indicate the number of quotations included in each average.

(in pence)

		1381	1397	1398
1	Laborer, unskilled (peón).....	22.7 ⁴	25.5 ⁹	22.0 ¹
2	Mason's helper (albañil, peón).....	....	24.0 ¹	....
3	Mason, master (albañil, maestro).....	41.0 ¹²	42.0 ⁴	42.0 ¹
		1402	1405	1406
1	Laborer, unskilled.....	23.7 ¹⁰	27.0 ⁶	24.0 ¹
2	Mason's helper.....	....	....	....
3	Mason, master.....	42.0 ³	42.0 ²⁴	42.0 ¹⁶
		1412	1413	1414
1	Laborer, unskilled.....	23.5 ⁷	22.0 ⁵	22.0 ⁶
2	Mason's helper.....	....	....	....
3	Mason, master.....	....	....	....
		1418	1419	1421
1	Laborer, unskilled.....	24.0 ⁴	....	23.5 ⁵
2	Mason's helper.....	20.0 ⁵	24.0 ¹	....
3	Mason, master.....	42.0 ⁶	42.0 ¹	....
		1424	1436	1438
1	Laborer, unskilled.....	27.4 ⁸	24.0 ²	26.0 ²
2	Mason's helper.....	....	28.0 ⁴	....
3	Mason, master.....	48.0 ¹²	44.0 ²	....
		1442	1445	1446
1	Laborer, unskilled.....	25.0 ²	....	....
2	Mason's helper.....	24.2 ⁴	24.0 ²	26.0 ⁶
3	Mason, master.....	44.0 ⁸	44.0 ⁶	44.0 ⁷
		1449	1450	1452
1	Laborer, unskilled.....	24.0 ¹	....	24.0 ⁴
2	Mason's helper.....	24.3 ⁴	26.5 ²	....
3	Mason, master.....	44.0 ⁴	44.0 ²	....
		1456	1460	1461
1	Laborer, unskilled.....	25.0 ²	26.0 ¹	....
2	Mason's helper.....	....	....	26.0 ¹
3	Mason, master.....	44.0 ⁸	....	44.0 ⁴
		1464	1465	1466
1	Laborer, unskilled.....	....	25.0 ²	23.3 ²
2	Mason's helper.....	24.0 ²	28.0 ¹	28.0 ⁴
3	Mason, master.....	44.0 ²	44.0 ¹	44.0 ²
				1467
				1468
				22.0 ¹
			
			

MONEY, PRICES, AND WAGES

	1469	1471	1475	1478	1479
1 Laborer, unskilled.....	22.0 ¹	24.0 ⁴	....	....	....
2 Mason's helper.....	....	....	25.7 ³	24.0 ¹	24.0 ⁴
3 Mason, master.....	....	44.0 ⁴	44.0 ³	44.0 ¹	44.0 ⁴
	1480	1481	1482	1485	1486
1 Laborer, unskilled.....	25.0 ³	22.0 ³	20.0 ³	24.0 ³	24.0 ¹
2 Mason's helper.....	28.0 ⁴	23.0 ²	23.8 ⁹	....	21.5 ²
3 Mason, master.....	44.0 ⁴	44.0 ³	44.0 ⁵	44.0 ¹	43.3 ⁴
	1487	1489	1490	1491	1492
1 Laborer, unskilled.....	....	28.5 ³	....	....	24.0 ⁶
2 Mason's helper.....	22.7 ⁵	32.0 ¹	24.0 ¹⁶	....	26.0 ³
3 Mason, master.....	44.0 ⁶	44.0 ³	44.0 ⁸	42.0 ¹	44.0 ³
	1494	1495	1496	1497	1498
1 Laborer, unskilled.....	....	24.0 ¹	23.2 ¹⁷	24.8 ¹³	23.8 ⁷
2 Mason's helper.....	24.0 ⁵	24.0 ¹⁶	24.8 ⁹	....	....
3 Mason, master.....	42.0 ⁴	44.0 ⁵	43.3 ¹⁹	42.0 ⁸	42.0 ³
					1499
1 Laborer, unskilled.....					25.3 ⁹
2 Mason's helper.....					....
3 Mason, master.....					42.0 ⁴

APPENDIX XII

WAGES IN NAVARRE

ALL the wage rates are quoted by the day. -Equivalences of the penny in fine gold are listed in Table 18, p. 141 *supra*. For fragmentary data prior to 1346, *vide* Appendix XIII. The exponents indicate the number of quotations included in each average or used as controls.

A 1346-1400

(in pence)

			1346	1347	
1	Adobe mason, helper (tapiador, peón).....		....	....
2	Adobe mason, journeyman (tapiador, oficial).....		....	....
3	Carpenter, helper (carpintero, peón).....		....	....
4	Carpenter, journeyman (carpintero, oficial).....		....	....
5	Laborer, female (mujer).....		4.8 ¹⁶	4.8 ¹⁶	
6	Laborer, male (peón or bracero).....		10.6 ¹⁶	10.2 ²⁰	
7	Mason, helper (albañil, peón).....		....	10.0 ¹⁸	
8	Mason, journeyman (albañil, oficial).....		21.8 ¹⁶	20.5 ¹⁶	
9	Stonecutter, helper (picapedrero, peón).....		8.0 ⁴	....
10	Stonecutter, journeyman (picapedrero, oficial).....		17.5 ¹⁶	....
		1348	1349	1351	1352
1	Adobe mason, helper.....	....	....	11.0 ⁴	....
2	Adobe mason, journeyman.....	....	....	....	....
3	Carpenter, helper.....	....	....	12.0 ⁴	16.0 ¹
4	Carpenter, journeyman.....	....	26.0 ¹²	20.0 ²¹	22.0 ¹⁸
5	Laborer, female.....	4.0 ⁴	7.0 ¹⁶	8.0 ⁸	7.5 ¹⁰
6	Laborer, male.....	9.0 ⁸	17.8 ¹⁶	13.3 ²⁰	15.0 ²⁸
7	Mason, helper.....	....	....	....	10.8 ¹⁶
8	Mason, journeyman.....	20.0 ⁸	25.0 ¹⁶	22.0 ¹²	20.0 ²⁴
9	Stonecutter, helper.....	....	....	12.0 ¹	11.0 ⁴
10	Stonecutter, journeyman.....	....	....	24.0 ⁸	....
		1353	1354	1355	1356
1	Adobe mason, helper.....	....	....	....	....
2	Adobe mason, journeyman.....	....	....	....	....
3	Carpenter, helper.....	....	....	14.0 ²	....
4	Carpenter, journeyman.....	20.0 ⁸	28.0 ⁴	28.0 ²	39.0 ⁴
5	Laborer, female.....	12.0 ⁴	....	8.0 ¹	....
6	Laborer, male.....	15.0 ⁸	14.0 ⁴	14.0 ⁴	....
7	Mason, helper.....	12.0 ⁸	....	....	18.0 ²
8	Mason, journeyman.....	20.0 ⁸	28.0 ¹	28.0 ⁴	30.5 ⁴
9	Stonecutter, helper.....	....	....	....	....
10	Stonecutter, journeyman.....	....	....	....	....

MONEY, PRICES, AND WAGES

A 1346-1400 — CONTINUED

	1357	1358	1359	1360
1 Adobe mason, helper.....	....	12.0 ⁸	12.0 ¹⁸	16.0 ⁴
2 Adobe mason, journeyman.....	....	36.0 ⁸	36.0 ¹⁸	....
3 Carpenter, helper.....	14.0 ¹⁸	12.0 ⁴	....	....
4 Carpenter, journeyman.....	25.5 ¹⁰	24.0 ⁴	....	29.0 ²⁸
5 Laborer, female.....	9.1 ¹⁰	6.0 ¹²	6.0 ²⁴	11.8 ¹⁷
6 Laborer, male.....	20.0 ¹	....	....	20.8 ¹⁸
7 Mason, helper.....	....	....	....	....
8 Mason, journeyman.....	....	....	....	24.0 ¹³
9 Stonecutter, helper.....	....	....	....	30.3 ⁸
10 Stonecutter, journeyman.....	....	....	....	47.3 ⁸
	1361	1362	1364	1365
1 Adobe mason, helper.....	....	16.2 ¹²	12.0 ⁴	....
2 Adobe mason, journeyman.....	42.0 ⁸	36.0 ⁴	30.0 ⁴	....
3 Carpenter, helper.....	....	12.5 ¹⁸	12.0 ⁴	18.0 ¹
4 Carpenter, journeyman.....	25.0 ¹⁴	24.8 ¹⁸	30.0 ⁸	38.0 ⁸
5 Laborer, female.....	8.3 ¹⁷	6.3 ¹⁸	6.0 ⁸	6.0 ⁸
6 Laborer, male.....	17.7 ¹⁸	12.0 ¹¹	12.0 ⁷	12.0 ⁴
7 Mason, helper.....	....	....	....	12.0 ⁴
8 Mason, journeyman.....	....	....	....	24.0 ⁸
9 Stonecutter, helper.....	....	24.0 ⁸	....	30.0 ¹⁸
10 Stonecutter, journeyman.....	....	36.0 ¹⁰	....	42.0 ¹⁸
	1370	1371	1372	1375
1 Adobe mason, helper.....	....	....	....	....
2 Adobe mason, journeyman.....	....	....	....	....
3 Carpenter, helper.....	18.7 ¹⁶	24.0 ⁴	....	27.0 ¹⁰
4 Carpenter, journeyman.....	48.4 ²¹	48.0 ⁸	48.0 ⁸	60.0 ²¹
5 Laborer, female.....	15.3 ¹⁸	....	18.0 ⁴	12.0 ²²
6 Laborer, male.....	33.0 ⁵	....	36.4 ¹⁴	31.0 ²⁸
7 Mason, helper.....	30.0 ⁷	....	....	42.0 ⁵
8 Mason, journeyman.....	48.0 ⁸	....	48.0 ¹	48.0 ⁸
9 Stonecutter, helper.....	24.0 ⁴	30.0 ⁴	....	39.8 ⁸
10 Stonecutter, journeyman.....	48.0 ¹	52.0 ¹²	....	60.0 ¹²
	1376	1377	1378	1379
1 Adobe mason, helper.....	....	....	24.0 ⁸	42.0 ⁴
2 Adobe mason, journeyman.....	....	....	51.0 ⁴	54.0 ⁷
3 Carpenter, helper.....	....	36.0 ⁸	....	36.0 ⁴
4 Carpenter, journeyman.....	....	60.0 ⁸	54.0 ⁸	63.0 ¹⁰
5 Laborer, female.....	12.0 ¹⁸	18.5 ⁸	....	18.0 ⁴
6 Laborer, male.....	....	36.0 ⁴	....	....
7 Mason, helper.....	....	....	24.0 ⁸	....
8 Mason, journeyman.....	....	....	48.0 ⁸	....
9 Stonecutter, helper.....	28.5 ⁴	....	....	48.0 ⁴
10 Stonecutter, journeyman.....	48.0 ⁸	60.0 ²	48.0 ¹	64.1 ¹²
	1380			
1 Adobe mason, helper.....	....	....	....	42.0 ⁴
2 Adobe mason, journeyman.....	....	....	....	54.0 ⁷
3 Carpenter, helper.....	....	....	....	37.8 ²²
4 Carpenter, journeyman.....	....	....	....	63.5 ²²
5 Laborer, female.....	12.0 ¹⁸	18.5 ⁸	....	18.0 ⁴
6 Laborer, male.....	....	36.0 ⁴	....	....
7 Mason, helper.....	....	....	24.0 ⁸	....
8 Mason, journeyman.....	....	....	48.0 ⁸	....
9 Stonecutter, helper.....	28.5 ⁴	....	....	48.0 ⁴
10 Stonecutter, journeyman.....	48.0 ⁸	60.0 ²	48.0 ¹	70.0 ²²

APPENDICES

A 1346-1400 — CONTINUED

	1382	1383	1384	1385	
Adobe mason, helper.....	....	30.0 ²	36.0 ⁴	36.0 ⁸
Adobe mason, journeyman.....	....	48.0 ¹	84.0 ¹²	60.0 ⁶
Carpenter, helper.....	....	37.5 ⁸	60.0 ¹⁰	42.0 ⁷
Carpenter, journeyman.....	58.5 ⁶	51.0 ¹⁷	79.5 ¹⁴	64.0 ¹¹	
Laborer, female.....	....	19.5 ¹⁷	25.0 ¹⁰	18.0 ⁸
Laborer, male.....	31.5 ⁸	38.0 ¹²	60.0 ⁸	....
Mason, helper.....	32.0 ⁶	30.0 ¹	54.0 ¹	30.0 ⁴	
Mason, journeyman.....	49.0 ¹²	52.0 ⁹	66.0 ¹	84.0 ⁴	
Stonecutter, helper.....	....	....	60.0 ⁴	....
Stonecutter, journeyman.....	....	....	84.0 ¹²	....
	1387	1388	1389	1390	
Adobe mason, helper.....	....	45.0 ⁶	48.0 ⁸	....
Adobe mason, journeyman.....	....	60.0 ⁴	....	....
Carpenter, helper.....	24.0 ⁸	27.0 ¹	29.4 ²⁶	....
Carpenter, journeyman.....	....	66.0 ²²	59.4 ²²	72.0 ¹⁶
Laborer, female.....	16.5 ⁸	17.7 ²⁸	18.8 ²²	20.0 ²²	
Laborer, male.....	....	48.0 ¹⁸	39.0 ²⁸	53.3 ²⁴
Mason, helper.....	....	24.0 ⁸	....	36.0 ⁴
Mason, journeyman.....	42.0 ⁴	48.0 ¹¹	....	60.5 ⁶
Stonecutter, helper.....	60.0 ¹	51.0 ¹²	50.0 ¹⁰	60.0 ¹⁰	
Stonecutter, journeyman.....	78.0 ⁹	74.2 ²⁴	71.1 ²²	90.8 ²¹	
	1391	1392	1393	1394	
Adobe mason, helper.....	....	....	48.0 ¹	....
Adobe mason, journeyman.....	....	60.0 ²	66.0 ⁶	....
Carpenter, helper.....	45.0 ⁸	48.0 ¹²	49.0 ¹⁴	....
Carpenter, journeyman.....	72.0 ¹²	70.5 ²⁶	73.5 ¹⁸	83.0 ⁹	
Laborer, female.....	22.0 ¹²	23.5 ²²	24.0 ¹⁷	22.5 ⁸	
Laborer, male.....	44.0 ¹⁶	48.1 ⁴⁴	49.1 ⁴²	40.0 ¹²	
Mason, helper.....	....	....	....	....
Mason, journeyman.....	....	60.0 ¹	....	72.0 ¹
Stonecutter, helper.....	....	82.5 ¹²	....	....
Stonecutter, journeyman.....	108.0 ¹²	118.1 ²⁴	114.0 ¹²	102.0 ⁴	
	1395	1396	1398	1399	1400
Adobe mason, helper.....	48.0 ²
Adobe mason, journeyman.....	72.0 ²	72.0 ²
Carpenter, helper.....	48.0 ⁴	72.0 ⁸	69.0 ¹¹
Carpenter, journeyman.....	72.0 ⁸	72.0 ²	90.7 ¹⁰	96.0 ¹²	96.0 ⁴
Laborer, female.....	24.0 ¹⁸	24.0 ²	30.0 ⁸
Laborer, male.....	48.0 ¹²	48.0 ⁴	36.0 ³	60.0 ⁸
Mason, helper.....	36.0 ⁸	48.0 ¹
Mason, journeyman.....	72.0 ¹²	72.0 ²
Stonecutter, helper.....	55.5 ²	72.0 ¹	72.0 ²
Stonecutter, journeyman.....	91.5 ²	96.0 ⁸	96.0 ⁸

MONEY, PRICES, AND WAGES

B 1401-1450

(in pence)

			1401	1402	
1	Carpenter, helper (carpintero, peón).....		72.0 ⁴	72.0 ¹⁷	
2	Carpenter, journeyman (carpintero, oficial).....		96.0 ¹²	96.3 ²⁸	
3	Laborer, female (mujer).....		.....	30.0 ¹²	
4	Laborer, male (peón or bracero).....		60.0 ¹	72.0 ¹²	
5	Mason, journeyman (albañil, oficial).....		.....	.....
6	Plasterer, helper (yesero, peón).....		.....	.....
7	Plasterer, journeyman (yesero, oficial).....		.....	.....
8	Roof-tiler, helper (retejador, peón).....		.....	.....
9	Roof-tiler, journeyman (retejador, oficial).....		.....	.....
10	Stonecutter, helper (picapedrero, peón).....		.....	72.0 ⁴	
11	Stonecutter, journeyman (picapedrero, oficial).....		.....	92.0 ¹²	
		1403	1404	1406	1407
1	Carpenter, helper.....	84.0 ¹	.....	72.0 ⁷	60.0 ¹
2	Carpenter, journeyman.....	93.8 ¹⁶	96.0 ⁸	96.0 ²⁶	96.0 ¹²
3	Laborer, female.....	.....	36.0 ⁶	32.0 ¹⁷	36.0 ⁸
4	Laborer, male.....	72.0 ⁹	74.0 ¹⁶	84.0 ¹⁶	72.0 ¹⁶
5	Mason, journeyman.....	.....	.....	96.0 ¹²	96.0 ⁴
6	Plasterer, helper.....	.....	.....	.....	72.0 ¹
7	Plasterer, journeyman.....	.....	.....	96.0 ⁶	96.0 ¹
8	Roof-tiler, helper.....	.....	.....	81.0 ⁴	72.0 ⁸
9	Roof-tiler, journeyman.....	.....	.....	96.0 ⁷	96.0 ⁸
10	Stonecutter, helper.....	72.0 ⁴	.....	.....	.....
11	Stonecutter, journeyman.....	93.8 ¹²	96.0 ¹²	93.0 ⁷	.....
		1408	1410	1411	1413
1	Carpenter, helper.....	72.0 ⁴	72.0 ¹²	.....	72.0 ¹²
2	Carpenter, journeyman.....	96.0 ⁴	96.0 ²⁸	.....	96.0 ¹⁶
3	Laborer, female.....	.....	38.0 ⁷	.....	.....
4	Laborer, male.....	.....	69.5 ¹²	.....	66.0 ⁸
5	Mason, journeyman.....	.....	.....	96.0 ⁹	96.0 ¹
6	Plasterer, helper.....	.....	.....	.....	.....
7	Plasterer, journeyman.....	.....	.....	.....	102.0 ⁶
8	Roof-tiler, helper.....	.....	.....	.....	.....
9	Roof-tiler, journeyman.....	96.0 ⁴	96.0 ⁴	72.0 ⁴	.....
10	Stonecutter, helper.....	.....	.....	.....	.....
11	Stonecutter, journeyman.....	.....	96.0 ¹²	.....	108.0 ⁶

APPENDICES

B 1401-1450 — CONTINUED

		1414	1418	1419	1420
1	Carpenter, helper.....	81.0 ²⁰	72.0 ²	72.0 ²	78.0 ⁷
2	Carpenter, journeyman.....	106.3 ²⁰	98.0 ¹⁴	96.0 ²	102.0 ²
3	Laborer, female.....	48.0 ¹⁸	48.0 ¹	....	....
4	Laborer, male.....	70.9 ¹⁶	72.0 ¹⁶	72.0 ²	78.0 ²
5	Mason, journeyman.....	120.0 ¹⁰	100.0 ⁹	....	....
6	Plasterer, helper.....	72.0 ¹	....	....	84.0 ²
7	Plasterer, journeyman.....	96.0 ²	....	....	108.0 ²
8	Roof-tiler, helper.....	....	84.0 ¹	....	78.0 ⁴
9	Roof-tiler, journeyman.....	....	108.0 ¹	....	105.0 ⁴
0	Stonecutter, helper.....	92.0 ²	72.0 ⁴	72.0 ⁹	80.0 ²
1	Stonecutter, journeyman.....	116.0 ¹²	117.8 ¹²	120.0 ²	105.0 ⁴
		1421	1422	1423	1424
1	Carpenter, helper.....	72.0 ⁴	....	....	....
2	Carpenter, journeyman.....	96.0 ¹²	96.0 ¹²	96.0 ¹⁰	96.0 ¹²
3	Laborer, female.....	....	....	36.0 ²	42.0 ²
4	Laborer, male.....	68.0 ⁹	69.5 ¹⁶	78.0 ¹²	76.0 ¹²
5	Mason, journeyman.....	....	....	....	....
6	Plasterer, helper.....	66.0 ²	....	....	....
7	Plasterer, journeyman.....	96.0 ⁹	96.0 ¹²	....	....
8	Roof-tiler, helper.....	....	....	....	....
9	Roof-tiler, journeyman.....	....	....	....	....
0	Stonecutter, helper.....	....	....	....	72.0 ⁴
1	Stonecutter, journeyman.....	96.0 ²	96.0 ¹²	....	108.0 ²
		1425	1426	1427	1428
1	Carpenter, helper.....	....	....	72.0 ⁴	72.0 ⁴
2	Carpenter, journeyman.....	108.0 ¹	108.0 ⁴	96.0 ⁴	96.0 ⁴
3	Laborer, female.....	....	....	....	....
4	Laborer, male.....	....	72.0 ²	72.0 ⁴	72.0 ⁴
5	Mason, journeyman.....	....	....	....	....
6	Plasterer, helper.....	....	84.0 ¹	....	....
7	Plasterer, journeyman.....	....	108.0 ¹	96.0 ⁴	96.0 ⁴
8	Roof-tiler, helper.....	....	....	....	....
9	Roof-tiler, journeyman.....	108.0 ¹	108.0 ⁴	....	....
0	Stonecutter, helper.....	....	....	72.0 ⁴	72.0 ⁴
1	Stonecutter, journeyman.....	....	108.0 ²	96.0 ⁴	96.0 ⁴
		1429	1430	1431	1432
1	Carpenter, helper.....	....	....	....	....
2	Carpenter, journeyman.....	96.0 ²	104.8 ¹⁴	96.0 ¹⁰	117.0 ²²
3	Laborer, female.....	33.0 ⁴	42.0 ¹	....	....
4	Laborer, male.....	66.0 ¹²	74.7 ¹²	78.0 ¹⁴	80.0 ¹²
5	Mason, journeyman.....	93.0 ²	120.0 ⁴	96.0 ⁴	....
6	Plasterer, helper.....	72.0 ²	84.0 ¹	....	....
7	Plasterer, journeyman.....	96.0 ⁴	96.0 ⁴	108.0 ²	....
8	Roof-tiler, helper.....	....	....	....	....
9	Roof-tiler, journeyman.....	90.0 ²	111.0 ²	....	120.0 ²
0	Stonecutter, helper.....	....	84.0 ²	....	96.0 ⁴
1	Stonecutter, journeyman.....	105.0 ⁴	108.0 ⁴	108.0 ¹⁷	118.0 ²²

MONEY, PRICES, AND WAGES

B 1401-1450 — CONTINUED

	1433	1434	1435	1436	
1 Carpenter, helper.....	.....	.....	.....	84.0 ⁹
2 Carpenter, journeyman.....	116.0 ¹³	117.0 ⁷	108.0 ⁴	105.0 ¹²	
3 Laborer, female.....	.....	36.0 ²	.....	.....
4 Laborer, male.....	84.0 ⁹	72.0 ¹⁹	.....	84.0 ⁴
5 Mason, journeyman.....	.....	114.0 ¹²	.....	.....
6 Plasterer, helper.....	.....	99.0 ⁴	84.0 ⁴	.....
7 Plasterer, journeyman.....	.....	118.5 ⁸	108.0 ⁴	96.0 ⁴
8 Roof-tiler, helper.....	.....	.....	.....	.....
9 Roof-tiler, journeyman.....	120.0 ²	115.5 ¹⁰	108.0 ⁵	.....
10 Stonecutter, helper.....	.....	.....	.....	84.0 ¹
11 Stonecutter, journeyman.....	.....	120.0 ¹⁶	108.0 ¹	108.0 ⁴
	1437	1438	1439	1440	
1 Carpenter, helper.....	72.0 ²	75.0 ⁸	84.0 ⁴	86.0 ⁸	
2 Carpenter, journeyman.....	106.5 ¹²	108.7 ⁹	101.8 ²⁸	101.0 ¹²	
3 Laborer, female.....	.....	.....	36.0 ⁶	36.0 ¹
4 Laborer, male.....	72.0 ⁵	78.0 ⁶	66.5 ¹⁸	68.0 ⁸	
5 Mason, journeyman.....	.....	102.0 ²	108.0 ¹⁸	.....
6 Plasterer, helper.....	72.0 ⁴	.....	72.0 ²	78.0 ⁴
7 Plasterer, journeyman.....	108.0 ⁴	108.0 ²	108.0 ²	108.0 ³	
8 Roof-tiler, helper.....	72.0 ⁴	84.0 ⁴	73.0 ²	.....
9 Roof-tiler, journeyman.....	102.0 ²	108.0 ²	99.0 ⁶	105.0 ⁶	
10 Stonecutter, helper.....	84.0 ¹	.....	86.0 ¹⁸	72.0 ⁴
11 Stonecutter, journeyman.....	108.0 ⁴	108.0 ⁹	107.5 ²⁷	108.0 ⁴	
	1441	1442	1443	1445	
1 Carpenter, helper.....	84.0 ⁵	84.0 ⁹	84.0 ³	71.0 ⁶	
2 Carpenter, journeyman.....	102.0 ⁸	106.5 ¹⁰	108.0 ¹⁰	101.3 ²⁸	
3 Laborer, female.....	.....	36.0 ⁴	36.0 ¹	36.0 ¹²
4 Laborer, male.....	72.0 ⁴	76.0 ¹¹	72.0 ⁵	70.5 ¹⁸	
5 Mason, journeyman.....	.....	108.0 ⁴	.....	.....
6 Plasterer, helper.....	72.0 ⁴	84.0 ¹	.....	84.0 ¹
7 Plasterer, journeyman.....	108.0 ⁵	108.0 ¹	.....	108.0 ¹
8 Roof-tiler, helper.....	.....	.....	.....	84.0 ¹
9 Roof-tiler, journeyman.....	.....	108.0 ⁴	120.0 ²	108.0 ⁸
10 Stonecutter, helper.....	.....	.....	.....	99.0 ⁴
11 Stonecutter, journeyman.....	108.0 ⁸	108.0 ⁴	.....	112.0 ⁷
	1446	1447	1448	1449	1450
1 Carpenter, helper.....	90.0 ⁸
2 Carpenter, journeyman.....	108.0 ¹⁸	102.0 ⁵	108.0 ⁴	102.0 ²	108.0 ²
3 Laborer, female.....	42.0 ²
4 Laborer, male.....	82.5 ¹⁸	81.8 ²⁰	84.0 ¹⁶	72.0 ²
5 Mason, journeyman.....	102.0 ²
6 Plasterer, helper.....
7 Plasterer, journeyman.....
8 Roof-tiler, helper.....	84.0 ²	72.0 ¹	72.0 ¹
9 Roof-tiler, journeyman.....	108.0 ⁸	102.0 ⁵	108.0 ¹	102.0 ⁵	108.0 ¹
10 Stonecutter, helper.....	84.0 ¹	84.0 ⁴	84.0 ⁵
11 Stonecutter, journeyman.....	108.0 ²	108.0 ⁴	108.0 ⁵

APPENDIX XIII

FRAGMENTARY PRICES AND WAGES IN ARAGON AND
NAVARRÉ, 1276-1380

A COMMODITY PRICES

r abbreviations of the metrological units, *vide supra*, p. 213. The ex-
ents indicate the number of quotations included in each annual average
used as controls.

I ARAGON, 1276-1380

(in pence)

COMMODITIES						
English	Spanish	Units	1276	1277	1306	
1 Barley.....	Cebada.....	ca	....	58.0 ³	24.0 ¹	
2 Candles, tallow.....	Velas de sebo.....	lb	....	....	2.0 ²	
3 Cheese.....	Queso.....	@	....	....	....
4 Chick-peas.....	Garbanzos.....	al	....	....	....
5 Ginger.....	Jengibre.....	lb	....	24.0 ²	....
6 Lambs.....	Carneros.....	each	....	....	....
7 Lard.....	Manteca.....	lb	....	....	....
8 Oats.....	Avena.....	ca	....	....	18.0 ¹	
9 Olive oil.....	Aceite.....	@	40.3 ¹⁰	....	....
10 Paper, writing.....	Papel.....	qu	11.0 ¹	....	6.8 ⁴	
11 Rye.....	Centeno.....	ca	84.0 ²	90.0 ⁴	....
12 Saffron.....	Azafrán.....	lb	....	216.0 ¹	....
13 Sugar.....	Azúcar.....	lb	....	....	....
14 Wheat.....	Trigo.....	ca	110.9 ⁶	108.5 ⁶	66.0 ¹	
	Units	1307	1308	1309	1325	1326
1 Barley.....	ca	36.0 ²	38.5 ²	....	....	96.0 ¹¹
2 Candles, tallow.....	lb	2.0 ⁵	2.0 ²	2.5 ²	....	....
3 Cheese.....	@	51.2 ⁶	38.8 ⁷	44.6 ⁶	60.0 ⁴	71.0 ¹¹
4 Chick-peas.....	al	2.2 ⁵	2.6 ²	2.5 ¹	4.0 ⁵	4.2 ¹
5 Ginger.....	lb	....	....	....	....	....
6 Lambs.....	each	40.0 ²	37.5 ²	....	....	....
7 Lard.....	lb	3.8 ⁷	3.0 ²	3.3 ⁶	6.0 ⁴	7.0 ⁷
8 Oats.....	ca	42.0 ¹	....	....	....	....
9 Olive oil.....	@	24.4 ⁶	21.7 ⁶	28.0 ¹	40.3 ⁶	30.3 ¹⁶
10 Paper, writing.....	qu	6.8 ¹	6.0 ¹	....	....	10.0 ¹
11 Rye.....	ca	....	....	....	....	....
12 Saffron.....	lb	....	....	....	....	....
13 Sugar.....	lb	....	....	....	....	....
14 Wheat.....	ca	63.0 ⁶	80.0 ⁶	118.5 ³	212.5 ⁴	202.3 ¹⁰
	Units	1329	1330	1331	1332	1333
1 Barley.....	ca	....	....	....	....	68.0 ¹
2 Candles, tallow.....	lb	2.5 ¹	....	....	....	....
3 Cheese.....	@	....	....	84.0 ²	84.0 ²	....
4 Chick-peas.....	al	4.0 ⁵	....	4.0 ⁴	4.0 ⁴	2.5 ¹
5 Ginger.....	lb	....	....	....	....	....
6 Lambs.....	each	71.7 ⁴	65.5 ⁴	61.4 ⁴	55.5 ⁴	....
7 Lard.....	lb	....	....	5.0 ²	6.0 ⁴	....
8 Oats.....	ca	....	....	....	....	....
9 Olive oil.....	@	34.3 ⁶	30.3 ⁶	60.5 ⁵	52.7 ⁶	50.4 ²
10 Paper, writing.....	qu	....	....	....	....	....
11 Rye.....	ca	....	....	....	....	....
12 Saffron.....	lb	....	....	....	....	....
13 Sugar.....	lb	....	....	....	....	....
14 Wheat.....	ca	....	130.0 ¹	....	....	200.8 ⁸

APPENDICES

1 ARAGON, 1276-1380 — CONTINUED

	Units	1335	1336	1337	1350	1351
1 Barley.....	ca	....	....	....	....	....
2 Candles, tallow.....	lb	....	....	....	....	....
3 Cheese.....	@	72.0 ⁶	84.0 ⁶	84.0 ²	....	....
4 Chick-peas.....	al	4.0 ⁷	4.0 ¹	....	....	....
5 Ginger.....	lb	....	....	....	....	....
6 Lambs.....	each	56.4 ²	56.0 ⁴	....	....	....
7 Lard.....	lb	6.0 ²	6.0 ⁴	....	....	....
8 Oats.....	ca	....	....	....	....	....
9 Olive oil.....	@	66.6 ⁷	60.5 ²	....	40.3 ¹	....
10 Paper, writing.....	qu	....	....	....	7.0 ²	....
11 Rye.....	ca	....	....	....	....	....
12 Saffron.....	lb	....	....	....	....	....
13 Sugar.....	lb	....	....	....	....	....
14 Wheat.....	ca	....	....	....	146.0 ¹	151.0 ²
	Units	1362	1363	1373	1374	1378
1 Barley.....	ca	....	....	210.0 ¹	....	....
2 Candles, tallow.....	lb	....	....	....	....	....
3 Cheese.....	@	....	....	....	....	144.0 ⁵
4 Chick-peas.....	al	....	....	....	....	....
5 Ginger.....	lb	....	48.0 ¹	....	....	....
6 Lambs.....	each	....	....	144.0 ²	147.0 ¹²	132.0 ⁶
7 Lard.....	lb	....	....	....	....	12.0 ¹
8 Oats.....	ca	....	....	....	....	....
9 Olive oil.....	@	80.7 ⁴	....	96.8 ⁸	94.8 ⁷	....
10 Paper, writing.....	qu	....	....	18.0 ²	18.0 ²	....
11 Rye.....	ca	....	....	....	234.0 ²	....
12 Saffron.....	lb	....	384.0 ¹	....	....	....
13 Sugar.....	lb	....	54.0 ¹	....	....	....
14 Wheat.....	ca	....	....	....	294.8 ⁵	....
	Units			1379	1380	
1 Barley.....	ca	....	....	125.5 ²	....
2 Candles, tallow.....	lb	....	....	....	7.0 ¹	
3 Cheese.....	@	....	....	....	156.0 ⁴	
4 Chick-peas.....	al	....	....	....	8.6 ¹	
5 Ginger.....	lb	....	....	102.0 ¹	96.0 ¹	
6 Lambs.....	each	....	....	135.5 ¹²	146.4 ¹⁴	
7 Lard.....	lb	....	....	....	12.0 ²	
8 Oats.....	ca	....	....	107.0 ²	....
9 Olive oil.....	@	....	....	78.7 ¹²	84.7 ²	
10 Paper, writing.....	qu	....	....	16.0 ⁴	16.0 ¹	
11 Rye.....	ca	....	....	101.0 ²	....
12 Saffron.....	lb	....	....	....	....
13 Sugar.....	lb	....	....	66.0 ¹	62.0 ¹	
14 Wheat.....	ca	....	....	184.9 ¹⁸	....

MONEY, PRICES, AND WAGES

2 NAVARRRE, 1283-1350

(in pence)

COMMODITIES							
	English	Spanish	Units	1283	1284	1285	
1	Barley.....	Cebada.....	robo	25.0 ²	18.0 ²	....
2	Beans, horse.....	Habas.....	robo	....	....	....
3	Hens.....	Gallinas.....	each	....	8.0 ¹	8.0 ¹	
4	Hogs.....	Tocinos.....	each	189.8 ³	....	....
5	Lambs.....	Carneros.....	each	....	....	....
6	Olive oil.....	Aceite.....	lb	....	2.3 ¹	3.0 ¹	
7	Peas, garden.....	Arvejas.....	robo	....	....	....
8	Salt.....	Sal.....	robo	9.6 ¹	14.0 ²	....
9	Wax.....	Cera.....	12 lb	....	....	192.0 ¹	
10	Wheat.....	Trigo.....	ca	180.0 ²	126.5 ²	168.0 ⁴	
11	Wine, red.....	Vino tinto.....	p	8.1 ³	....	....
12	Wine, white.....	Vino blanco.....	p	....	16.0 ²	18.0 ²	
		Units		1286	1294	1309	1310
1	Barley.....	robo	18.0 ¹	14.0 ²	19.0 ¹¹	20.4 ¹⁶	....
2	Beans, horse.....	robo	....	....	....	....	36.0 ¹
3	Hens.....	each	8.0 ¹	....	....	....	....
4	Hogs.....	each	....	....	....	....	....
5	Lambs.....	each	....	....	....	....	....
6	Olive oil.....	lb	3.0 ¹	....	....	....	2.3 ¹
7	Peas, garden.....	robo	....	....	....	....	....
8	Salt.....	robo	....	16.0 ¹	....	....	....
9	Wax.....	12 lb	180.0 ¹	....	....	....	288.0 ¹
10	Wheat.....	ca	150.0 ²	184.0 ⁴	....	....	....
11	Wine, red.....	p	....	9.0 ³	....	....	....
12	Wine, white.....	p	....	....	....	....	....
		Units		1330	1333	1336	1339
1	Barley.....	robo	....	....	12.5 ⁹	12.8 ⁷	12.1 ⁹
2	Beans, horse.....	robo	....	....	....	....	46.5 ¹
3	Hens.....	each	....	6.0 ⁸	9.0 ³	8.0 ³	....
4	Hogs.....	each	....	....	....	....	....
5	Lambs.....	each	72.0 ¹	....	52.0 ³	....	54.0 ¹
6	Olive oil.....	lb	3.2 ¹	2.7 ¹	....	2.6 ¹	2.6 ²
7	Peas, garden.....	robo	....	....	....	....	....
8	Salt.....	robo	....	....	....	8.0 ¹	....
9	Wax.....	12 lb	264.0 ¹	240.0 ¹	....	216.0 ¹	216.0 ³
10	Wheat.....	ca	120.0 ¹	100.0 ¹²	115.0 ⁴	92.3 ¹²
11	Wine, red.....	p	10.0 ²	10.0 ⁴
12	Wine, white.....	p	19.6 ³

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2 NAVARRE, 1283-1350 — CONTINUED

	Units	1341	1342	1343	1344	1350
1 Barley.....	robo	22.7 ²	10.0 ¹	17.3 ¹²	17.5 ¹³
2 Beans, horse.....	robo	32.0 ¹	....	24.7 ⁴	22.0 ²	....
3 Hens.....	each	6.0 ¹	7.5 ⁴	....	....	....
4 Hogs.....	each	....	....	396.0 ¹	....	252.0 ⁴
5 Lambs.....	each	54.0 ¹	....	....	....	84.0 ⁴
6 Olive oil.....	lb	2.6 ¹	2.6 ²	2.8 ²	4.8 ¹	....
7 Peas, garden.....	robo	....	....	67.0 ²	70.0 ¹	63.0 ²
8 Salt.....	robo	....	....	....	....	....
9 Wax.....	12 lb	216.0 ¹	220.0 ²	204.0 ²	192.0 ¹	240.0 ²
10 Wheat.....	ca	159.7 ¹²	96.0 ¹	200.0 ¹²	153.2 ¹²	....
11 Wine, red.....	p	....	....	....	8.0 ²	16.8 ²
12 Wine, white.....	p	....	21.2 ⁰	....	....	22.6 ²

B WAGES

All of the wage rates are quoted by the day. The exponents indicate the number of quotations included in each yearly average.

1 ARAGON, 1301-1333

(in pence)

	1301	1306	1307	1308	1309
1 Laborer, unskilled (peón).....	....	4.1 ²	....	....	....
2 Mason's helper (albañil, peón) ..	4.0 ²	....	3.6 ¹²	....	....
3 Mason, master (albañil, maestro)	10.0 ²	....	14.0 ²	12.0 ¹	12.3 ⁴
	1314	1315	1326	1329	1332
1 Laborer, unskilled.....	....	7.0 ⁴	....	7.3 ⁴	8.5 ⁴
2 Mason's helper.....	5.4 ¹²	4.0 ²	....	....	....
3 Mason, master.....	20.0 ⁷	18.0 ²	....	21.0 ²	....

2 NAVARRE, 1284-1310

(in pence)

	1284	1308	1309	1310
1 Carpenter, helper (carpintero, peón).....	....	....	14.0 ¹	....
2 Carpenter, journeyman (carpintero, oficial)	18.0 ²	18.0 ¹²	18.0 ¹²	18.0 ¹²
3 Laborer, female (mujer).....	5.0 ¹	4.4 ¹²	4.5 ¹²	4.8 ¹²
4 Laborer, male (peón or bracero).....	8.0 ²	10.0 ¹²	12.0 ¹²	11.5 ¹²
5 Mason, journeyman (albañil, oficial).....	21.0 ⁴	19.9 ¹²	19.5 ¹²	18.4 ¹²
6 Stonecutter, helper (picapedrero, peón)...	12.8 ²
7 Stonecutter, journeyman (picapedrero, oficial).....	18.5 ¹²	19.5 ⁴

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