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# The Crisis of the 3rd Century A.D.: Wage Increases and Inflation in Roman Egypt

Stuart Robertson

## Material Abstract

This thesis reconsiders the 3rd century A.D. in Egypt using labour contracts to determine if there is any evidence to demonstrate how low-status wage agreements responded to the currency changes between A.D. 235 and 305. The importance of this research is that this is a period that is typically described as a time of crisis and inflation. This research therefore explores how private wage agreements and rates responded to the debasement of the Alexandrian tetradrachm between A.D. 235 and the reforms of Aurelian in 274/5; it then examines private viticulture-labour and general labour agreements to determine how wage agreements responded to the reforms of Aurelian in A.D. 274/5, and the changes to currency that occurred between A.D. 274/5 and A.D. 299. Private labour agreements between A.D. 300 and 305 are then examined to determine if there is any evidence for inflation, and to establish how wages responded to the A.D. Edict of Maximum Prices. Finally the research examines wheat prices between A.D. 235 and 305 to determine how these prices responded to the changes in the currency and the buying power of labourer wages during the study period.

The results will demonstrate that between A.D. 235 and A.D. 274/5 private wage agreements did not increase in response to the debasement of the Alexandrian tetradrachm. They will also demonstrate that between A.D. 274/5 and A.D. 299 the reforms of Aurelian saw a doubling in value of the tetradrachm, and that wages remained stable reflecting this doubling until c.A.D 286. The results will then show that the introduction of the nummus saw the continued use of older debased tetradrachms, and that this necessitated the upward revaluation of the nummus to ensure its use as a replacement to the tetradrachm. Moreover the revaluation reduced the number of nummi paid in wage agreements to mid 3rd century rates both in terms of the coins, and the amount of silver exchanged. Finally the research will demonstrate that wheat prices per *artaba* reflected the revaluation of the currency, and not inflation; and that prices remained stable until A.D. 305.

# The Crisis of the 3rd Century A.D.

# Wage Increases and Inflation in Roman Egypt

Stuart Robertson

This thesis is submitted for the degree of Doctor of Philosophy

Department of Archaeology

University of Durham

2014

## Contents


List of Tables ..... 7
Table of Figures ..... 11
Statement of Copyright ..... 13
Acknowledgments ..... 14
Dedication ..... 14
Chapter 1. Introduction ..... 15
Section 1.1. Methodology ..... 21
Section 1.2. The Significance of the Research ..... 25
Section 1.3. Inflation ..... 27
Section 1.4. Definitions and Calculations ..... 27
Section 1.5. Historical Comparison ..... 32
Chapter 2. The 3rd Century Crisis ..... 37
Chapter 3. Revisionist Views ..... 42
Chapter 4. Egypt in the 3rd Century A.D. ..... 49
Chapter 5. Factors Affecting Wage Stability (A.D. 235 – 274/5) ..... 60
Section 5.1. Silver Currency during the 3rd Century in Egypt ..... 60
Section 5.2. The Currency Reforms of the 3rd Century A.D. ..... 62
Section 5.3. Factors limiting wage increase in Egypt: 3rd century A.D. ..... 66
Section 5.4. Economic Factors: Available Employment ..... 68
Section 5.5. Geographical Limits ..... 72
Section 5.6. Guilds ..... 73
Section 5.7. Tradition ..... 76
Section 5.8. Government and Taxation ..... 77
Section 5.9. Conclusion ..... 79
Chapter 6. Evidence of Wage Stability until A.D. 274/5 ..... 82
Section 6.1. Wages: Potters ..... 82
Section 6.2. Potters' Wages in Silver ..... 86
Section 6.3. Wages: Ass and Ox-Drivers ..... 87
Section 6.4. Wages: Apprentices ..... 92
Section 6.5. Maintenance ..... 96
Section 6.6. Apprentices: Fines ..... 97

Section 6.7. Conclusion....99
Chapter 7. Currency Reforms A.D. 275 - 299....101
Section 7.1. The A.D. 274/5 Reform of Aurelian....102
Section 7.2. Analysis of hoard evidence for the A.D. 274/5 currency reforms....107
Section 7.3. Price increases in the papyri....110
Section 7.4. The Reform of A.D. 279 – 80....113
Section 7.5. The Reforms of A.D. 294 – 96....115
Chapter 8. Evidence for Wage Stability A.D. 275 - 299....119
Section 8.1. P. Oxy. XLVII, 3354: a viticulture labour contract from A.D. 257....123
Section 8.2. P. Col. 10, 280: a viticulture labour from A.D. 269/277....126
Section 8.3. Papyrus P. Col. 10. 280: Analysis of Estiot....130
Section 8.4. Papyrus P. Col. 10, 280: Analysis of Harl....132
Section 8.5. Papyrus P. Col. 10, 280: Conclusion....133
Section 8.6. P. Oxy. XIV, 1631: a viticulture labour contract from A.D. 280....134
Section 8.7. Analysis....135
Section 8.8. P. Oxy. XIV, 1631. The analysis of Estiot....136
Section 8.9. P. Oxy. XIV, 1631. The analysis of Harl....137
Section 8.10. Silver content: Analysis....138
Section 8.11. Maintenance Payments P.Oxy. XIV. 1631....140
Section 8.12. Papyrus P.Laur 4.166....141
Section 8.13. Papyrus P.Laur 4.166: Analysis....143
Section 8.14. PSI XIII, 1338: a vineyard contract from A.D. 299....146
Section 8.15. PSI XIII, 1338: Analysis....147
Chapter 9. Other Labour Contracts: A.D. 275 – 299....151
Section 9.1. Papyrus P.Wash.Univ.1.18....152
Section 9.2. Papyrus P.Wash.Univ. 1.18 : Analysis....155
Section 9.3. Papyrus B.G.U. 2.262: Supporting Evidence....156
Section 9.4. Papyrus P.Cair.Isid.81....158
Section 9.5. Papyrus P.Cair.Isid.81: Analysis....159
Section 9.6. Papyrus P.Sakaon.58 dating to July A.D.299....163
Section 9.7. Wages A.D. 275 – A.D. 299: Conclusions....165
Chapter 10. Evidence for Wage Stability A.D. 300 - 305....170
Section 10.1. Introduction....170
Section 10.2. The Reign of Diocletian....170
Section 10.3. Wages and the Price Edict of Diocletian....173
Section 10.4. Ass-drivers in the Price Edict of Diocletian....176
Section 10.5. Labourers in the Price Edict of Diocletian....178

Section 10.6. P.Oxy. LXIII, 4353: Evidence of Wage Stability ..... 179
Section 10.7. P. Oxy. VI. 895 ..... 182
Section 10.8. Conclusion ..... 185
Chapter 11. Prices in the 3rd Century A.D. ..... 186
Section 11.1. Price determinants in the 3rd century A.D. ..... 186
Section 11.2. Factors affecting "administered" prices: The Demand Crowd ..... 189
Section 11.3. Factors affecting "administered" prices: The Supply Crowd ..... 192
Section 11.4. Egyptian Wheat Prices A.D.300 - 305 ..... 196
Section 11.5. How much would this cost a labourer? ..... 204
Section 11.6. Barley ..... 207
Section 11.7. Conclusion ..... 208
Chapter 12. Overall Conclusions ..... 210
Section 12.1. Results A.D. 235 - 275 ..... 210
Section 12.2. Results A.D. 275 - 299 ..... 213
Section 12.3. Results A.D. 275 – 299, Other Labour Contracts ..... 217
Section 12.4. Results A.D. 300 - 305 ..... 223
Section 12.5. Results Wheat Costs ..... 224
Section 12.6. Significance of the results ..... 228
Appendix 1: Non-Technical Glossary of Terms ..... 231
Appendix 2: The British Museum Tetradrachms, Analysis of Cope ..... 235
Appendix 3: Papyrus P.Oxy.VI 895 ..... 239
Appendix 4: Ostracon O.Mich. 1.157 ..... 241
Appendix 5: Apprentice Papyri Analysed in Text ..... 244
P. Oxy. II, 275 ..... 244
Translation ..... 245
P. Oxy. XLI, 2971 ..... 246
Translation ..... 247
P. Oxy IV 725 ..... 248
Apparatus ..... 250
Translation ..... 251
P. Oxy XIV, 1647 ..... 252
Apparatus ..... 253
Translation ..... 254
SB 18.13305 ..... 255
Apparatus ..... 256
Translation ..... 257
P.Oxy. LXIII, 4353 ..... 258

Apparatus ..... 259
Translation ..... 260
Appendix 6: Viticulture and labour papyri analysed in text ..... 261
P.Oxy. IV. 729 ..... 261
Apparatus ..... 264
Translation ..... 266
P.Oxy. XLVII, 3354 ..... 270
Apparatus ..... 272
Translation ..... 273
P.Col. 10 280 ..... 275
Apparatus ..... 276
Translation ..... 277
P. Oxy. XIV, 1631 ..... 279
Apparatus ..... 281
Translation ..... 282
P.Laur.4.166 ..... 284
Apparatus ..... 285
Translation ..... 286
BGU 2.624 ..... 287
Apparatus ..... 288
Translation ..... 289
P.Wash. Univ. 1 18 ..... 290
Apparatus ..... 291
Translation: ..... 292
P. Oxy LXVII 4597 ..... 293
Apparatus ..... 294
Translation ..... 295
P.Cair.Isid. 81 ..... 296
Apparatus ..... 297
Translation ..... 298
P.Sakaon. 58 ..... 299
Apparatus ..... 300
Translation ..... 301
P.S.I. 13. 1338 ..... 302
Apparatus ..... 303
Translation ..... 304
P.S.I. 9 1037 ..... 305

Apparatus ..... 306
Translation ..... 307
P. Oxy XXXVIII 2859 ..... 309
Apparatus ..... 310
Translation ..... 311
Appendix 7: 4th century papyri with wheat prices analysed in text ..... 312
CPR VI.75 ..... 312
Translation ..... 312
O.Bodl.2.2062 ..... 313
Apparatus ..... 313
Translation: ..... 314
P.OXY. 36.2798 ..... 315
Apparatus ..... 315
Translation ..... 316
Appendix 8: *Sportulae* Inscriptions ..... 317
Analysis ..... 320
Bibliography ..... 322

## List of Tables

Table 1 Illustrative price rises for wheat in the Egypt of the 3rd century A.D. Data from Duncan-Jones (1976, p.241-263); Rathbone (1996, p.331-332). ..... 31
Table 2 Rates of exchange between denominations in 3rd century A.D. Egypt. Data from Bagnall (2009, p.190); Corbier (2008a, p.338). ..... 61
Table 3 Wages for production of a "set" number of *ceramia.* Data from Cockle (1981, p.87-97). ..... 83
Table 4 Additional production with the payment of maintenance. Data from Cockle (1981, p.87-97). ..... 84
Table 5 Possible total production per pottery. Data from Cockle (1981, p.91). ..... 85
Table 6 Possible total wage per pottery. Data from Cockle (1981, p.91). ..... 86
Table 7 Rate of payment per 100 *ceramia.* Data from Cockle (1981, p.91). ..... 86
Table 8 Quantity of silver paid to potters using different tetradrachm issues. Data from Cope *et al.* (1997, p.10 – 12); Lendon (1990, p.109). ..... 87
Table 9 Ass and ox-drivers: daily wages A.D. 239 – c.269 ..... 89
Table 10 Contemporary tetradrachm issues. Data from Cope *et al.* (1997, p.12) ..... 90
Table 11 Contracts for apprentice weavers (A.D. 66 – 271). Data from Johnson (1936, p.390 – 391); Drexhage (1991, p.376). ..... 93
Table 12 Apprentice weavers A.D. 66 - 271: fines ..... 97
Table 13 Apprentice weavers A.D. 66 - 271: fines and advances in tetradrachms ..... 98
Table 14 Approximate difference in silver between silver coins of the Empire and Egyptian tetradrachms. Data from Cope *et al.* (1997, p.12 - 150). ..... 104
Table 15 Silver contents of the antoninianus and the Egyptian tetradrachm. Data from Harl (1996a, p.130); Cope *et al.* (1997, p.12) ..... 106
Table 16 Evidence for price increases A.D. 274/5 – 293. Data from Rathbone (1996, p.330 – 332) ..... 111
Table 17 Silver contents of the Egyptian tetradrachm ..... 112
Table 18 Approximate difference in silver between silver coins of the Empire and Egyptian tetradrachms ..... 114
Table 19 Silver content of the Egyptian tetradrachm from A.D. 280 – 294/6 ..... 115
Table 20 Private wheat prices in the mid 3rd century. Data from Rathbone (1996, p.331 - 332) ..... 119

Table 21 State wheat prices in the 3rd century A.D. Data from Rathbone (1996, p.331 - 332) .....119
Table 22 Wine prices in the 3rd century A.D. Data from Rathbone (1996, p.331 - 332) .....119
Table 23 Ass prices in the 3rd century A.D. Data from Rathbone (1996, p.332 - 333).....120
Table 24 Private house sales in the 3rd century A.D. Data from Rathbone (1996, p.332 - 333) .....120
Table 25 Land rents per *aroura* in the 3rd century A.D. Data from Rathbone (1996, p.332 - 333) .....120
Table 26 Papyrological evidence analyzed in the following section.....122
Table 27 Monthly payments for viticulture tasks: A.D. 257 from contract P. Oxy. XLVII, 3354.....123
Table 28 Monthly payments for viticulture tasks per man: A.D. 257 (from contract P. Oxy. XLVII, 3354) .....124
Table 29 Wages in silver coins for viticulture tasks: A.D. 257 (contract P. Oxy. XLVII, 3354) .....125
Table 30 Reconstruction of payments for P. Col. 10.280 dating to A.D. 269/277.....128
Table 31 Monthly payments for viticulture tasks: A.D. 269/277 in P. Col. 10.280 .....128
Table 32 Total monthly wages: A.D. 257 (papyrus P. Oxy. XLVII, 3354) and A.D. 269/277 (papyrus P. Col. 10.280) .....129
Table 33 Monthly payments in silver, P. Oxy. XLVII, 3354 (A.D. 257) and P. Col. 10.280 (A.D. 277) using Estiot's ratio of drachmas to tetradrachms for P.Col. 10.280. See Estiot (2012, p.549 – 550).....131
Table 34 Monthly payments in silver P. Oxy. XLVII, 3354 (A.D. 257) and P. Col. 10, 280 (A.D. 277) .....133
Table 35 Payments in kind P. Oxy. XIV, 1631 (A.D. 280) .....135
Table 36 Total wage in silver coin P. Oxy. XLVII, 3354 (A.D. 257) and P. Oxy. XIV, 1631 (A.D. 280) .....137
Table 37 Total wage in silver coin P. Oxy. XLVII, 3354 (A.D. 257) and P. Oxy. XIV, 1631 (A.D. 280) .....137
Table 38 Maintenance payments in kind: papyri P.Oxy. XLVII, 3354 (dating to A.D. 257)140
Table 39 Maintenance payments in kind P.Oxy. XIV. 1631 (dating to A.D. 280) .....140
Table 40 Viticulture wages in A.D. 289/90 (P.laur.4.166) applying the theories of Estiot and Harl. See Estiot, (2012, p.549 – 55); Harl (1996, p.151, 155).....143

Table 41 Total viticulture wages per *aroura* P.Oxy. XLVII.3354 (A.D. 257) and P.Laur.4.166 (A.D. 289/90) ..... 144
Table 42 Viticulture wages per *aroura*, per man P.Oxy. XLVII.3354 (A.D. 257) and P.Laur.4.166 (A.D. 289/90) ..... 145
Table 43 Rate per aroura: P. Oxy. XLVII, 3354 (A.D. 257); PSI. XIII.1338 (A.D.299) ..... 147
Table 44 Rate per aroura: P. Oxy. XLVII, 3354 (A.D. 257); P.Laur. 4.166 (A.D. 289/90 ); PSI. XIII.1338 (A.D.299) ..... 148
Table 45 Silver paid per *aroura* P. Oxy. XLVII, 3354 (A.D. 257); P.Laur. 4.166 (A.D. 289/90); PSI. XIII.1338 (A.D.299) ..... 149
Table 46 Silver paid for liturgical duties per day in A.D. 266 and A.D. 297. Data from Elmaghrabi (1982, p.162 – 180); Haslam *et al.*(1990, p.132 – 137) and papyrus P. Cair. Isid. 81 ..... 160
Table 47 Silver paid for liturgical duties per day in A.D. 266 and A.D. 297 on the basis of debased tetradrachms rather than nummi. Data from Elmaghrabi (1982, p.162 – 180); Haslam *et al.* (1990, p.132 – 137) and papyrus P. Cair. Isid. 81 ..... 161
Table 48 Daily wages in silver coin per day in P.Sakaon.58 (A.D. 299) ..... 164
Table 49 Comparison of silver paid per day in A.D. 297 and 299 if papyri P.Cair.Isid.81 and P. Sakaon. 58 are reckoned in debased tetradrachms and not nummi. Data from Cope *et al.* (1997, p.70 – 72). ..... 165
Table 50 Wages for Camel drivers, Ass-drivers and Labourers (A.D. 301). Data from Giacchero (1974, p.150) ..... 176
Table 51 Daily wages in the mid.-3rd century (Section 6.3, p.87 - 92) and in the A.D. 301 Price Edict. Data from Giacchero (1974, p.150). ..... 177
Table 52 Ass-drive wages in terms of silver (for the mid.-3rd century see Section 6.3, p.87 - 92) and in the A.D. 301 Price Edict. Data from Giacchero (1974, p.150) ..... 177
Table 53 Daily rate of pay for labourers in the A.D. 301 Price Edict. Data from Giacchero (1974, p.150) ..... 178
Table 54 Number silver-coated coins paid to a labourer per day. Data from Section 6.3, p.87 - 92; Giacchero (1974, p.150) ..... 178
Table 55 A.D. 304 Tapestry weaver's wage in nummi. Data from Rea (1996, p.18 - 21). ... 180
Table 56 Number silver-coated coins paid to a weavers per month: A.D. 253 and A.D. 304 (see Section 6.4, p.92 - 99) and also Rea (1996, p.18 - 21). ..... 180
Table 57 Silver-coated coins payable as fines in weaving contracts: A.D. 253 and A.D. 304. Data from Rea (1996, p.18 - 21). ..... 181

Table 58 Revaluation of the nummus as expressed in drachmas A.D. 299 – 305. Data from Estiot (2012, p.548 – 549); Harl (1985, p.263 – 269).....196
Table 59 Mid.-late 3rd century wheat prices per *artaba* Rathbone (1996, p.331, 2); Duncan-Jones (1976a, p.241 – 262).....198
Table 60 Possible late 3rd century wheat prices based upon the evidence of CPR. VI. 75. Data from Bagnall (1989, p.69); Rathbone (1996, p.331, 2); Duncan-Jones (1976a, p.241 – 262).....200
Table 61 Number of silver coins payable per *artaba* of wheat. Data from Bagnall (1989, p.69-70); Rathbone (1996, p.331, 2); Duncan-Jones (1976a, p.241 – 262).....203
Table 62 Wages and wheat costs in drachmas (late 3rd-century A.D.) Data elaborated from the tables prepared by Bagnall (1989, p.69); Rathbone (1996, p.331, 2); Duncan-Jones (1976a, p.241 – 262).....204
Table 63 Wages and wheat costs in silver-coated coins (late 3rd-century). Data from Chapter 8 (p.119 - 178); P. Oxy XXXVIII 2859; Papyrus P. Oxy. LXVII 4597; Bagnall (1989, p.69); Rathbone (1996, p.331-332); Duncan-Jones (1976a, p.241 – 262).....206
Table 64 Costs for Barley per *artaba*. Data from Lendon (1990, p.110 – 111).....208
Table 65 Tetradrachms paid using Estiot's ratio of eight drachmas to one tetradrachm. See Estiot (2012, p.549 - 550) applied to the number of silver tetradrachms in papyri P. Oxy. XLVII, 3354 (A.D. 257); P. Oxy. XIV, 1631 (A.D. 280).....215
Table 66 The payment per man, per *aroura*, in papyri P. Oxy. XLVII, 3354; P. Laur. 4.166 and PSI XIII 1338 paid in debased tetradrachms and in nummi. Coin data from Cope *et al.* (1997, p.12); Carson (1990, p.237 – 238).....216
Table 67 The Silver Content of the Alexandria tetradrachms .....236
Table 68 Third century dated *sportulae* inscriptions. Data from Duncan-Jones (1974, p.187 - 191).....317
Table 69 Foundations for *sportulae*. Data from Duncan-Jones (1974, p.190, 198 - 199).....318
Table 70 Further *sportulae* inscriptions.....318

## Table of Figures

Figure 1 Graph of Roman shipwrecks. Data from Hopkins (1980, p.106).....46
Figure 2 Silver content and weight of the Egyptian tetradrachm (A.D. 64 – A.D. 270), data from Appendix 2: The British Museum tetradrachma analysis of Cope, p.224 .....50
Figure 3 Roman Egypt: showing the principal settlements from the 1st – 3rd centuries A.D.; towns mentioned in this research highlighted.....54
Figure 4 Cumulative effect of major minting outputs of tetradrachms on the amount of circulating coins until the reforms of Gallienus in A.D. 268.....64
Figure 5 Factors that restrict wage movement (author's diagram). .....68
Figure 6 Map of the Fayum and the environs of Karanis .....75
Figure 7 Wages per 100-"jars" compared with the silver content of the tetradrachm. Data from Cockle (1981, p.87-97)Cope *et al.* (1997, p.12). .....85
Figure 8 Daily wages for ass and ox-drivers in drachmas (A.D. 239 – 269). Data from Table 9 (p88).....88
Figure 9 Daily wage for ass and ox-drivers in drachmas (A.D. 239 – 269). Data from Rathbone (1991, p.148 – 174); Cope *et al.* (1997, p.12) .....91
Figure 10 Apprentice weaving wages in tetradrachms per month (A.D. 66 - 271). Data from Johnson (1936, p.390 – 391); Drexhage (1991, p.376) .....95
Figure 11 Monthly wages for apprentice weavers and the silver content of the tetradrachm (A.D. 66 - 271) Data from Cope *et al.* (1997, p.12); Drexhage (1991, p.376); Johnson (1936, p.390 - 391).....96
Figure 12 Tetradrachms of Aurelian A.D. 275/6.....105
Figure 13 Tetradrachm of Probus, Alexandria Mint, A.D. 278/279.....113
Figure 14 Tetradrachm of Diocletian, Alexandrian mint A.D. 285/6.....116
Figure 15 Nummus of Diocletian, Alexandrian mint, A.D. 297-298 .....117
Figure 16 Tetradrachm of Domitius Domitianus, Alexandria Mint A.D. 297-298 .....118
Figure 17 Degree of price movement prior to market intervention. Point of intervention marked by the oval (author's diagram).....188
Figure 18 Wages of potters, ass and ox-drivers, and apprentices prior to A.D. 274/5. Data from Cockle (1981, p.87-97); Cope *et al.*(1997, p.12); Drexhage (1991, p.345 – 347); and interpreted in Chapter 6 .....212

Figure 19 The amount of silver paid in papyri P.Cair. Isid. 81 (A.D. 297) and P. Sakaon.58 (A.D. 299) if calculated in pre-nummus currency. Data from Cope *et al.* (1997, p.12).....219
Figure 20 Comparison of silver paid in 297 and 299 if they were paid in nummi. Data from Cope *et al.* (1997, p.12) P.Cair. Isid. 81 and P. Sakaon.58.....220
Figure 21 Amount of silver paid per *aroura* using a ratio of 20 drachmas to one nummus in A.D. 299. Data from Cope *et al.* (1997, p.12); P. Oxy XLVII 3354 (A.D. 257); PSI XIII 1338 (A.D. 299).....221
Figure 22 Daily wage for labourers and amount of silver exchanged each day. Data from Cope *et al.* (1997, p.12); Drexhage (1991, p.345 – 347); Rathbone (1997, p.330 -331); Giacchero (1974, p.150); papyri P.Oxy. LXII, 4351 (A.D. 304); P. Oxy. VI. 895 .....224
Figure 23 Comparison of the cost of one *artaba* of wheat and a labourer's wage. Data from Cope *et al.* (1997 p.12); Duncan-Jones (1976a, p.252 – 253); Rathbone (1997, p.217 – 220). .....226
Figure 24 Comparison of the wage and the official cost of one *artaba* of wheat in silver. Data from Cope *et al.*, (1997, p.12); Duncan-Jones (1976a, p.252 – 253); Rathbone (1997, p.217 – 220). .....227
Figure 25 Papyrus P.Oxy.VI 895.....239
Figure 26 Detail of Papyrus P.Oxy.VI 895 with "ρ" circled .....240
Figure 27 Ostracon O. Mich 1.157 with the symbol  marked. Photograph from Youtie (1974, plate VIII a).....241
Figure 28 Ostracon O. Mich.1.157, Photograph from Youtie (1974, plate VIII a) .....242
Figure 29 Ostracon O. Mich.1.157 enlarged, Photograph from Youtie (1974, plate VIII a) 243
Figure 30 Ostracon O.Mich. 1.157 enhanced contrast. Photograph from Youtie (1974, plate VIII a).....243

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## Dedication

To my beautiful wife and my wonderful children, with love and gratitude always.

# Chapter 1. Introduction

The present research aims to reassess the Roman economy of the 3rd century A.D. from A.D. 235[1] to 305[2] in Egypt. The reason for selecting these dates is that they mark the traditional period of the 3rd century crisis, indeed the years between the assassination of Alexander Severus in A.D. 235[3] and the accession of Diocletian in A.D. 284 are generally regarded as "watershed" period in Roman history during which the empire moved from the relatively benign government of the Principate to the autocratic, oppressive, rule of the Tetrachy, and post-Diocletian Empire known as the "Dominate". Indeed the problem of the 3rd century crisis has been the subject of debate for many years and various approaches have been taken to interpret the scale, significance and impact of that "crisis" on Roman society. The traditional argument is that a decline in the silver content triggered a period of inflation, and that this is concurrent with a wider crisis in Roman empire that consisted of political instability, governmental collapse, war (both internal and external), economic decline, plague and empire-wide disillusionment as civic-elites begin to "shun" traditional expressions of "Romanitas[4]" but it will be the contention of this research that the collapse of the Roman economy in the 3rd century A.D. is overstated. This research will assess the evidence from

[1] The traditional date for the start of the 3rd century with the assassination of Severus Alexander.

[2] The abdication of Diocletian.

[3] The start the 3rd century crisis can of course be disputed. Giardina (2007, p.757) argues that it starts with death of Marcus Aurelius in A.D. 180.

[4] See the traditional argument as suggested by Finley (1973, p.89, 91) and Jones (1953a, p.296 – 298; 1964, p.24 – 29). The idea of a 3rd century collapse is so regularly restated that a full list of those scholars who have restated and argued for the crisis would be unfeasible within this document. Jones (1953a, p.293-318) gives the definitive account, also reiterated in Jones (1964, p.12 – 28). The following authors provide a general outline of the traditional arguments (although this list is certainly nothing more than an illustrative outline of the range of views on the topic): Bartlett (1994, p.285 - 301) writing with an overt political agenda sees the 3rd century as a move towards an economic policy that deprived the individual of the freedom to pursue profit and crushed individuals under an oppressive tax regime that caused migration to large estates; Corcoran (2006, p.35 – 49) on the problems of the period generally; Corbier (2008a, p.338 – 334) and many others on debasement, Drinkwater (2008, p.58 - 60) on the military crisis; Duncan-Jones (2004, p.25 – 28) on economic changes; Giardina (2007, p.757 – 764) on spread of plague along military transit route, cost of defence, *annona* and decline of cultivation; Potter (2004, p.215 – 298) for a readable summary of the political, military and religious changes of the 3rd century, in particular the period from A.D. 225; Harl (1996a, p.125 – 180, 270 – 289) on the economic changes; Jongman (2007, p.180 - 196) on non-traditional indicators for the scale and extent of crisis; Howgego (1995, p.121 – 124) on a more cautious interpretation; Katsari (2002, p.1 – 7; 2005, p.270 – 275; 2005, p.51 – 62) on the monetary impact of the crisis. See also Lo Cascio (2008d, p.176 – 178) for developments in governance; Liebeschuetz (2007, p.17 -18) on the collapse of 2nd century urbanism; Lendon (1990, p.106) who cites traditional arguments on inflation; also Leone (2007, p.23 – 287) on North Africa. A very useful summary of the western Empire in the 3rd century which combines several different approaches, not just archaeology, is given in King and Henig (1981). Papi (2004, p.56 – 67) should be consulted on the collapse of Roman institutions in Italy whilst Young (2001 p.24 – 192) provides a detailed treatment of the period with particular reference to trade.

Egypt between A.D 235 to 305 to determine how wages reacted to the debasement of the currency, and the currency reforms of the emperors Aurelian (in A.D. 274/5) and Diocletian (in A.D. 294 – 6, and again in A.D. 301).

The importance of the province of Egypt for our understanding of the economy of the 3rd century A.D. cannot be underestimated. It is from Egypt that we have the majority of the data for wages and costs, and it from this evidence that the extent of the economic crisis in the 3rd century has been assessed (and hypothesized for the wider empire). The importance of this research is that although there have been many studies which argue that the Roman Empire suffered significant inflation during the 3rd century A.D.[5] the evidence for this inflation is drawn primarily from the papyri evidence of Egypt, or analysis of the silver content of the currency[6] (particularly after the reforms of Aurelian in A.D. 274/5) or the price of wheat and other commodities in the A.D. 301 Edict of Maximum Prices.

There have, however, been no detailed analysis of how Egyptian wages were affected by the changes between A.D. 274/5 and A.D. 300 using the evidence of labour contracts themselves. For example, the works of Duncan-Jones[7], Drexhage[8] and Rathbone[9], have detailed data for wages until the first half of the 3rd century A.D. but around A.D. 275 their

[5] Verboven (2007, p.252) discusses prices in the 3rd century noting that in Egypt there is no inflation pre-A.D. 274, and no structural inflation outside Egypt until A.D. 250. Harl (1996a, p.280) believes that faith in the Egyptian currency collapsed between A.D. 255 – 275, and if Bowman (2008b, p.77) is to be believed it is the currency reforms of Aurelian in A.D. 275 that lead to "two decades of price-inflation". Duncan-Jones' (1974, p.10) work in the economy remains standard reading. He considered inflation during the 3rd century A.D. to be slow inflation because the bread tariffs in Asia Minor between the 2nd and 3rd centuries A.D. increased 2-fold; but that there was an implied inflation in the 3rd century over 80 years because there is then a 25/50-fold increase in bread prices between the 3rd and 4th centuries (depending on the size of the *modius castrensis*) that equates to an increase of 4 – 4.9% per annum. Jones (1964, p.26 – 29) gives the tradition assessment of the Late Roman Empire including inflation and move to money-in-kind (with its effect on trade), the coinage crisis of the 3rd century A.D. and debasement. Harl (1996a, p.280) believes that faith in the Egyptian currency collapsed between A.D. 255 – 275; Verboven (2007, p.252) discusses prices in the 3rd century noting that in Egypt there is no inflation pre-A.D. 274, and no structural inflation outside Egypt until A.D. 250.Van Minnen (2007, p.207 – 225) follows Bowman and believes the inflation of A.D. 275 destroyed the financial base of the cities. Hollard (1995, p.1067) also argues for a sudden increase in prices in A.D. 275 that is ascribed to "inflation".

[6] A selection of relevant summaries and studies of that process of debasement might include the following, although this is an illustrative and by no means an extensive list: Bland (1993, p.69 – 77; 1997, p.34); Callu (1979, p.20 – 21); Carson (1965, p.225 – 235; 1990, p.232 – 237); Cope (1972a, p.27); Cope and Warren (1972, p.247 – 248); Cope *et al.* (1997, p.12 – 150); Corcoran (2006, p.48 – 49); Corbier (2008a, p.338 – 334); Harl (1996a, p.125 – 180, 270 – 290); Jones (1964, p.26 – 27); Katsari (2002, p.4 – 6); Lo Cascio (2008d, p.165 – 178); Tyler (1972, p.249 – 260; 1975, p.16 – 24); Walker (1978, p.68 – 69, 135 – 141); Rathbone (1996, p.322); Wassink (1991, p.460. 370 – 488); Weiser (1983, p.279 – 295); Wilson (2007, p.113 – 114).

[7] Duncan-Jones (1974, p.11, notes 5 – 6).

[8] Drexhage (1991, p.345 – 347).

[9] Rathbone (1997, p.330 -331).

data-sets cease, indeed Rathbone's[10] seminal study of the economics of Roman estates in Egypt during the 3rd century does not consider wages in detail beyond the end of the Heroninos archive in the late A.D. 260s. Other studies of wages compare wages or prices in the 2nd century with wages and prices in Diocletian's Price Edict of A.D 301[11]. Indeed the only key interpretations of the economics of the period come from studies of the numismatic[12] evidence that are used to demonstrate an economic crisis through the detailed analysis of coinage, and the levels of gold, silver or bronze in the various denominations[13]; the study of hoard evidence and the production levels for coinage[14]; attempts to understand the values of various coins for the period[15]; and studies that have attempted to link the value of the post A.D. 274/5 currency to the price of gold[16]. Indeed part of the reliance by historians

[10] See Rathbone (1991, p.148 – 174).

[11] See Reece (1975, p.299 – 306) for a useful outline of this approach; Reece (1973, p.239 - 245) is also useful.

[12] Drinkwater (2008, p.65) notes that numismatics provides the main means of analysing the events of the 3rd century A.D. through the appearance of new emperors in hoards; estimations of the time it would take news of imperial changes to reach the provinces and mints, and for those coins to circulate widely. A good overview of the role of numismatics in interpreting the history of the 3rd century A.D. is given by Howgego (1995, p.115 – 140) who considers the Roman manipulations of the currency, causes of inflation, and the 3rd century crisis itself. For numismatic studies showing the 3rd century as a period of crisis see Hollard and Depeyrot (1987, p.57 – 85). Drinkwater (2008, p.66) writing in the Cambridge Ancient History cites Carson (1990) for a summary of the 3rd century based on numismatic evidence. Carson (1990, p.233 - 239) does indeed provide a detailed overview as to stages of debasement of the Roman currency and how the political events of the 3rd century are reflected in that currency, though it is focused primarily on the currencies of the central empire. A more recent study was produced by Hollard (1995, p.1045 – 1078) who very usefully summarized numismatic research on the 3rd century and looked in particular at effect of debasement on the social classes of the empire, and the impact of inflation on those classes.

[13] Walker's (1978) analysis of the silver currency of the denarius in the 3rd century was a seminal publication, see Walker (1978, p.68 – 69, 135 – 141). A more recent analysis has been published by the British Museum by Cope *et al.* (1997). This work is of particular interest as it argues that the periods of price inflation do not actually coincide with periods of debasement. For an account of the complex issues regarding analysis of the silver content in coins see a recent summary by Ponting ( 2012, p.1 – 27) in the Oxford Handbook of Greek and Roman Coinage as well as Klockenkämper *et al.* (1999, p.311 – 320). See also Cope (1972b, p.261 – 278) on chemical analysis of coins; and see his analysis of electron-probe methods in Cope and Warren (1972, p.237 – 248), and early work with chemical analysis in Cope (1972a, p.3 – 47).

[14] See Howgego (1992, p.1 – 4) on the impossibility of estimating output based on dies, and Duncan-Jones (1994b, p.111 – 129, 238 – 243); Esty (2005, p.173 – 177) for some statistic analysis including the loss-rates used in this paper with an overview on the limitations and possible approaches to output analysis; Buttrey (1993, p.335 – 351) on why die-study analysis cannot be done, and see also Buttrey *et al.* (1994 p.341 – 352); and on challenging the assumptions behind loss-rates see Buttrey and Buttrey (1997. p.113 – 135). See Duncan-Jones (1999, p.245 -254) with regard to the wastage of coin dies in the Republic, also on the statistical use of dies in coin hoards see Duncan-Jones (1994a, p.139 – 152). Despite the analysis of Duncan-Jones (1994b, p.205) estimating mint output, analysis of mint-output is at best controversial. See Esty (2005, p.173 – 174) who challenges general assumptions based on hoard evidence. Also see Howgego (1992, p.1 – 5); Howgego *et al.* (2013, p.15 – 16); Van Heesch (2011, p.311 – 328).

[15] The role of value marks has generated a controversial debate, see Corbier (2008a, p.335, 340 – 341), Harl (1996a, p.146; 1985 p.263 – 270) is the main advocate for the XXI marks on the empire-wide coins of Aurelian as an expression of value in sestercii. His opinion is not uniformly accepted, see Bland (2012, p.655 -662). The numismatic argument, that the XXI marks are fractions of silver inside the coin, are based on the chemical analysis of post A.D. 274/5 aurelianii coin, see Carson (1990, p.236 – 237).

[16] See Reece for an outline of the gold "standard", and its role as medium against which the value of the debased post A.D. 274/5 currency of the empire beyond Egypt can be assessed see (Reece, 1973 p.299 – 306). The argument rests of the stability of the aureus which (excluding a period under Gallienus) remained largely pure

on the numismatics to determine the chronologies of the 3rd century A.D. lies in paucity and unreliability of the historical sources for the period[17]. Hollard[18] argues for example that it is extremely difficult for modern historians to interpret the changes to prices in the 3rd century since the bulk of the evidence comes either from Egyptian papyri or a few inscriptions; indeed Hollard argues that it is impossible to reconstruct a coherent price-index for the long-term because there are vast gaps in the records of 3rd century prices. This gap can be clearly seen in the data tables assembled by Duncan-Jones[19], Drexhage[20], and Rathbone[21]. These scholars have attempted to analyse the changes to Egyptian grain-costs over the first three-centuries of the Roman Empire. Their data-tables contain numerous examples of costs prior to A.D. 270 (partly, but not exclusively) due to the survival of a series of archives of which the most notable example is the mid 3rd century archive of Heroninos[22] but their data for the period after A.D. 270 is far more limited. As a result it is not entirely clear how the inhabitants of the 3rd century A.D. in Egypt were affected by the changes to the currency, and to what degree they suffered from inflation[23].

This research however examines an independent data-set: the evidence of labour contracts to test the hypothesis that last quarter of the 3rd century A.D. was marked by inflation. If the analysis of late 3rd century labour contracts reveals that there are material increases in the wages paid to labourers then this might be evidence of inflation in the wage payments. This then would be evidence that the economic system in Egypt was in crisis; and that the traditional argument is correct: that the 3rd century saw the failure of the economic system because it was unable to balance its expenditures with its income[24].This would then suggest that the debasement of the currency was a significant factor in driving the price of

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through-out the 3rd century, presumably as a means to pay, and secure the loyalty, of soldiers and officials. Hollard (1995, p.1074 – 76) argues that the monetary debasement led to a profound social change that saw the movement of wealth to a stable gold currency (against which billon coins), wages and services could be tariffed. See also Pankiewicz (1985, p.171 – 182) and Corbier (2008a, p.343 – 344) for restatements of the role of gold.

[17] On the historians for the 3rd century and the lost works of Dexippius c. A.D. 210 – 273 see Drinkwater (2008, p.65); see both Drinkwater (2008, p.54– 64); Hekster and Zair, 2008 p.7 – 8) for a recent summary of the problems with the Scriptores Historia Augustae and the usefulness of later accounts of the 3rd century, and the problems implicit in the narratives of Victor (c. 320 – c. 390), Eutropius (late 4th century) and Festus (late 4th century).

[18] Hollard (1995, p.1066).

[19] Duncan-Jones (1976a, p.241 -262).

[20] Drexhage (1991, p.300 – 380).

[21] Rathbone (1996, p.330 – 332; 1997, p.1997 217 -220).

[22] Rathbone (1991).

[23] See Howgego (1995, p.121 – 124) for a useful summary of the limits of Egyptian evidence for inflation and also Allen (2007, p.1-15) on value of key goods in the early 4th century.

[24] As originally suggested by Finley (1973, p.89, 91); Jones (1953a, p.296 - 298; 1964, p.24 – 29).

goods since the decline in the amount of silver meant more coins were needed to pay for goods[25]. Moreover if a relatively urbanised area of the empire like Egypt saw a collapse of faith in the currency after A.D. 275[26] then this could be mirrored in other parts of the empire where there is a cessation of inscriptions, a cessation of building and the abandonment of cities[27].

By contrast if the results of this research show little evidence of material inflation in low-status wages then this would be evidence that traditional view that debasement of the currency caused price-rises and inflation in 3rd century Egypt is flawed[28]. Indeed the importance of this study is that unlike the work of Corbier[29] who argued for long-term stability based on a comparison of prices in the times of Augustus (63 B.C. – A.D. 14) and Pliny the Elder (A.D. 23 - 79), and the same prices in the A.D. 301 Price Edict of Diocletian; or the work of Duncan-Jones and Rathbone[30] who demonstrate long-term stability in wheat prices until c.A.D. 269, the research in this PhD aims to assess the degree to which wages changed during the 3rd century A.D. by an examination of labour contracts between A.D. 235 and 305. This approach employs labour wages as a "proxy" indicator of economic change for the period between A.D. 235 and 305 to determine if there is any evidence of inflationary pressure on wage agreements between these periods. This is because the labour contracts reflect work agreements by the lower social classes in Roman Egypt and as such it is felt that they would be more sensitive to the effects of inflationary pressure. This might be expressed either by a significant increase in the number of coins paid to labourers over the course of the study period, or a significant increase in payments in-kind (such as food) if inflationary pressures are causing wages in coin to lose their value as the silver content of the currency declines (see footnote 5, p.16 and footnote 6, p.16).

[25] See Katsari (2002, p.8).
[26] See Lendon (1990, p.112 – 113). Savio (2007, p.179) suggests that inflation was due to the loss of gold-standard between A.D. 269 – 270/276, death of Claudius Gothicus, and fall of Palmyra.
[27] See Van Minnen (2007, p.207 – 225) on collapse of the financial base of in Egyptian cities; Liebeschuetz (2007, p.17 -18) on the collapse of the 2nd century urbanism; and Leone (2007, p.23 – 287) on the decline of cities North Africa. See also Papi (2004, p.56 – 67) on the collapse of Roman institutions in Italy. For a general summary see (Hekster and Zair, 2008 p.31 – 44).
[28] See Finley (1973, p.89, 91) and Jones (1953a p.296 - 298; 1964 p.24 – 29) for the traditional views of the 3rd century inflation.
[29] Corbier (1985, p.69 – 106) contains a comparison of commodities in listed in the A.D. 301 Price Edict, and their costs as in the time of Augustus (B.C. 63 – A.D. 14) and Pliny the Elder (A.D. 23 - 79). The result of this study suggested that despite the fact that the denarius in the time of Diocletian's A.D. 301 Price Edict was worth 1/72 of its value at the time of Augustus; that there was only an annual inflation of 3.5 %; and that there was long-term stability in the costs of wheat, oil, and labour.
[30] Duncan-Jones (1976a, p.241 -262); Rathbone (1996, p.330 – 332; 1997 p.1997 217 -220).

By using the "proxy" indicator of wages for the late 3rd century A.D. this research therefore reviews the evidence for a 3rd century crisis in general. It attempts to determine with reference to Roman Egypt if Corbier was correct to suggest that the impact of inflation upon the populace of 3rd century was less pronounced than previously argued[31], or whether Hollard[32] was correct challenge Corbier's interpretation and to argue that there was no direct relation between prices in the 1st century A.D. and the early 4th century A.D. This is because the 3rd century was a time of severe crisis in which the impact of currency collapse and inflation was felt particularly by the lower social classes[33].

To determine the most likely interpretation Chapter 2 will therefore provide a brief overview of the 3rd century crisis. In Chapter 3 the revisionist view of a 3rd century crisis is presented. Chapter 4 contains an overview of Egypt in the 3rd century and this outline is used to suggest various factors that might have maintained Egyptian wage stability in the 3rd century A.D. Chapter 5 considers the factors that might have contributed to wage stability in the 3rd century A.D., in Egypt. Chapter 6 then tests the evidence for wage stability in Egypt prior to A.D. 274/5 using the evidence of wages for potters, ass-drivers and apprentices. In Chapter 7 the research considers the nature of the currency reforms between A.D. 275 – 299, to understand how these reforms might have affected Egyptian wages in the final quarter of the 3rd century A.D. Chapter 8 then considers the evidence of viticulture-labour contracts in the light of the reforms outlined in the previous chapter to determine the degree of wage stability between A.D. 275 – 299. Chapter 9 then considers the evidence for wages in other types of labour contract between A.D. 275 - 299 using the evidence for day-labour rates to determine if the results are the same as for viticulture-labour wages in the previous chapter. Chapter 10 explores the impact of Diocletian's Price Edict on wages between A.D. 300 and 305 (which is the abdication of Diocletian) while Chapter 11 considers the results of these studies against the document prices for wheat and barley between A.D. 274/5 and A.D. 305. Finally, Chapter 12 contains a summary of the conclusions. The reason for selecting these

[31] See Corbier (1985, p.69 – 106).

[32] Hollard (1995, p.1067) argues that Corbier's suggestion that there was long-term price stability between the 1st and 4th centuries is illusionary because there was no direct relationship between prices in the 1st century A.D. and the 3rd century A.D.; and that in a time of changes, of wars and civil disorders, inflation would simply increase regularly. Indeed Hollard (1995, p.1067) draws on the work of Callu (1969, p.401 – 402) to point out that inflation which had been moderate until A.D. 260 suddenly increased in the decade of A.D. 270 with the result that prices increased eight-fold. Depeyrot (1988, p.241 – 242) moreover suggests that after stability costs in Egypt were multiplied by 12-fold between A.D. 267-9 and A.D. 291 – 3.

[33] Hollard (1995, p.1075) argues that the use of gold spared the upper-classes, soldiers, and government officials the impact of inflation; and that the lower classes using debased silver currency could not exploit the inflation and were unable to pay off their debts.

different groups of works lies in the need to have data-sets of related tasks against which conclusions might be drawn.

### Section 1.1. Methodology

To determine the nature of the 3rd century A.D. wage increases, and any increases in prices, this research combines a study of the papyrological evidence for wages and day-rates using both primary and secondary sources: studies of the face-value of the currency, and the chemical analysis of 3rd century coins, with particular reference to the tetradrachm of 3rd century Egypt. From the outset it is important to try to understand how the Roman Economy (particularly in Egypt) functioned. The results of an extensive review of secondary sources on the Roman Economy will be combined with a papyrological survey on wages and prices, and chemical and non-invasive coin analysis[34] to generate a baseline of data on the silver content of the tetradrachm against which the evidence of papyri can be assessed.

To obtain a data-set of papyri to understand how wages changed between A.D. 235 – 305 this research contains a survey of papyrological evidence published by the Egyptian Exploration Society (in their collection of Oxyrhynchi papyri) that specify wages, prices and quantities between A.D. 235 and A.D. 305. Only those papyri that can be securely dated between A.D. 275 and A.D. 305, and which contain references to wages and prices in this period are recorded. These are further studied to determine if the references to prices and wages contained within them could be compared in a meaningful manner. Those that can be compared are included in this study.

The results of the data from the Egypt Exploration Society are also combined with a study of online database of Egyptian papyri, http://www.papyri.info/ [last accessed 05/05/2014][35]. Since this search generates 1,846 papyri which have a strict date between A.D. 250 and A.D. 300, it is necessary to individually identify papyri that can be dated between A.D. 275 and A.D. 300, and which contain commodities and prices from which meaningful analysis might be made. Since the research period extends to the abdication of Diocletian in

[34] See Cope for analysis of the Egyptian tetradrachm Cope *et al.* (1997, p.12).

[35] http://www.papyri.info/ is an online database of papyri coordinated by Duke University and the Institute for the study of the Ancient World. It is a collaborative project that combines data from the Duke Database of Documentary Papyri, the Advanced Papyrological Information System, the Heidleberger Gesamtverzeichnis der griechischen Papyrusurkunden Ägypten, and the Bibliographie Papyrologique. It now includes and replaces the papyrological data previously held by the Perseus Digital Library by Tufts University: www.perseus.tufts.edu/hopper/ [last accessed 19/08/2014]. The data are maintained by the Trismegistos and relies on peer reviewed, scholarly, curation of the material. For further information see the site description at ://www.papyri.info/ [last accessed 19/08/2014].

A.D. 305 it is also necessary to identify papyri whose dates fall strictly between A.D. 300 and A.D. 305[36]. This generates 1,919 papyri which will then be examined to identify those papyri that can be dated between A.D. 300 and A.D. 305, and for comparative wages, quantities and costs. Finally to ensure that all papyri are identified subsequent searches need to be made with "phrase-specific" searches[37]. The phrase-specific searches refer to currency and employment. Terms include: "δραχ" short for "drachma" (to identify any references to coins since the term continues in use as an accounting tool throughout the study period), and "μυριαδ" short for myriad (a late 3rd century A.D. term to identify currency).

It is also necessary to search for less common terms for the coins of Roman Egypt: "δεναρι" short for "denarius", and "νυμμι" short for nummus. Searches will also be made for the phrases "επικεφαλ" or "επικεφαλον" as well as the term "λαογρα*"* since these are all terms that specify the poll tax, the "*laographia*" [38]. This is because these searches might reveal changes in rates of payment in response to the reforms of the currency or pressures of the 3rd century A.D. Other taxes like the *anabolikon,* which is perhaps a tax on linen or clothing[39], will also be searched using the term "αναβολι". Finally searches need to be made of job titles, for example the term for vine-dresser "αμπελου". This phrase is short for "αμπελουγος", though in practice it also identifies references to viticulture contracts. The term for a tenant "μισθωτ", (short for "μισθωτος") and ass-driver "ονολατ", (short for "ονολατος"), are also searched. The reason for selecting these areas of evidence is that each provides a sequence of costs against which the silver content of the currency can be assessed. The importance of this is that the results will allow us to answer the question as to whether wages agreed in contracts reflected the silver content of the currency[40].

[36] The reason for these dates is that at the time of research it was thought to be the narrowest possible search criteria.

[37] Subsequent to the initial search it was discovered that it was possible to search within two-year bands, for example identifying papyri between A.D. 276 and 278. This was used as a means to check that all papyri had been identified.

[38] See Boek (2008, p.47 – 48) on the poll tax. On the "head Tax" of A.D. 296/7 see Corbier (2008a, p.379), though Bowman (1976, p.168) notes that the nature of this *epikephalion* is uncertain – thus it is not clear if this tax is exactly the same as the tax dating to A.D. 238. See also Rathbone's (1993, p.87 – 97) analysis of the poll-tax *laographia* as originally established by Augustus. See footnote 231, p.56.

[38] The importance of the poll tax to the monetary economy of the empire lies in the fact that it had to be paid in cash, see Christiansen (2004a, p.45). This meant that no matter how debased the currency, cash was still required for the payment of the poll tax and therefore cash-wages remained important. Howgego makes a similar point that coins are still used in crisis (Howgego, 1992 p.24) because the government still requires silver to pay its soldiers and administrators.

[39] See Sheridan (1999, p.211 – 217).

[40] This is a theory suggested by Katsari (2002, p.8) in which the debasement of the antoninianus coin outside Egypt during the 3rd century caused a proportional increase in the number of coins needed to pay for item.

Finally to demonstrate the purchase power of wages in the late 3rd century, the cost of wheat in the late 3rd century will be compared with the evidence of wages. This is partly because wheat was a fundamental necessity for people in the 3rd century A.D., and its cost might reflect changes to currency. In 3rd century Egypt wheat was purchased by the *artaba*[41], and although there were different types of *artaba* it is clear that one *artaba* was a month's worth of wheat for a man (see footnote 41, p.23). As a result "phrase-specific" searches include terms like: "αρταβ" short for "*artaba*" (to identify any references to wheat) and "πυρο" short for "*puros*" (the word for wheat). These results are then searched for references to "δραχ" (drachma).

Once the search results are generated and the papyri are translated, the wage payments in the labour contracts or the wheat costs will need to be compared. For the period between A.D. 235 (the start of the study period) and 275 (the reforms of Aurelian) the wages paid to potters, ass-drivers, and apprentices will be examined with regard to the number of tetradrachms paid to the workers[42], and this wage can be compared to the silver content of the coins to see if debasement affected wages. This research will then consider the wages paid to labourers between A.D. 275 and 299 using vineyard labour contracts, and the wages paid to labourers performing public duties. For these contracts (that date between A.D. 275 and 294[43]) the theories of Sylviane Estiot[44] and Kenneth Harl[45] will be used to determine the number of silver coins paid to the workers. The reason for selecting the work of both Estiot[46]

[41] An *artaba* was enough wheat for one man for a month, or enough for 30-loaves, each at 1 ½ pounds, see Parsons (2012, p.108). See also Duncan-Jones (1976b, p.53 – 62; 1976c, p.43 – 52); Bagnall (2001, p.7 – 11); Mayerson (1998, p.189 – 194).

[42] The wage in silver tetradrachms can be calculated because there were four bronze drachmas to each silver tetradrachm prior to A.D. 275, see Corbier (2008a, p.347); Howgego (1985, p.52).

[43] These are contracts P. Col. 10, 280 (A.D.269/277); P. Oxy. XIV, 1631 (A.D. 280); P. Laur. 4.166 (A.D. 289/90). See Chapter 8, p.119 - 151.

[44] Estiot (2012, p.549 – 550).

[45] Harl (1996a, p.151, 155).

[46] Estiot is currently undertaking the on-line revision of Roman Imperial Coinage (RIC) volumes 1 of 2; she has studied late Roman coin hoards, and has written extensively on the late 3rd century currency, see Estiot (2012, p.538 – 560). See also Estiot (2011a, p.91 – 152; 2011b forthcoming; 2009, p.157 – 174; 1999, p.51 – 165; 1996, p.33 – 70).

and Harl[47] is that both suggest values for the post-A.D. 274/5 currency in Egypt, and both values are very different[48].

The argument of Estiot[49] is that the reforms of Aurelian in A.D. 274/5 saw the one-to-one replacement of the antoninianus with Aurelian's new reformed coins outside Egypt, and at the same time the pre-reform antoninianus was down-valued to one denarius to become the denarius usualis (or denarius of daily use) because the old denarius was no longer being minted. This means that the new antonininus of Aurelian was worth two denarii at its introduction[50]. The replacement of the pre-reform antoninianus (worth two drachmas and therefore two tetradrachms) by the new-reformed coins of Aurelian means that these new coins of Aurelian were worth two pre-reform tetradrachms and therefore eight drachmas[51].

By contrast the argument of Harl[52] is that A.D. 275 saw the introduction of a coin that was worth five denarii (and therefore five tetradrachms because of the one-to-one relationship between the denarius and the tetradrachm) this new coin of Aurelian therefore equates to 20 drachmas[53]. This is because he argues that that the XXI and KA marks on some of the new coins of Aurelian (introduced across the empire in A.D. 274/5) were the same marks as those that were marked on some of the nummi from the Alexandrian mint from around A.D. 296 onwards. He suggests that Diocletian would use the same marks on his nummi of A.D. 296 onwards, only if they carried the same meaning as those on Aurelian's in A.D. 274/5 coins. Since Antioch and Alexandria concurrently minted coins under Diocletian's reform that were marked KV and XXI, they had to have the same meaning as in A.D. 274/5. In this case the KV means 20:5 (or 20 sestercii for five denarii), and XXI means 20:1 (or 20 sestercii for one nummus)[54].

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[47] Harl (1996a) has written extensively on the ancient world, and published the influential book "*Coinage and the Roman Economy, 300 BC to 700 AD*". A sample of his other work includes: Harl (1997, p.223 – 230; 1996b p.197 – 204; 1987 p.1 – 261; 1985 p.263 – 270).

[48] The importance of applying these theories is that the reforms of Aurelian are commonly considered to have resulted in the revaluation of the currency, and between these dates (A.D. 275 – 294) the silver content of that currency fell from c.0.2 grams of silver per coin, to 0.01 grams of silver per coin Cope *et al.* (1997, p.12).

[49] See Estiot (2012, p.550 – 552).

[50] There was a nominal one-to-one relationship between the denarius and the pre-reform tetradrachm. On the relationship of the pre-A.D. 274/5 denarius and the tetradrachm see Corbier (2008a, p.347); Howgego (1985, p.52); Geissen (2012, p.563); Rathbone (1996, p.325 – 326); Van Minnen (2008, p.226); Christiansen (2004b, p.43 – 44).

[51] See Estiot (2012, p.549 – 550) for a full discussion.

[52] Harl (1985, p.263 – 270).

[53] See Harl (1996a, p.151).

[54] See Harl (1996a, p.151).

After A.D. 294 the ratios of drachmas to the post-A.D. 274/5 reformed tetradrachm suggested by both Estiot[55] and Harl converge[56]. The research applies these values to the wage payments in the identified papyri to determine how many tetradrachms were paid to the workers. If the number of silver tetradrachms or nummi (after A.D. 299) are known, then the Cope's analysis of the 3rd century silver contents of the Alexandrian tetradrachms can be used to determine if the increases reflect the degree of silver debasement in currency[57]. This is important since a significant increase in the actual number of silver coins paid to workers would be indicative of inflationary pressure at the end of the 3rd century.

Finally between A.D. 300 and 305, the wages for ass-drivers, and labourers will be determined using the ratios of 50 and 100 drachmas to the nummus implied by the A.D 301 Price Edict and subsequent Currency Edict[58]. This is because in c.A.D. 298 the nummus fully replaced that post-A.D. 274/5 reformed tetradrachm of Aurelian in Egypt as the coin of transaction, and the application of these ratios is used to determine if the number of transaction coins paid to the workers in A.D. 301 (after the introduction of the A.D. 301 Price Edict) reflects the numbers of coins paid to workers in the mid-to late 3rd century A.D. If the number of coins paid to workers remains the same then this will be evidence for the stability in wage payments at the end of the 3rd century, and it is evidence that there is stability with regard to the economy of Roman Egypt at the start of the 4th century A.D.

### Section 1.2. The Significance of the Research

The importance of applying the theories of Estiot and Harl[59] concerning the numbers of drachma to the post A.D. 275 currency in Egypt is that that they should reveal whether the wages paid to workers between A.D. 275 and 294 reflect the changes to the silver content of the currency or a revaluation of the currency, and the degree that wages changed after the reforms of Aurelian. This is important since the current view of Aurelian's reforms is that his attempt to address empire-wide inflation resulted in significant increases of prices[60], and that

[55] Estiot (2012, p.552) argues that by A.D. 294 there were 16 drachmas to each post-A.D. 274/5 reformed tetradrachm.
[56] Harl (1996a, p.151) argues that there were 20 drachmas to each post-A.D. 274/5 reformed tetradrachm
[57] See Cope *et al.* (1997, p.12) for the debasement of the Alexandrian tetradrachm.
[58] Abdy (2012, p.589 - 90).
[59] Estiot (2012, p.549 – 550; Harl (1996a, p.151, 155).
[60] See Hollard (1995, p.1067 and also footnote 32, p.20).

these price increases were caused by debasement of the currency and the reforms of Aurelian in A.D. 274/5[61]

By determining whether the daily rate of pay for low-status workers in Egypt changed after the reforms of Aurelian in A.D. 274/5 in terms of the numbers of debased silver coins paid to those workers; and whether the cost of grain altered in terms of silver coins after the reforms of Aurelian in A.D. 274/5, this research will therefore demonstrate whether there was a moderate revaluation of the currency (as suggested by Estiot[62]) or a major attempt at deflation by removing large numbers of coins from circulation[63]. If wages remained the same prior to, and after the reforms of Aurelian[64], and if there was no significant increase in maintenance payments, this would be evidence that the interpretation of a 3rd century inflationary crisis in Roman Egypt is at best overstated. It would moreover provide further evidence for the theory of Corbier[65] that Roman Egypt the 3rd century was not a period of economic crisis, despite the debasement of the currency[66]. This view would potentially challenge that those of Bagnall and Hollard[67] that the 3rd century was a time when the lower-class suffered from inflation and were unable to break free of their debts.

Regardless of the results it is hoped that the research within this PhD will help address the problem posed by Christopher Howgego in 1995: that the papyri evidence for inflationary price-rises in Egypt after A.D. 275 is not clear enough to demonstrate that there actually were significant price rises in response to Aurelian's reforms[68]. In order to address this point it is necessary to outline the challenges faced by the Roman Empire of the 3rd century A.D., and of Egypt itself. The following chapter will therefore consider firstly the traditional interpretation of the 3rd century crisis, followed by an outline of the revisionist views. The research will then consider also Egypt from both perspectives. Prior to any analysis of inflation in the Roman Empire, however, it is necessary to consider the phenomenon of inflation. This is considered in Section 1.3, Section 1.4 and Section 1.5 below.

[61] See Ferri (2012, p.19 – 20) on the reforms of Aurelian, and Howgego (1995, p.126 – 127) on the significance of Aurelian's reforms. See also Corbier (2008a, p.382), and a fuller bibliography of the changing silver content of the 3rd century coinage see footnote 6, p.16.
[62] See Estiot (2012, p.552).
[63] See Hollard (1995, p.1073).
[64] See Ferri (2012, p.19 – 20) on the reforms of Aurelian.
[65] See Corbier (1985, p.69 – 106).
[66] See Savio (2007, p.127 – 185); Ferri (2012, p.19 – 20); and see also footnote 6, p.16.
[67] See Bagnall (2003b, p.85-96); Hollard (1995, p.1075).
[68] See Howgego (1995, p.126).

## Section 1.3. Inflation

The end of the 3rd century is frequently cited as a time of steep inflation based on the debasement of the currency[69], and of social crisis with rebellions and political uncertainty[70]. This is suggested to have led to a period of inflation, and even hyperinflation at the end of the 3rd century A.D.[71]. In order to understand the significance of these rates of inflation it is necessary to understand what inflation is, how it can be variously measured with reference the limitations of our dataset. The effects of inflation will be considered using the historical example of the two periods of inflation from the Weimar Republic of Germany between 1920 - 1923 and 1929 - 1933 in order to understand the impact such rates would have on society, and whether the same social impacts are present in the Romano-Egyptian society of the 3rd century A.D.

## Section 1.4. Definitions and Calculations

The U.S. Federal Reserve defines inflation as a "general increase in the overall price level of the goods and services in the economy."[72] This is important definition since it argues that inflation, and how to measure it, is a more complex issue than simply tracking the increase in price of a single commodity. Indeed the U.S. Federal Reserve monitors a range of price-indices because different indices track different products and services. The objective of the Federal Reserve is to gain an overall idea of price increases across the whole economy, and they point out that, "Inflation cannot be measured by an increase in the cost of one product or service, or even several products or services"[73]. This is particularly important when we consider periods which lack the data, or records, from which such calculations are made.

The fact that a real understanding of inflation can only be gained from analysis of multiple prices has particular significant for Egypt in the 3rd century when the main evidence for inflation is taken largely from the increases in the price of wheat. Rathbone[74] has tried to

[69] For views of the 3rd century inflation see footnote 5, p.16 and footnote 6, p.16.
[70] For the traditional view of the 3rd century crisis see footnote 4, p.15.
[71] Bland (1997, p.29 – 55) who summaries the debasement of the currency and gives an outline of inflation. Bowman (2008b, p.77) suggests that the currency reforms of Aurelian in A.D. 275 lead to "two decades of price-inflation". See also footnote 5, p.16.
[72] See their website page "What is inflation and how does the Federal Reserve evaluate changes in the rate of inflation?" (2007), [Last accessed 12/09/2015].
[73] See their website page "What is inflation and how does the Federal Reserve evaluate changes in the rate of inflation?" (2007), [Last accessed 12/09/2015].
[74] Rathbone (1996, 331-332). See also Duncan-Jones (1974, p.10) and footnote 5, p.16.

address this limitation by considering a broader range of products and rents, but the data-set from Egypt 3rd century is still negligible when compared even with the paucity of British consumer price-data between 1750 – 1850, on which inflation for that period is measured by the U.K. Office of National Statistics[75].

Analyses of historical inflation from 1750 – the current day are useful, however, in that it is possible to consider inflationary movements in price for precious-metal currencies. In this case the data from the Office of National Statistics[76] on British consumer price Indices shows rates of inflation based on a precious metal currency, and fiduciary currencies. This is because the British currency prior to 1938 was based on an exchange-rate with a precious metal standard (in this case gold)[77], and then from 1938 on an agreed exchange rate between banks without any standard (as is the case today). The importance of this data for the study of Egypt in the 3rd century A.D. is that currency at that time was based on the silver content of the tetradrachm coins, but that around A.D. 280 the currency was dramatically debased and had a negligible amount of precious metal[78]. The data is also important because the Egyptian currency was linked to the currency of the central empire at a fixed exchange-rate, rather like an exchange rate with a known gold standard[79]; and finally because currency of Egypt was eventually incorporated into the single currency zone under Diocletian in A.D. 298 with the minting of the nummus[80].

The first point to consider is that currencies based on the precious-metal content of their coins show very little inflation[81], and that significant inflation is a product of the post-1938 economies. This is evidenced by the Consumer Price Indices from Britain which show that between 1750 and 1938 there was only a three-fold increase in prices, but that after

[75] The National Office of Statistics manages to create a sequence of consumer price data in the early 19th century by combining data from a "few local markets", the accounts of colleges and hospitals, and from the records of the Navy Victualling Service."Prior to the 19th century they generate their data from the wholesale prices at produce markets like the Smithfield market, see O'Donoghue, Goulding, and Allen (2004, p.39). Even this is a substantively greater data-set than exists for 3rd century A.D. Egypt. See Section 11.4, p.196 and footnote 565, p.111 for a list of wheat prices.
[76] O'Donoghue, Goulding, and Allen (2004).
[77] Interestingly it is possible to use a standard other than gold. In order to curb the hyperinflation of the Weimar Republic between 1920 and 1923, the government minted a temporary currency called the "Rentenmark" at an exchange rate of one-trillion Marks to one Rentenmark. This temporary currency was linked to the price of industrial and agricultural assets, not gold; see Storer (2013, p.99).
[78] See Cope *et al.* (1997, p.12) and Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.
[79] See footnote 287, p.65.
[80] See Abdy (2012, p.589-590).
[81] Bernholz (2015, p.16-17); O'Donoghue, Goulding, and Allen. (2004, p.40).

1938[82] prices have risen more than forty-fold with a dramatic tripling of prices occurring between 1973 and 1981[83]. With regard to Egypt in the 3rd century A.D., the dramatic price rises that have occurred in the West since 1938 have occurred during the period when Western economies left a fixed rate of exchange with a known gold-standard and moved to a discretionary exchange-rate for fiduciary paper money[84].

In any narrative of the 3rd century A.D. inflation is described as an "evil" that significantly affected the economic stability of the empire[85]. It must be remembered however that inflation itself is not necessary bad, but simply evidence on an uncertain economic situation; in effect it is a measurement of uncertainty[86]. Inflationary situations occur where there is uncertainty because people factor "risk" into their calculations either by asking for a substantive premium on loans against a guessed rate on increase, or by securing their loan by other means[87]. It is noticeable that at times of currency change in Egypt during the 3rd century A.D. loan contracts suddenly include the phrases that specify the loan will be paid on "Ptolemaic" silver coins (which had a better silver content), or "the new currency of the Augusti", which might potentially have a better silver content or better exchange rate[88]. In this manner the creditors would be insuring themselves against a loss in value by using a fixed amount of silver in older coins, or accepting payment in the latest coin issue of the government. This is not to say that inflation did not affect ancient economies but that in general inflation occurred over longer periods, and that yearly price rises in response to

[82] O'Donoghue, Goulding, and Allen. (2004, p.40). The reasons for this a varied but the significance of 1938 is that it is the date when Britain left the gold-standard by which the pound had a known relationship to one pound of gold. A precious metals standard limits inflation as governments have to maintain sufficient gold to be able to convert their currency as required. As a result this limits the minting of fiduciary money.

[83] The economic situation of Britain mirrored that of the world since this period saw a four-fold increase in oil-prices that left inflation in 1974 running at 10% in the US, France, Italy and Japan, see O'Donoghue, Goulding, and Allen. (2004, p.40).

[84] Donovan (2015, p. 11-12) and also Bernholz (2015, p.22).

[85] See footnote 4, p.15.

[86] As Donovan (2015, p. 12) points out: "if everyone knows what a rate of inflation will be they adjust accordingly". If for example you know that inflation is running at 50% then you charge interest on a loan of 53%, which in practice is a 3% interest-rate.

[87] Even in the worst excess of the 1922-1923 hyperinflation experienced in Germany during the Weimar Republic there were sections of society that benefitted from the depreciation of the currency. Storer (2013, p.95 - 96) notes that farmers could use the hyperinflation to wipe out debts; that cheap credit could be used to acquire land or art that would maintain value.

[88] Christiansen (1984, p.297 – 298) notes that the papyri mentioning "Old Coins" are papyri: P. Grenf. II, 77 (A.D. 260 – 70); PSI VIII 890 (3rd century); P. Strass. IV 233 (2nd half of the 3rd century A.D.); P. Stras. V 636 (Late 3rd century A.D). "New Coins" SPP V 83 (A.D. 266-67); SPP V 85 (A.D. 266-67); SPP V 94 (A.D. 267-8); SPP V 86 (Reign of Gallienus); BGU IV 1064 (A.D. 277-78); P. Oxy XIV1713 (A.D. 279); BGU IV 1090 (A.D. 286); P. Osl III 135 (A.D. 286 – 293); P. Lips 4 (A.D. 293) ); P. Lips 5 (A.D.293); P. Lips 29 (A.D. 295) P. Oxy XIV 1773 (3rd century A.D.); P. Lips 84 (Reign of Diocletian); P. Oxy XXXI 2587, list IV no. 66. See also footnote 196, p.49.

harvests and supply were of more significance in earlier periods. Consideration of the annual percentage change in price shows that in any year prices might vary by 10% - 20% above or below a typical price median; indeed the evidence of British Consumer Price Indices from 1750 – 1850 show that annual prices varied significantly particularly during periods like the Napoleonic Wars[89].

Crucial to any consideration of historical inflation are the statements made by Bernholz[90] that there has never been inflation unless there was a budget deficit by the state; that dictators always create the potential for inflationary situations through irregular interventions in the economy and that there is no long-term commitment to financial stability because a new dictator can intervene differently[91]. He also notes that in a currency system based on precious metal inflation can only really occur by two means: firstly a significant increase in the precious metal circulating[92] or for coinage to be altered either by lowering the metal content or weight but not reducing the face-value, or increasing the face-value but not the metal content.

In the case of 3rd century Egypt the metal content of the tetradrachm was dramatically reduced, most significantly between A.D. 264 – A.D. 268[93] but the face-value was not changed. Applying Bernholz's[94] argument this created the *potential* for inflation but there were still old better silver coins circulating in Egypt against which these debased coins might be informally exchanged. In effect older coins could have acted as an informal currency standard against which newer coins could be exchanged at a fixed (and perhaps illegal) rate. This means that the rate of inflation in Egypt was governed by the amount of silver the currency was perceived to have, and therefore the number of coins that could be exchanged against either older coins, gold coins, or aurelianii at Alexandria. It follows that therefore that in terms of debasing the silver content of the currency in 3rd century A.D. Egypt, inflation would be limited by the amount of silver in those coins. For a hyperinflation situation to occur in the 3rd century A.D. therefore there would need to be a massive, and increasing,

[89] "Composite Price Index: annual percentage change: 1750 - 2003" see O'Donoghue, Goulding, and Allen. (2004, p.40, fig. 1).
[90] Bernholz (2015, p.20 – 21).
[91] Bernholz (2015, p.30 - 31) notes that Florentine financial stability was only achieved because the merchant class for who a low-inflationary and stable currency was essential were the political decision-makers.
[92] Perhaps from new sources like mines or plunder, see Bernholz (2015, p.29).
[93] See Figure 4, p.64.
[94] Bernholz (2015, p.29).

output of coins with a reliable silver content, and also no other gold or older good silver coins in circulation.

After A.D. 274/5 the currency was changed. The aurelianus was introduced with a new value, but with a similar silver content to the pre-A.D. 274/5 coins[95]. This again should have produced the *potential* for inflation, and it does seem that there was an increase in prices and wages[96], see Table 1 (below).

**Table 1 Illustrative price rises for wheat in the Egypt of the 3rd century A.D. Data from Duncan-Jones (1976, p.241-263); Rathbone (1996, p.331-332).**

| Date | Price per *artaba* |
|---|---|
| A.D. 260 | 16 drachma |
| A.D. 277?[97] | 200 drachma? |
| A.D. 293 | 300 drachma |
| A.D. 294 | 216, 220, 228, 232 drachma |
| A.D. 301 | 640 drachma |
| A.D. 301 Price Edict | 1,200 – 1,333 drachma |

It is not clear whether prices increased in A.D. 277 (see the debate on O. Mich 1.157 in footnote 562, p.110). Even if O. Mich 1.157, dating to A.D. 277, is correctly dated it would seem that prices for wheat were relatively stable until the late 3rd century, rather than increasing annually.

Similarly in after A.D. 279, when the currency was once more debased to around 0.1 grams – 0.05 grams of silver per coin[98], there is no evidence that the face-value of the post-A.D. 274/5 tetradrachm was increased; so once again a pre-condition for inflation was created. How far there was any increase is not clear. It is noticeable that Tacitus (A.D. 275 - 276) briefly introduced a double-coin with double the silver content to the reformed tetradrachms of Aurelian[99]. How far he was responding to an inflationary situation however is not clear as there would seem to be little increase in wages at this time[100], see Table 1

[95] See Cope *et al.* (1997, p.12) and Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.
[96] See the currency reforms of Aurelian in Section 7.1, p.102.
[97] For the debate on O. Mich. 1.157 see footnote 562, p.110; and Appendix 4: Ostracon O.Mich. 1.157, p.241.
[98] See Cope *et al.* (1997, p.12) and Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.
[99] Callu (2010, p.187 – 198).
[100] See footnote 5, p.16.

(above). And while it is tempting to suggest that there was an inflationary increase in prices between A.D. 275 and A.D. 301 it is not clear that prices rose progressively, or in spikes in response to currency changes.

### Section 1.5. Historical Comparison

At first glance a comparison between the hyperinflation of the Weimar republic in 1922 – 1923 and 1930 – 1932, with the inflation suggested for Egypt in the 3rd century might seem a useful parallel. For example in Egypt in the late 3rd century A.D. wheat prices rose from 16 drachmas per *artaba* (in A.D. 260) to c. 1,200 - 1,333 drachmas per *artaba* (in A.D. 301), see Table 1, p.31. Such an increase might suggest hyperinflation but if it is the true of the 3rd century A.D., we might expect to see evidence of a significant social impact due to the rapid inflation. Indeed the traditional argument is that this inflationary increase at the end of the 3rd century A.D. affected the whole economy: ending the economic vitality of cities, and contributing to barter-system and programme of government requisitions in kind[101]. In part this picture is influenced by the effects of the hyperinflation of the Weimar Republic in 1922-1923, and also in 1930 – 1932[102].

During the hyperinflation of the 1920s prices rose astronomically. In April 1919 a family of four could live on 60 marks per week, but by 1921 they required 249 marks per week[103]. By 1923 Germany is experiencing hyperinflation, partly as a result of the French decision to occupy the Ruhr Valley and force reparation payments for WWI from Germany. To support a policy of "passive resistance" to the occupation the Ruhr Valley, the Weimar government was forced to pay unemployment support to almost the whole Ruhr region. With their industrial base at standstill, but with a need to support those workers, more and more money was printed. The exchange rate fell from 64.8 marks to the U.S. dollar in 1920, to 4,200,000,000 marks to the U.S. dollar by 1923. As the worst excesses of hyperinflation were realized, the economy collapsed into barter. The social impacts of hyperinflation, in a

[101] See Jones (1953a, p.293-318; 1964, p.12 – 28).
[102] Amongst many overviews it is useful to consider Storer (2013, p.81 - 99). See also Feldman (1993, p.421) on the buildup and causes of the 1920s hyperinflation, and also Feldman (1993, p.446 – 451, 513 – 576) on the hyperinflation itself. Fergusson (2010, p.92 – 107) gives an excellent overview of the Austro-Hungarian experience of hyperinflation during the 1920s, and see also Fergusson (2010, p.108 – 169) for the overview of the German hyperinflation. See also Michael, Nobay and Peel (1994, p.1-22) for a reconsideration of the processes of monetary hyperinflation in the Weimar Republic. See Ferguson. (1996, p. 635-666) for the political difficulties faced by the Weimar Republic. See David and George (1998, p. 816-831) for contemporary views of the Weimer Inflation. For an analytical and for a statistical analysis of the impact of inflation on political behaviour see, Bruno and Hannelore (1983, p.403 – 420). See also Dornbusch and Fischer (1986, p.1-47) for the stabilization of the currency during hyperinflation with reference to Germany in 1923, also Dornbusch & Fischer (1986, p. 6-11); and for Austria in 1922, see Dornbusch and Fischer (1986, p.11-15).
[103] Storer (2013, p.90).

period when prices were increasing by the hour were huge[104]. Fixed salaries and pensions were unable to keep pace with the price rises and living standards for many fell, particularly those in cities who had to buy food and fuel. People found they had to break the law to survive and in 1923 the prison population was increasing by 100,000 per day[105]. Bribery and corruption was rampant, and 1923 was marked by a number of anti-government uprisings[106]. In 1930 – 1932 Germany again experienced an inflationary period. During these years inflation jumped from 14.4% - 42.3%[107]. During this time the inflation was associated with the collapse of the banks[108], and a contraction of the economy that led to widespread, long-term, unemployment. The agricultural sector was also hit by falling prices, and there was a loss of trust between the artisan and merchant middle-classes who had previously seen their savings and income in the 1920 – 1923 hyperinflation destroyed[109].

The degree to which such parallels can be used to consider 3rd century A.D. Egypt is however far from clear. Inflation in 3rd century A.D. Egypt, if there was significant inflation, does not seem to have been associated with massive social breakdown[110]. Neither does it seem associated with a collapse in the monetary system as fixed, traditional, amounts of money were still required for payment of taxes. Indeed for much of the 3rd century Egypt is noticeable for its stability and for the maintenance of the urban and civic institutions[111]. And while it is accepted that Egypt did see the replacement of its currency during the 3rd century A.D. (once in A.D. 274/5 and again in A.D. 298/99) this was part of wider change in the currency across the empire and, it is not clear to what extend any economic problems in the heart of the empire were replicated in Egypt. Indeed there are stark differences between the inflation of the Weimar Republic of the 1920s and the supposed inflation of Egypt in the 3rd century A.D. The hyperinflation of 1921 – 1923 had its roots in the economic situation and reparations of the 1st World War, and was aggravated by the political response to the occupation of the Ruhr. Similarly the collapse in the banking system of 1930 – 1932 was caused by a combination of factors: calling in of US loans after the "Black Friday" collapse

[104] Storer (2013, p.91 – 93) notes that a 5,000 mark cup of coffee would cost 8,000 marks by the time it had been drunk.
[105] Storer (2013, p.97-98).
[106] Storer (2013, p.98-99).
[107] Bruno and Hannelore (1983, p.415).
[108] Petzna (1969, p.61-62).
[109] Petzna (1969, p.71 -73).
[110] See Chapter 4, p.49 - 60.
[111] See Chapter 4, p.49 - 60.

of the US stock exchange in 1929[112]; the election of the socialists to the German parliament in 1930; and the collapse of the Austrian banks in 1931[113]. Such a situation was not paralleled in 3rd century Egypt.

Further parallels with the economic situation of the Weimar Republic and with 3rd century Egypt point to more differences rather than similarities. The inflation of 1929 – 1932 saw a loss of trust by the populace towards the political parties that resulted in the political radicalization and the empowerment of groups like the German National People's Party (Nazis) and the Kommunistische Partei Deutschlands (Communists) at the expense of the mainstream parties. By 1932 the inflation was also associated with a loss of faith in democratic systems themselves as the administrations of Brüning and his successors sought to rule by presidential decree, rather than parliament[114]. These factors cannot be attributed to the 3rd century A.D. for although the Empire was based on an autocratic and dictatorial system, there is no clear evidence that there was any movement by the lower and middle-classes to replace the prevailing political system, and if anything, there is some evidence for a continued "paternalist" relationship with the Imperial government as means to address grievances[115]. Indeed the only clear instance of an attempt to replace the government was the rebellion led by the aristocracy and landowners against Maximinus in A.D. 238, because his taxation policies were perhaps affecting this class to deeply[116].

The problems of the Weimar Republic were further associated with unemployment and collapse of apprenticeships[117], lowered social spending, and more indirect taxation as the government of Brüning sought to allow the free-market to balance the budget. Again there are clear differences between the economic situation of the Weimar Republic and 3rd century A.D. Egypt. It is not clear whether there was any decline in apprenticeships during the 3rd

[112] This is because German banks had "borrowed" their way out of the 1920 – 1923 inflationary period by borrowing US dollars on short-term loans which they then used to finance long-term loans in Germany, see Petzna (1969, p.61-2).
[113] Petzna (1969, p.61).
[114] Petzna (1969, p.66).
[115] An example of this is preserved by papyrus P.Oxy. XVII 2130 (dating to A.D. 267). It records a petition against the unjust and illegal nomination to office of the Gynasium. Appellant is immune and asks for the legal justification as to why his original petition was ignored. In order for his grievance to be addressed a copy of his petition was placed at the feet of the statue of Gallienus in the Imperial cult so that it can be addressed by the Prefect, see Hunt (1927, p.231, 232). See also Versnel (1981, p.36).
[116] Drinkwater (2008, p.31).
[117] Petzna (1969, p.73).

century, and indeed apprentice contracts continue for much of the period[118]. Nor is it clear how much unemployment there might have actually been, since Donovan[119] argues that unemployment is a modern phenomenon and not associated with agricultural economies; and in 3rd century A.D. Egypt the majority of the populace would have been associated with agriculture.

In considering the parallels between more recent inflationary episodes and that suggested for Egypt in the 3rd century A.D.[120], it would seem that the two situations are very different. The society of 3rd century A.D. Egypt remained deeply traditional, and despite the cities, and structures of government, it was not the same type of economy of society as that of the Weimar Republic of the 3rd century[121]. Indeed the most basic difference between them was that of the speed of communication. In the 1930s loss of confidence, perceptions of crisis, the calling-in of loans happened far faster than would be imagined in the agricultural world of the 3rd century A.D[122]; and while the cities of Egypt were linked by a sophisticated canal and road system, and were part of an empire-wide procurement system (the *annona*) they were not the developed industrialized cities of Germany that were more divorced from the agricultural base that supported them[123]. Indeed the only parallel that might be drawn is that in a hyperinflation situation those who a best placed to survive and profit from the depreciating currency are those farmers who are closer to food and fuel sources[124]. As such it is the purpose of this thesis to reassess the economy of 3rd century A.D. Egypt, to determine if there is any direct evidence for inflation during this period and if so, the evidence for the scale and degree of that inflation. To do so it is necessary to outline the arguments for the 3rd century as a time of crisis, and the also the revisionist views that argument that the 3rd century

[118] See Section 6.4, p.92 - 101.
[119] Donovan (2015, p.21).
[120] See footnote 5, p.16.
[121] Indeed the degree to whether there was any concept of economic theory in the ancient world has been discussed by Vivenza (21012, p.25 – 44) but unlike 3rd century A.D. Egypt, contemporaries in 1920s Germany were able to analysis the issue of hyperinflation with very modern concept of the role and movement of money, see David and George (1998, p.816-831).
[122] Bernholz (2015, p.29-30) uses to data from Castile to consider the slow rate of inflation in provincial 16th century Spain. The evidence shows large increases in prices as the amount of silver entering Spain increases, but that price increase occur at different rates and different times due to the slow movement of currency and also due to short term price fluctuations due to harvests.
[123] As Donovan (2015, p.21) points out one reason inflation is felt more significantly in the modern world is that there is far greater specialisation of employment; and such specialist employment is more subject to price changes. He notes that in the 18th century people still made their own clothes.
[124] Storer (2013, p.95). Petzna (1969, p.63) also notes that agrarian sector of the German economy was well represented politically and so partly protected, while Storer (2013, p.95) notes that inflation in the agricultural sector during 1920 – 1923 was not felt so heavily, and that some farmers were able to use the rapid inflation to their advantage.

crisis has been over stated.

## Chapter 2. The 3rd Century Crisis

In order to understand why the 3rd century is seen as a century of crisis it is necessary to outline something of the troubles that beset the Empire between A.D. 235 and 305. During this period there was a political crisis at the heart of the empire. This was caused by the disloyalty and ambitions of provincial military commanders. Emperors had increasingly brief reigns and often saw multiple contenders for the imperial throne. The sheer number of usurpers together with internal rebellion and external invasion are argued to have had a deleterious effect on the currency of the empire[125]. The need for coin to meet military expenditure is said to have led to an over-production of coin and an equally increasingly rapid debasement of the coins[126]. More debased coins were needed to pay for everyday goods and the end result is traditionally argued to be rapid price-inflation[127]. This supposedly caused an economic and urban decline as trade patterns collapsed, or civic-elites shed their traditional urban responsibilities and fled to their country estates under a more oppressive and totalitarian form of government.

During this period the habit of civic inscription seems to have declined. Prior to the 3rd century provincial urban politics were dominated by a culture of competitive "conspicuous display" by which local civic leaders competed amongst each other to provide their local towns with increasingly ostentatious public monuments and buildings, thereby demonstrating and promoting their Roman identity. During the 3rd century A.D. this system became unsustainable since the privileged classes that paid for the construction of those public buildings found themselves so burdened with civic duties that the tradition of monumentality declined dramatically in the mid-third century. Liebeschuetz[128] notes generally that civic inscriptions vanish with civic behaviour by A.D. 250.

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[125] For a relevant bibliography see footnote 4, p.15.
[126] See footnote 6, p.16.
[127] See footnote 5, p.16.
[128] See Liebeschuetz (2007, p.17 -18). The "arms-race" of conspicuous expenditure that was already causing financial difficulties to cities in the second century A.D. however Jones (1964, p.12-13) cites the appearance of *curatores civitatis* in the reign of Trajan as evidence for the start of the third century pressures on the towns. Pliny too, was sent to Bythynia and had to organize the financial status of cities, see Pliny *Letters*. X. 54, 75, 78. Is this evidence of systemic failure in the Roman system or simply the inability of individuals within towns to manage their financial affairs?

Inflation is argued to have risen drastically during this period - an inflation that destroyed the economic vitality of the empire and led to a more demonetarized economy. This inflation is argued to have occurred because it was during the 3rd century A.D. that the principal silver coin of the empire, the denarius, was replaced by the antoninianus[129]; and during this period the silver content of both coins drastically declined. The silver content of the denarius dwindled until it was essentially a copper coin, and indeed it ceased to be minted in any appreciable quantity after the reign of Gordian III (A.D. 238 – 244); while the silver content of the antoninianus fell from a coin that was 75% pure (3.65g of silver) on the death of Caracalla, to c.1 – 2% pure (c.0.1g of silver) in A.D. 270[130] under the early years of Aurelian's rule[131].

Concurrent with this decline is the collapse of the provincial bronze coinages known also as *assaria* (since were thought to be the equivalents of the *asses* of Rome). These bronze coins were minted by the many cities in the east of the empire and were a source of "small change" within the cities in which they circulated[132]. Minting of these coins was at its peak by the A.D. 250[133] and although their circulation was limited to particular cities there was a need for those cities to establish a rate of exchange between their coins and the bronze coins from other cities, or the coins from the imperial mints of the Roman authorities. Many coins, therefore, had the face values of bronze coins counterstamped to create a rate of exchange between non-local coins and the coins of the city[134]. This counterstamping was important

[129] The antoninianus was a "radiate". This means that the image of the emperor was surrounded by a radiating crown. Traditionally radiates were "double-value". By contrast "laureates" were single-value coins with the emperor wearing a laurel-wreath crown. This leads scholars to suggest that the new radiates were worth two denarii despite the fact that it only had 1 ½ times the silver content, though this value for the antoninianus is not universally agreed upon, see Corbier (2008a, p.341).

[130] Almost every academic study of the 3rd century crisis repeats or reviews the currency debasement. The process of debasement has been exhaustively treated by many scholars. A selection of relevant summaries and studies of that process of debasement has already been given in footnote 6, p.16.

[131] See Cope *et al.* (1997, p.149 – 150). It is traditionally assumed that there is a decrease in the available bullion due to the cessation of the Spanish silver mines, see Corbier (2008a, p.290); Jones (1980, p.161 – 163); Wilson (2007, p.109 – 120). But Butcher and Ponting (2012, p.81 - 83) argue that their analysis of 2nd century denarii indicates that by the late 2nd century the silver in the coin was actually coming from a central European location and that silver stocks were not in decline, though whether that such stocks were available to all emperors or the quantity of production is not yet clear.

[132] Many cities in the East of the Empire produced their own bronze coins known as "Greek Imperials". This bronze coinage was minted both for symbolic purposes – as symbols of a city's loyalty, status, or prosperity; but also to relieve this shortage of small-change. See (Harl, 1987 p.84); Howgego (1985, p.93); Johnston (2012, p.453-467).

[133] See Howgego (1985, p.9 – 10) on the exchange of bronze coins. Similar evidence survives from Pergamon in the time of Hadrian in the form a rescript from the emperor. He states that bankers could charge people who paid in bronze when they grouped together to make a payment in silver, and that fish had to be paid for in bronze no matter what the quantity so that the city revenues could be preserved, see MacDonald (1989, p.121).

[134] Harl (1996a, p.140).

because bronze was the main means of payment within the markets of the empire and strict rules seem to have governed its use. Indeed the exchange market was the means by which a city brought its own local currency into circulation[135] and bronze coinage therefore functioned as a means to move silver from private hands back into the local city treasuries for taxation purposes[136]. The moneychangers had their stalls in and around the forum to take silver from shoppers and provide them with the bronze for their purchases. The evidence of Aphrodisas shows that payments for certain common goods and services in the market had to be made in bronze rather than silver. Thus items tariffed in bronze had to be paid for in bronze, no matter the quantity[137], and that that bronze could only then be (legally) changed at official moneychangers. The silver coins were then, presumably, purchased from the moneylenders by the towns in order to pay their tax liability[138].

These rates of exchange came under pressure during the mid 3rd century. As the fineness of the antoniniani declined between A.D. 255 – 60 under Valerian, the sizes and weights of these provincial coins were cut dramatically[139]. Several cities double and treble the face values of the *assaria* during A.D. 255 – 260) and the counterstamp perhaps is evidence of inflation[140] and economic decline[141] – particularly because these currencies had largely ceased to be minted by A.D. 270[142]. The notable exception was the Egyptian tetradrachm which continued to be minted until c. A.D. 296[143].

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[135] MacDonald (1989, p.122).

[136] Howgego (1985, p.73) argues that a bronze coin would not be countermarked with a value over 14, since there were 16 Roman *asses* to a denarius. So a counterstamp above 14 means the bronze coin would begin to rival the value of a silver denarius.

[137] Howgego (1985, p.93).

[138] See Harl (1987, p.10).

[139] See Harl (1996a, p.140). Presumably if the *assaria* could not be revalued in response to the changes in the antoniniani they would become over-valued and vanish into hoards Something of this nature seems to have happened in Mylesa in the early 3rd century. The city seems to have tried to maintain the old weight standards against debased imperial coins. The details are not clear but blackmarket moneychangers took business away from the official exchange banks and the local economy seems to have collapsed, see MacDonald (1989, p.123).

[140] For a full analysis of the cities that increase the face value of their bronze coinage see Harl (1996a, p.141 – 143) with additions from Howgego (1985, p.61 – 64, 214 – 216) and a thorough review by Johnston (2012, p.453-467). As an example: the city of Side revalues its five bronze assaria to 10 assaria in A.D. 255; the city of Prusias (Bythinia) revalues the four bronze assaria of Maximus to 12 assaria in A.D. 255; while Heraclea revalues the two bronze assaria of Caracalla at four assaria and the four assaria of Severus Alexander at eight assaria in A.D. 255, see Harl (1996a, p.141 – 143); Hollard (1995, p.1055). This coincides with increased outputs of antoniniani from the imperial mints.

[141] This possibly indicates it is no longer cost effective to mint imperials.

[142] The question as to why the Greek Imperials ceased is vexed. It seems to be associated with conditions in the late A.D. 260s but they do not seem to have ceased due to some imperial dictat since a number of mints continued into the A.D. 270s. The coins show the aspirations, traditions and values held by the cities. For a thorough consideration see Howgego (1985); see also Harl (1987, p.84). Since silver coinage is controlled by the imperial authorities, and that this silver is in the form of increasingly debased silver coins, the bronze provincial coins might have become too valuable to use. This is because from A.D. 250 bronze became a store

Keith Hopkins[144] summarizes the general view of the period:

> "Recurrent debasement of the silver coinage was a tactic used to solve a recurrent dilemma: how to meet rising government expenditure, especially expenditure on the army, without a corresponding increase in government revenue… [the] rapid debasement brought with it a spiral of inflation… The traditional fiscal system broke down… Soldiers and government officials… increasingly took it upon themselves to secure their own supplies, in kind… The breakdown of central control over taxation… was reflected in the formation of separate rival governments under a rapid succession of emperors, generals and kings in France, Britain, Egypt and Syria, as well as in Rome… the mid-third century was almost certainly a period of economic depression. General insecurity probably reduced the volume of inter-regional trade… In provincial towns, the number of charitable foundations and of incised tombstones dropped; so too did the number of new public buildings, except for defensive town-walls."

Other studies might also seem to support this hypothesis. Sperber's[145] study, for example, of agricultural trends in third century Roman Palestine using purely literary sources led him to conclude that the second half of the third century was a period marked by:

> "decline in several different branches of agricultural activity, wheat growing... viticulture... and the production of fruits of various kinds.... Furthermore, this decline is not limited to a single locality, but is a widespread geographic phenomenon, e.g., Duron in Judea... the Galilee... Gabala, south of the Dead Sea".

The pervading impression in the literature is that the third century is a period of profound difficulty for the Roman Empire, and that the empire that emerged at the end of the 3rd century A.D. is therefore traditionally thought to have been of a different, more

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of wealth and billion antoniniani become the coin most commonly lost coins. It seems that bronze was trading at two-times, or three-times, its face value during the time of Decius and certainly after A.D. 250 few people will part with bronze until the time of Diocletian, see Harl (1996a, p.135). Perhaps a similar pressure contributed to the end of the "Greek Imperials" and perhaps their intrinsic value was far in excess that of the transactions for which they were expected to serve, see Johnston (2012, p.465).

[143] Geissen (2012, p.556 - 557).

[144] Hopkins (1980, p.123).

[145] Sperber (1972, p.233).

authoritarian, nature[146]. Thus the traditional view is that the over-taxation of the peasant-classes; widespread exemptions amongst the curial classes and their desire to avoid more onerous hereditary liturgies; increased expenditure on the military in the face of external and internal strife; the failure to expand the tax-base; and debasement with associated inflation all characterized the crisis of the 3rd century A.D.

This picture of crisis is however a "general" picture and it is necessary to discuss the various revisionist theories for the 3rd century crisis in order to understand the wages and payments in the papyrological evidence between A.D. 235 and 305 with reference to these approaches.

[146] Corcoran (2006, p.35 – 49)37, 40); Liebeschuetz (2007, p.17); Bowman (2008b, p.67 – 68). In the words of Grant (1999, p.68), "The price [of survival] was terrible... [The Roman Empire] as revived by Diocletian, displayed a good deal of evil that had not been there, to such a massive extent previously, militarism, overtaxation, excessive bureaucracy, dictatorial autocracy".

## Chapter 3. Revisionist Views

More nuanced histories accept that the period A.D. 235 – 286[147] was one of political, economic and military uncertainty, but that that the effects were not uniform. Some provinces suffered more disruption than others, and the role of the "soldier emperors" themselves in restoring the economic and military stability of the empire is more generally appreciated. Indeed the traditional suggestion that the reign of Diocletian marked a new, more ritualized system of government can be challenged by his insistence on a return of "normalized" Roman political systems: his legal codifications, tax-reform, patronage of building programs are arguably typical of Emperors like Augustus (B.C. 63 – 14 A.D.) and Septimus Severus (A.D. 193 - 211) who "refounded" Rome after periodic episodes of civil war[148].

Much new work has recently been done with regard to the economy of the Roman Empire[149] and the degree of crisis in the 3rd century. The picture of 3rd century decline is now more nuanced[150] and new interpretive models of our data has allowed the debate about nature of the Roman economy to progress from the simple binary-opposition "primitive vs. modernist" postulated by Finley[151] to studies that attempt to consider ancient economies and the evidence of economic growth from many diverse data sets[152], often using proxy markers that attempt to assess economic growth from the degree of change in the "proxy" data[153].

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[147] A.D. 284 marks the accession of Diocletian.

[148] The traditional nature of the late 3rd century governance and the innovations are usefully described by Lo Cascio (2008a, p.131 – 136; 2008b, p.137 – 155; 2008c, p.156 – 169).

[149] In the past 30-years many of our traditional models to understand the "Roman Economy" have been challenged but the degree, extent and integration of the Roman economy (and indeed whether it was driven by coherent economic policies) remains at best controversial. Bowman and Wilson (2009) developing ideas in the Cambridge Economic History of the Ancient World have summarized many of the recent approaches for studying the Roman economy but much remains considered guess-work, supposition, or simply unknowable within the limits our data-sets. Vivenza (2012, p.25 – 44) argues there was certainly "economic thinking" but we do not know of economic theoretical studies in antiquity.

[150] Swain (2004, p.1 – 19).

[151] See Finley (1973) his seminal work: *The Ancient Economy*.

[152] For the extent of integration in ancient economics see Bowman and Wilson (2009, p.7 - 9, 16); the utility or otherwise of G.D.P. estimates see Bowman and Wilson (2009, p.12); also the use of phenomena that are a "reflection" of growth like urbanism or consumption for considering economic development see Bowman and Wilson (2009, p.12, 19 – 21); Vivenza (2012, p.25 – 44). For the institutions associated with currency including mints see Bowman and Wilson (2009, p.22), and money as a driver of the goods see Bowman and Wilson (2009, p.22-3); Von Reden (2012, p.266 – 286). For the evidence of credit institutions and structures, see Bowman and Wilson (2009, p.23); Harris (2006, p.1-24; 2008b, p.174 – 207). For the debate about markets that are free or controlled see Bowman and Wilson (2009, p.25 - 6). For population and the potential of human capital as a force of economic growth, see Saller (2012, p.71 – 86); Kehoe (2012, p.114 – 130); Scheidel (2012c, p.89 – 113). For the difference between aggregate growth and natural economic growth in response to

It is not just the economic interpretation of the 3rd century A.D. that is more nuanced. Lo Cascio[154] for example, points out that the crisis in the 3rd century saw changes to, rather than the collapse of, civic governance. Carrié[155] for example argues that the civic *curiae* are vigorous and active, while Lukas de Blois[156] argues that while there was most certainly a crisis caused by the movement of armies and plague that resulted in the decline of epigraphic traditions and debasement of the currency but the extent and impact of that crisis was specific to certain places at specific times. His model notes that not all provinces of the Roman Empire were simultaneously affected by the difficulties of the 3rd century A.D. Indeed some areas saw growth during that period and even if the traditional expressions of "Romanitas" are lacking then there is still clearly civic pride and a vigorous activity by the curial councils expressed in the papyri of Egypt[157].

Too often statements about the collapse or decline of the third century consider the empire in a Romano-centric manner, or from a top-down perspective, implying that the Empire was a homogenous unit. The words of Mattingly, however, are a useful reminder that the empire covered an area that today is:

"broken up into more than 30 nation states, with an ancient population of over 50 million people"[158]

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population growth, and the degree of market integration across the strata of society see Bowman and Wilson (2009, p.27 - 28).

[153] For example the growth of trade and division of labour see Bowman and Wilson (2009, p.29, 30-31); and for the difference between "organic" fuel economies and fossil-fuel growth see Bowman and Wilson (2009, p.29; Wilson, 2012 p.133 – 155); for intensification of investment - particularly in trade like olive oil or estates; technological development like water-mills (which show growth in the 2nd and 3rd centuries) and water-lifting machines see Bowman and Wilson (2009, p.33 - 36); for a review of manufacture and industry in the Roman Empire see Hawkins (2012, p.218 – 240); for transportation and its limits which affect economic growth see Adams (2012, p.218 – 240); for economic growth from state-led incentive schemes like favourable contracts to shippers see Bowman and Wilson (2009, p.42 - 43); and "consumptive" markers like the evidence of increasing health from skeletal remains see Bowman and Wilson (2009, p.43-44). See also Jongman (2007, p.183 – 200) on skeletal markers; Lo Cascio (2009, p.87) on urbanisation as a marker for growth; and further studies in Bowman and Wilson (2011) including Morley (2011, p.98 – 142) on economic development and growth in cities. On economic markers themselves see Scheidel (2006, p.1 – 7; 2012b, p.321 – 333); Temin (2012, p.45 – 70); Rathbone (2009, p.299 – 326). For education and literacy as a marker of growth Bowman and Wilson (2009, p.38 - 42). Further recent studies can be theories and explored in Temin (2009, p.2-5) and more thoroughly in his study of the Roman market economy: Temin (2013, p.29-54, 70 – 94, 95 – 193).

[154] Lo Cascio (2008a, p.131 – 136).

[155] Carrie' (2008, p.293 – 303).

[156] He notes that seasonal or brief disruption had little long-term impact, de Blois (2002, p.204 – 217). It was prolonged warfare that caused serious disruption to the frontier provinces and concurrent abandonment of land, see de Blois (2002, p.213).

[157] Bowman and Wilson (2009, p.50 – 53). See aslo Kulikwolski (2004, p.39) notes that the Canons of Elvira (a church council convened in Spain either in A.D 300 – 303 or 303 – 314) contains clauses that pre-suppose that it continued to important to be part of the curia of a town.

[158] Mattingly (2007, p.22).

Indeed the Roman Mediterranean covered a huge area. It consisted of a diverse series of regions and micro-regions, and interpretations of history based on the events in the Northern Roman empire cannot necessarily be applied to the Southern half of the empire - particularly during the period of profound regionalization of the third century. The provinces of the Roman Empire were a diverse series of regions, both culturally, politically, climatically, geographically and environmentally, with numerous micro-regions[159].

More recent archaeological studies also challenge these traditional assumptions of an empire-wide decline in the third century. For Horden and Purcell abatement rather crisis is normal in the Mediterranean and abatement does not equal crisis[160] This is a point further examined by Lewit[161] who argues that the traditional concept of decline of settlement in the third century is a fallacy of archaeology; and in contrast to Sperber's[162] assessment of literary sources, Bar's[163] work on the archaeology of third century Palestine suggests that there was no decline in society or settlement, but actually a growth in population, settlement, and a certain prosperity as the cultivation of new areas increased. This is a point borne out by studies of North African pottery distribution and oil manufacture during the third century centred on the African I, IIA – IID and Dressel 23 amphora types[164]. Studies of the distribution of these amphorae all show the growth of pottery, oil, grain and wine production during the third century[165] at the expense of traditional producers like Spain[166]. Bonifay notes

[159] Horden and Purcell (2000, p.103); Swain (2004, p.4). It is an area of "wide horizons and mobility of peoples, and shifting contours of micro regions". Indeed such dramatic differences can be found inside provinces themselves from a macro level, to the micro level of individual environmental niches on farms, see Horden and Purcell (2000, p.103).
[160] Horden and Purcell (2000, p.266).
[161] Lewit (1991, p.51-54).
[162] Sperber (1972, p.233).
[163] Bar (2002, p.43).
[164] Bonifay (2004, p.88, fig. 1).
[165] The literature is diverse and extensive but a sample of some more recent studies might be: Bes and Poblome (2009, p.73 - 92) on the industries of Proconsularis and Byzacium; Bonifay (2007) and Bonifay (2004, p.8 – 25) for the classic studies of North African amphora and pottery types, with subsequent studies on the contents of the amphoras; See Carandini (1983, p.145 – 162) on the growth of North African pottery; Carr (2009, p.105 – 126) on local production in Tunisia; Fulford (2009, p. 9 - 12) on pottery, amphora, lamps and tableware, Kehoe (1988b, p.5 – 59, 63 – 86, 208 - 219) on the development of North African coloni and the *annona*; Peña (1998, p.155 – 161, 165 – 186) on the distribution and export of oil *annona* at Carthage; Mackensen (2009, p.16 – 44) on the organisation of African Red Slip Ware production centres; Rickman (1980, p.261 – 275) on the grain trade more generally; Rossiter (2009, p.93 – 104) on North African Lamps; Sirks (2007, p.173 – 178) on the means of transport and the safeguards on the *annona* shipments; and Stone (2009, p.105 – 126) on the distribution amphora stamps.
[166] It is worth noting that Lewit (1991, p.51) suggests the evidence for the decline of Baetican Dressel 20 at Monte Testaccio at Ostia around A.D. 250 need not be associated with a decline of Spanish exports but by the rise of Portus, not Ostia, as the main port for Rome in the third century.

that the decline of Spanish amphora in the baths of Ostia is associated with their direct replacement by African amphoras as African olive oil replaces Spanish olive oil in the 3rd century A.D.[167] Indeed Bonifay's[168] work on North African pottery has demonstrated the vitality and growth of exports of oil, wine, and fish – as well as domestic pottery in the third century[169].

Spain moreover sees the importation of African Red Slip Ware (ARS 50) from A.D. 230/40 and widely distributed in the 2nd half of the third century[170]. In Spain fish is now the main export to Rome (after the decline of oil industry) and in Italy, Duncan-Jones[171] notes that there is an increase of wine being imported into Italy after A.D. 250 while Renyolds[172] shows that wine is being shipped through Tarraco for local Spanish urban markets like Valencia as late as A.D. 270. Seen in these terms Hopkins' famous graph[173] showing a decline in shipping during the third century does not reflect the degree of local and regional trade[174].

[167] "dans la stratigraphie des thermes a' Ostia, l' augmentation du nombre des amphores africaines coincideit avec un diminution de la proportion des amphores hispaniques Dressel 20 et paraissent demontrer le rempacement au IIIe. s. des importations d'huile de Betique par les importationes d'huile africaine", Bonifay (2007, p.9). "From the stratigraphy of the baths at Ostia an increase in the number of African amphoras coincides with the decline in the proportion of Spanish Dressel 20 amphoras, and especially demonstrates the replacement from the 3rd century A.D. of the import of Betican oil with the imported African olive oil" (author's translation).

[168] Bonifay (2007, p.16 - 19).

[169] The increase in African exports has been noted by other scholars. Bes and Poblome (2009, p.74) note that during the 3rd century A.D. African tableware is traded extensively in the Eastern Mediterranean, and in the Mediterranean the distribution of amphoras stamps from Leptiminus, Hadrumetum and Sullecthum ranges from Rome and Ostia, the south coast of France, Spain and Volubilis in modern Morocco, to Gaza and Beirut, see Stone (2009, p.135 – 140).

[170] See Renyolds (2005, p.375). Valencia in particular only begins to import Tunisian amphora from the mid. 3rd century and it is present in quantity in Lyon between A.D. 250 – 300, see Renyolds (2005, p.375) and between the 3rd and 5th century Ampurias (Emporia), a site that was traditionally assumed to decline in the 3rd century is actually a centre for the importation of luxury goods and settlement focused on the pre-Roman town, see Kulikwolski (2005, p.98).

[171] Duncan-Jones (2004, p.31).

[172] Renyolds (2005, p.382, 389).

[173] Hopkins (1980, p.106).

[174] Hopkins' graph actually shows that shipping is already in decline from the ascension of Augustus. Based on this the golden years shipping would of those of tumultuous years of civil war marking the final century of the Republic, and by the Principate shipping was already in decline. Moreover if the civil-strife of the final republican years were associated with a "peak" in trade, then why should the civil-strife of the third century be associated with its decline? Clearly something is wrong either with the "golden age" of expansion, or the primary data.

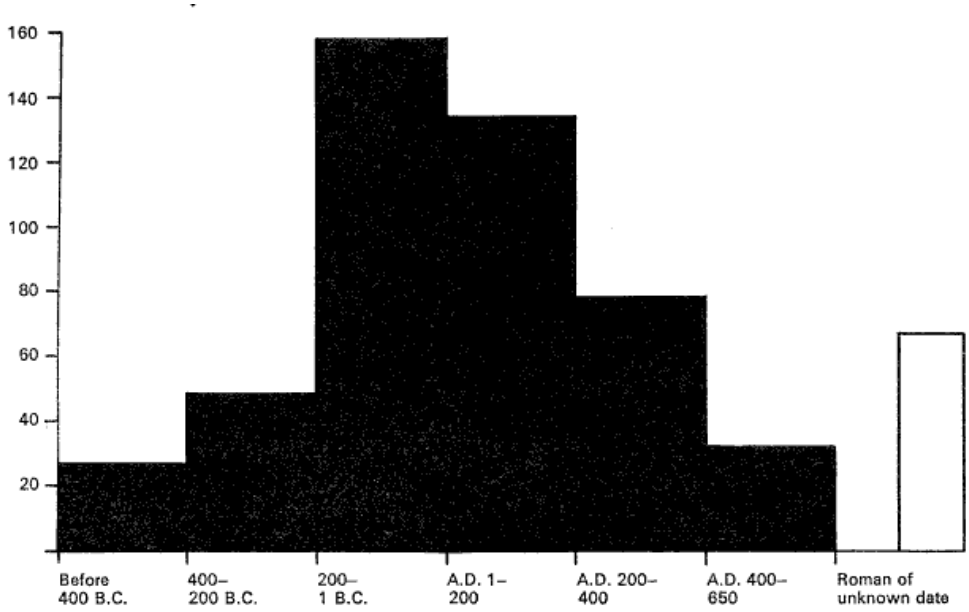


**Figure 1 Graph of Roman shipwrecks. Data from Hopkins (1980, p.106).**

Lewit's[175] recent study of 3rd century decline notes that Hopkins' primary data[176] is focused on ports (Southern Gaul, Bonifacio and the Tuscan Islands) and these are already in decline during the third century. Her analysis points out that wrecks focused on Asia Minor do not show decline in the third century. Indeed Lewit[177] argues that there is no drop in third century shipping until the fifth century A.D., while Horden and Purcell point out that trade continues even in periods of supposed decline[178]. Indeed during the so-called "crisis years" there is clear evidence of the local economies thriving. In Spain there is no A.R.S. during the early – mid. 3rd century but a thriving regional pottery industry making imitation sigillata developed[179]; while Leptiminus produced its own A.R.S. until sufficient supplies arrive in the mid 3rd century[180]. Moreover Horden and Purcell[181] also challenge the idea that the scale of trade can be properly assessed. They contend that trade is not only the movement of luxury items and argue that movement by trade is in little distinct from other redistributive strategies like piracy and opportunism. Small-scale cabotage trade can have a cumulative quantity that outweighs the individual elements, and a merchant-captain might be trader one day and a pirate the next.

[175] Lewit (1991).
[176] Hopkins (1980, p.106).
[177] Lewit (1991, p.54).
[178] See Horden and Purcell (2000, p.167).
[179] Renyolds (2005, p.403 – 4).
[180] See Carr (2009, p.107).
[181] See Horden and Purcell (2000, p.144, 156 – 8, 167).

Drinkwater by contrast sums up the military-political "crisis" by noting that the 3rd century military crisis was only focused on the years A.D. 240 – A.D. 270. In terms of civil war it seems only Philip the Arab fell fighting Roman troops – usually one of the rival generals was removed before any major confrontation, resulting in little Roman loss of life[182]. Political instability was limited to the top echelons of the senatorial and equestrian ranks – in contrast to which, the "civil service" of the empire continued to undertake the traditional tasks of government[183].

If the case for a crisis has been overstated what was the impact of the third century on the population of the empire? In actuality relatively few people of the Roman Empire were "directly" ruled by the Roman state – exceptions perhaps being soldiers and the *coloni* on Imperial estates who reported to state officials or commanders. For the majority of people the reality of provincial life was centred on a relationship: the *polis* or perhaps a *patron* for these were the key administrative and social structures that were important. The Roman Empire was above all hierarchical and a citizen of the empire defined himself or herself within a complex web of obligation and duty to others[184]. This hierarchical system is clearly reflected in the means by which the empire was administered. Administration was always devolved to a provincial level, to tribal elites and urban administrations that were loosely overseen by provincial governors and *procurators*[185]. This devolution process is clearly seen in the establishment of towns in tribal territories and their expansion during the second century, particularly in the regional economies of Britain and the frontier provinces[186], the development of curial bodies in Egypt[187], and urbanization in North Africa[188]. Such institutions continue to function throughout the third century providing for their citizens and maintaining the urban fabric. Kulikwolski[189] notes that the supposed cessation of public

[182] Drinkwater (2008, p.60-64).
[183] Mennen (2007, p.112 - 199).
[184] Even the emperor is bound by ties of duty to others.
[185] The role of *procurators* in the 3rd century has been considered by Lo Cascio (2008b, p.145; 2008c, p.166); and their role has been extensively studied by Kehoe (1988, p.61 -69) on the Imperial Estates of North Africa and the relationship between *coloni* and *conductores* with reference to property rights. See also De Vos (2013, p.185) for a similar summary on the control of *procurators* on Imperial Estates.
[186] Katsari (2008, p.262 - 273).
[187] Bowman (2008c, p.318).
[188] Kehoe (1988, p.206-210).
[189] See Kulikwolski (2004, p.94). He also reminds us that the decline of public inscription – against which the building rate is measured – does not automatically point to a crisis in the curial system. Inscriptions are made on materials other than stone, and more importantly the rate of inscription cessation is different in different parts of Spain. He points out that those cities that have the earliest contact with Rome lose their inscriptional traditions at an earlier period than those cities that have a later contact with Rome, see Kulikwolski (2004, p.37). Clearly the

buildings in Spain is not in fact a total cessation and although much reduced, new building work does occur – citing Cordova as one example where a new temple is built and maintained[190]. The work by Lepelley[191] also demonstrates continued building in Africa, particularly with the more settled conditions after the accession Diocletian in A.D. 284[192].

Towns therefore remained at the heart of imperial and local administration, and their vitality within the provinces was the means by which the Empire was able to weather the crisis of the third century. Even in the most difficult years of the third century towns remained the places where the governors could dispense justice, promulgate imperial edicts, disburse payments, receive taxes, and for wealthy to maintain a presence amongst the baths, theatres, temples, and markets[193]. This is a system that is maintained from the 1st to the 3rd century during which "regional economies" firstly of Gaul, then Spain, and finally Africa developed - necessitating increasing monetarisation of the provinces to facilitate that urban development[194]. As Drinkwater[195] notes that despite the challenges facing the Roman Empire in the 3rd century it was far from collapsing.

In order therefore to understand the how wages responded to the challenges of the 3rd century A.D. it will be necessary to understand how the 3rd century A.D. affected Egypt, and a brief outline of the 3rd century difficulties will be given with reference to Egypt in the next chapter.

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importance and social role of inscriptions changes during the third century but that does not mean that *curial* bodies face a crisis.

[190] He also points out that by the 3rd century most major cities in Spain had their complement of baths and monumental buildings, and that those that are important like amphitheatres and circuses are maintained, see Kulikwolski (2004, p.94 - 95). The evidence of Egypt too, suggests that public money was being spent on the maintenance and repair of buildings, for example the baths, see papyri CPH 82 (dating to A.D. 266), CPH 127/SPP XX 63 (dating to A.D. 267); and P. Oxy. 196 (dating to A.D. 283) in Johnson (1936, p.700 – 703).

[191] Lepelley (1979).

[192] For the date of Diocletian see Rees (2004, p.81).

[193] Kulikwolski (2005, p.39).

[194] Harris (2008a, p.262-3); Kehoe (1988, p.206-210); Katsari (2008, p.262 - 273).

[195] See Drinkwater (2008, p.62): "...the Roman empire neither collapsed nor, even after the disasters of 251 and 260, came anywhere near to collapsing."

## Chapter 4. Egypt in the 3rd Century A.D.

The extensive corpus of documentary evidence from Egypt has allowed the detailed study of many facets of ancient life. The degree, however, to which Roman Egypt experienced the troubles of the late 3rd century is harder to assess. It would seem from the papyrological evidence that there were certainly concerns about the currency during the 3rd century[196] and indeed this was a time of debasement and currency change[197].

In the empire outside Egypt the silver content of the principal coin (the antoninianus) fell from 75% pure (3.65g of silver) on the death of Caracalla (A.D 217), to c.1 – 2% pure (c.0.1g of silver) in A.D. 270[198] under the early years of Aurelian's rule[199]. This decline is mirrored in the silver coin of Egypt, the Alexandrian tetradrachm. During the 3rd century A.D. this fell in silver content from c. 0.99g of silver under Commodus (A.D. 180 – 192) to c.0.2g of silver per coin in under Claudius II (A.D. 268-9) and continued at that level for the early years of Aurelian's reign between A.D. 270 – c.274, as seen in Figure 2, p.50.

[196] Rathbone (1996, p.336) and Christiansen (1984, p.297 – 298) both suggest that this is indicative of concerns with the currency. There are six references to payment in "old coins" and 13 references to payments in "new" coins. See footnote 88, p.29.

[197] Those that can be dated seem to cluster around significant changes to the currency: those dating to the reign of Gallienus cluster around the significant debasement of the tetradrachm. This might explain the references around A.D. 266 when the tetradrachm was debased to c.0.4 grams of silver per coin (from A.D. 264/5) to c.0.2 grams of silver per coin (A.D. 266). See Cope *et al.* (1997, p.12). The introduction of new coins might explain the references in c. A.D. 266. The references to the late A.D. 270s reflect the new currency of Aurelian that replaced the previous (debased) tetradrachms. No doubt older coins were called in and demonetarized, see Rathbone (1996, p.328 – 329). This would explain why "new" coins were needed. Those clustering around A.D. 286 probably reflect some change or uncertainty that is not clear from our sources, and finally those from A.D. 293 – 295 date to the cessation of the tetradrachm in Egypt, the introduction of the nummus, and rebellion of Domitianus.

[198] Almost every academic study of the 3rd century crisis repeats or reviews the currency debasement. The process of debasement has been exhaustively treated by many scholars. A selection of relevant summaries and studies of that process of debasement is given in footnote 6, p.16.

[199] Cope *et al.* (1997, p.149 – 150).

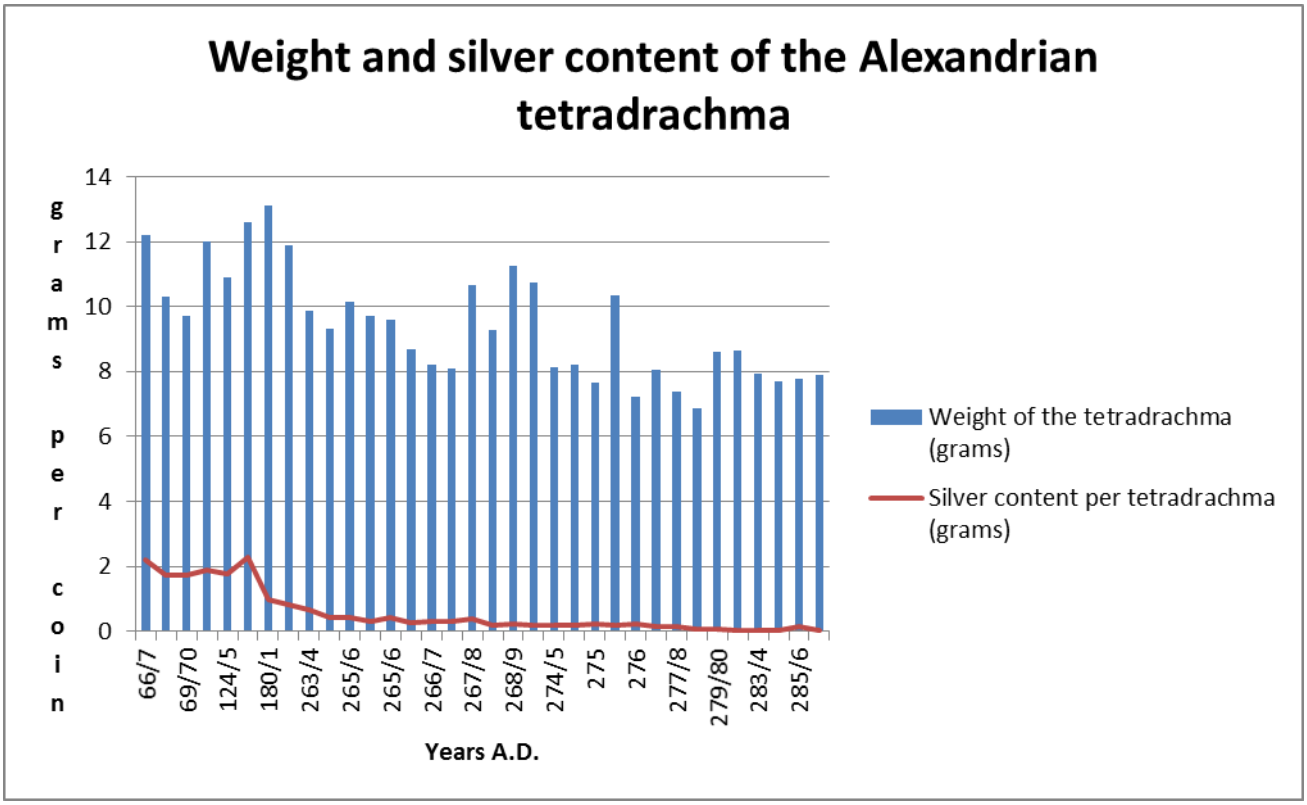


**Figure 2 Silver content and weight of the Egyptian tetradrachm (A.D. 64 – A.D. 270), data from Appendix 2: The British Museum tetradrachma analysis of Cope, p.224**

This debasement of the tetradrachm (as shown in Figure 2, above) occurred in stages[200] and although the reasons are not fully clear, it did so perhaps to match the decline of the silver content of the antoninianus with which it had a proportional silver relationship.

The province of Egypt was certainly not spared invasion and rebellion during the 3rd century A.D. For example, in the late A.D. 260s it was conquered by the Palmyrans and subsequently reconquered by Aurelian in A.D. 272. It is sometimes suggested that during this period Egypt was perhaps part of a revolt led by a merchant called Firmus[201] though this is by no means certain since the evidence for Firmus and his revolt relies on the unreliable history

[200] In A.D. 64 the silver content of the tetradrachm was c.2.21 grams of silver. The silver content dropped under Vespasian to around 1.7 grams but thereafter remained roughly stable until it was debased to c.1 gram of silver in under Marcus Aurelius in A.D. 176/7 (with a weight of 13.12 grams), to c.0.87 grams of silver under Severus Alexander in A.D. 224 – 5; to c.0.82 grams under Maximinus in A.D. 237 – 8; to 0.67 grams under Gallienus in A.D. 263-4; to c.0.43 grams in A.D. 265 (also under Gallienus) and c.0.30 grams in A.D. 267-8 (again under Gallienus). Finally the silver content dropped to c.0.2 grams of silver per coin under Claudius II (A.D.268-9), and even less in some coins. Thereafter the currency was reformed in A.D. 275 by Aurelian and again in the A.D. 280s by Probus. It was finally abandoned by Diocletian in A.D. 294 – 6 who introduced a new silver currency to the empire (the nummus). See Lendon (1990, p.109) for the chemical analysis of the Egyptian tetradrachm of Severus Alexander, Gordian III and Decius. The data for the debasement of the tetradrachm are given in Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.

[201] Bowman (2008d, p.315).

of the period, the *Scriptores Historia Augustae*[202]. Rebellions certainly occurred in the late 3rd century - a rebellion in A.D. 293/4 in the Thebaid[203] that required the presence of Galerius; and the more widespread rebellion of Domitius Domitianus in A.D. 297/8 which necessitated the intervention of the emperor Diocletian himself and led to the reorganization of the southern frontier[204].

There are other hints of possible problems in Egypt during the 3rd century A.D.[205] There is some evidence that reform of taxation, liturgies and landholdings might have become necessary in the A.D. 240s since there is papyri evidence of reforms to these areas under the rule of Philip Arabicus and his son, in the early A.D. 240s[206]. Whilst this might be considered as evidence of difficulties within the administration of the province (perhaps with the "*annona*") it is not necessarily evidence of a crisis in urban or provincial life itself. In A.D. 250 there was an empire-wide persecution of Christians and also presence of plague in the province[207]. Possible disturbances to the province are hinted at by the absence of census records in A.D. 257 – 258, and in A.D. 260 – 261 there was an unsuccessful revolt by the "Prefect" of the province (Aemilianus) against Gallienus. The years A.D. 269 – 274 saw the invasion and conquest of Egypt by Palmyran forces under Zenobia[208] and there is a collection of documents dating to these years for individuals in Oxyrhynchus who are claiming the corn-dole for compulsory duties undertaken at the instruction of the administration[209]. Finally there was a further revolt by a certain Domitianus against Diocletian c. A.D. 297-298[210] which may have been associated with the introduction of the nummus currency that occurred at the same time. While it is certain that parts Egypt experienced the presence of plague in

[202] Closer analysis suggests that this revolt is a fiction and that the evidence for that individual leading a revolt in Egypt is lacking. There definitely was a "corrector" called Firmus in Egypt during A.D. 274 but that there is also a tradition of a rebellion by "Firmus" is indicative of a confused situation, and of confusion in the sources Bowman (2008d, p.315).
[203] The part of Egypt centered on Thebes and Coptos, and its link to the Red Sea port of Myos Hormos.
[204] Geissen (2012, p.557).
[205] See Bowman (1976 p.158 – 160) whose assessment remains a useful overview, particularly his analysis of the mysterious (and in his opinion) unlikely revolt in the mid. 3rd century by Firmus.
[206] Bowman (2008d, p.318); Parsons (1967, p.134 – 141).
[207] The scale of the 3rd century A.D. plague is hard to assess. For an assessment see Bagnall (2000, p.288 – 292; 2002 p.114 – 120). It seems that there was a significant outbreak in Alexandria but unfortunately the accounts of the 3rd century are heavily moralistic and regard it as "divine judgement", see Corcoran (2006, p.35 – 49). Van Minnen (2007, p.207 – 225) sees the 3rd century plague as key reason why Egyptian cities of the 3rd century lost the financial resources to survive the inflation of A.D. 274/5.
[208] It is interesting that the papyrus (P. Oxy. XLIII, 3115) in A.D. 271 preserves an order to supply the Palmyran forces with fodder.
[209] Rea (1972, p.30 – 83). It is possible that the 4,000 citizens in receipt of the public corn-dole in the late 260s are associated with the short-lived Palmyran occupation during the last years of Gallienus, but it is a reward for an already privileged class, see Bowman (1976, p.170).
[210] The rebellion had been variously dated to A.D. 296-7 and A.D. 297-8 but according to Geissen (2012, p.557) papyrological evidence now dates the rebellion to A.D. 297 – 8. See Sutherland (1961 p.94 – 97).

the 3rd century A.D. the extent of that plague, and how quickly the population recovered are not clear (see footnote 207, p.51)[211]. Finally the complexities and models for the plague are considered by both Harris[212] and Yan Zelener[213]. Rathbone[214] suggests that in Egypt during the 3rd century there is a greater differentiation between rich and poor. In his assessment the purchase of land becomes increasingly restricted during the 3rd century leading, as he argues, to the faltering of the urban economy because private land is increasingly purchased by larger estates that dominate the land-holdings[215]. However it must be pointed out that there is no direct evidence for a "faltering" of the cities. Erdkamp in particular notes that the decline in the 3rd century urban life is a feature of the western provinces rather than the eastern ones[216], and that the eastern cities continued to practice activities like statue dedications for longer, reusing and redistributing existing marble supplies[217].

The evidence from contracts and leases also suggest that there continued to be a strong labour market at the end of the 3rd century A.D., since Bagnall notes that leases continue to be agreed for short terms, even at the end of the 3rd century[218]. The continued presence of short term leases, at the end of the 3rd century A.D. suggests that there was a strong labour market. In fact the only noticeable change to leasing during the 3rd century A.D. is a lack of urban investment by the elites in the more distant parts of the Fayum[219]. This is a point echoed by Rowlandson who notes the only clear difference between the early 3rd century A.D. and the end of the 3rd century A.D., is that there is an increase in the number of

[211] The 3rd century plague might possibly have been related to the Antonine plague of the 2nd century which is better attested, and perhaps caused depopulation in Egypt during the 2nd century A.D. that resulted in the doubling of prices, see Howgego *et al.* (2013, p.26); Kehoe (2012, p.114). Bruun (2003, p.426 – 434) however argues that the Antonine plague was less severe since building rates were not affected, see also Bruun (2007 p.124; 2012, p.123 – 164). Van Minnen (2001, p.175 - 177) argues that the Antonine plague caused the debasement of the currency in Egypt since there were fewer tax-payers, and that prices rose accordingly. A thorough treatment of the plague is given in Lo Cascio (2012), with particular consideration of the papyrological evidence by Andorlini (2012, p.15-28). The impact on recruitment is considered in Jones (2012, p.70-85); the effect of war, climate and food shortages on the scale of the plague is considered in Rossignol (2012, p.87 – 122). Jongman (2007, p.253 – 263), Scheidel and Sutherland (2012, p.265 – 296) also consider the plague and economic development.
[212] Harris (2012, p.331-338).
[213] Yan Zelener (2012, p.167 – 178).
[214] Rathbone (2002, p.714).
[215] Rathbone (2005, p.714).
[216] Erdkamp (2012, p.262). See Hekster and Zair (2008, p.35 – 36) who suggest a more nuanced picture of rising living standards in Africa but areas of the empire in decline.
[217] From either Arsinoe or Oxyrhynchus we have clear evidence of reuse and redistribution in the town. Papyrus P. Lond III 755 contains a survey of columns in disused buildings that will be reused. These are fully described by Papaconstantinou (2012, p.215 – 231).
[218] Bagnall (1985 p.306 – 307).
[219] Bagnall (1985 p.306 – 307).

urban-citizens leasing land, rather than villagers[220]. The reason for this change is unclear but it is possible that tenant-labour on the estates offered some security of income for urban dwellers at a time of economic uncertainty.

Interestingly, despite the presence of two usurpations, plague, and occupation by the forces of Palmyra, the papyri evidence from the province of Egypt would seem to suggest that provincial government in the 3rd century A.D. was still remarkably stable. The military and political crisis that affected the many of the other provinces seem to have left surprising little mark on the archaeological record and in the papyrological evidence – indeed the documentary evidence and archaeological evidence all indicate that the prosperity of the 2nd century A.D. continued into the 3rd, and that the economic life of the province seems largely untouched by these events[221]. The local town senates continued to meet, petitions are sent to magistrates, cities are maintained, liturgies are allocated and argued over, taxes are collected, rents are paid, and leases continued to be written and registered. Although sharecropping and payments in produce are recorded during this period, they are also recorded in earlier periods of Roman Egypt; and more significantly money and monetary transactions also continue to be recorded. Since accounts, loans and receipts continue to describe monetary transactions, money clearly continues to be the primary means of transaction in the 3rd century A.D.

[220] Rowlandson (1992, p.498; 1996, p.256). She also argues that leases are more uniform and less personal, indicating that landlords are increasingly distant from the estates, see Rowlandson (1992, p.499).

[221] Papyri (P. Oxy. XX, 2285) in A.D. 269 (during the Palmyran occupation) preserves wages paid to a bricklayer. Papyrus P. Oxy. XX, 2269 in A.D 269 is a fragment of an auction from Alexandria (with costs listed in sestercii); papyrus (P. Oxy. VII, 1036) in A.D. 273 concerns the lease of a house for two years; papyrus (P. Oxy. XII, 1455) from A.D. 275 concerns action taken by the city against an oil-seller who was making private sales of oil. He has been required to make a declaration to sell oil only in the market. The very normality of these papyri suggests stability rather than crisis.

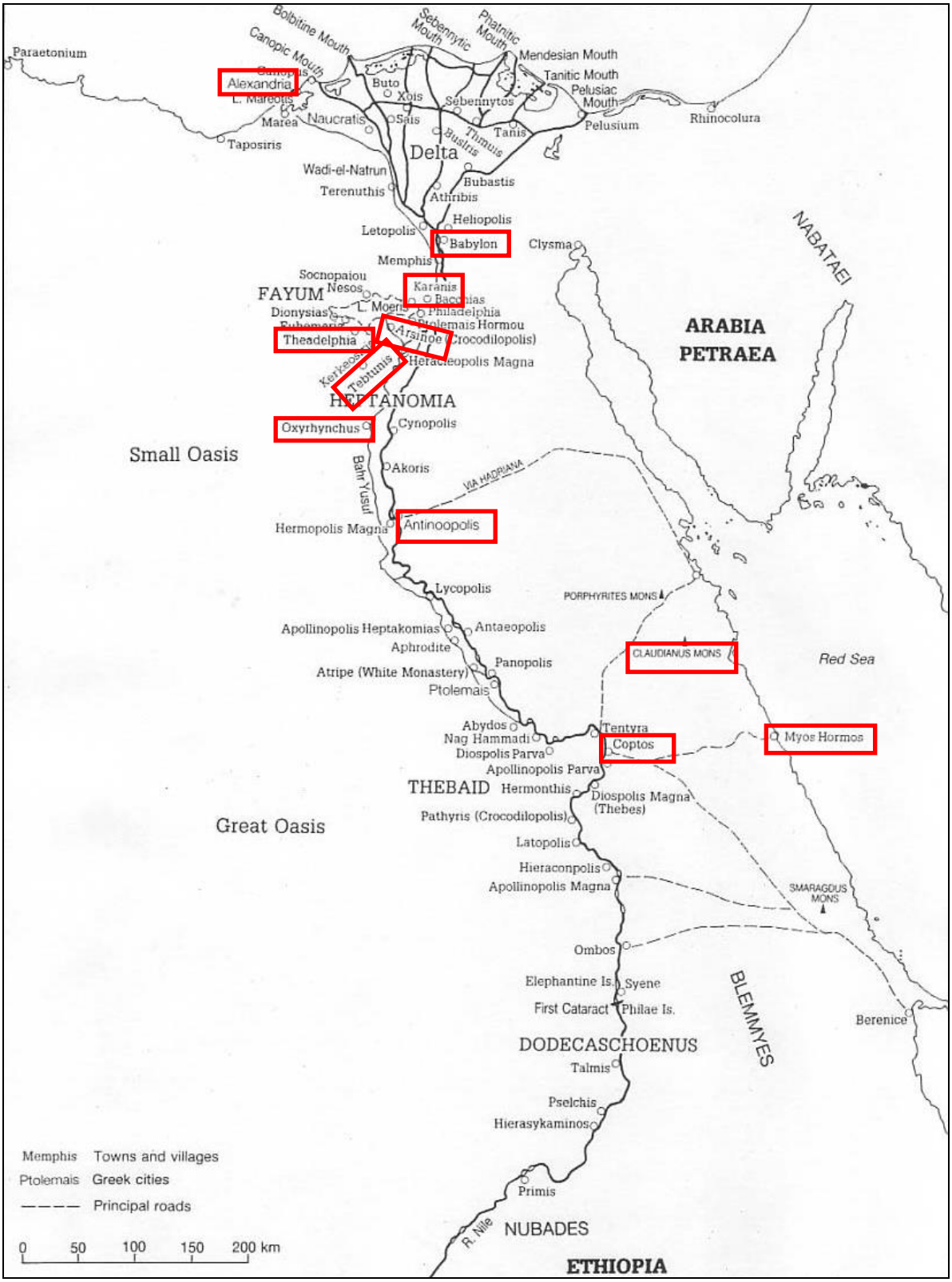


**Figure 3 Roman Egypt: showing the principal settlements from the 1st – 3rd centuries A.D.; towns mentioned in this research highlighted**[222]

[222] Hosted as: http://condor.depaul.edu/sbucking/extra/postphmap.jpg [Accessed 27/05/2014].

During the 3rd century A.D. the Roman administration continued to develop the provincial government of Egypt and the Severan policy of fostering *boulai* (self-governing local councils) was extended to the larger cities of the province[223]. On to these cities were devolved some of the duties of the central administration and the cities themselves became responsible for the collection of taxes within their *nomes* (districts)[224]. For the majority of the 3rd century these councils were led by a president (*prytanis*).

The reforms of Diocletian in A.D. 286 saw the appointment of the *rationalis* (*katholikos*) as the head of the financial administration and the activities of both a *magister rei privatae* and the *procuratores rei privatae* who probably replaced the *idios logos*[225] administering Roman law, confiscations, property, the legal status of different citizen groups and inheritance matters[226]. Other officers were also introduced: principally the *logistes* (finance officer or the former *curator civitatis*, the *syndikos* (legal officer), *exactor* or *strategos exactor* (tax officer). These officers now had responsibility for matters in the entire district and not simply the city[227]. The reforms in Egypt are of course part of the wider reforms of Diocletian which included the taxation system of the Roman Empire. This reform to the taxation-system was based on a personal tax liability and a land liability: the *capitation* and *iugatio* respectively[228].

Egypt was also a monetarized, densely populated province[229], and according to Monson with a population that grew under the early Roman Empire[230]. The importance of the

[223] Bowman (2008d, p.318); Carrie' (2008, p.271 – 273). Bowman (1976, p.161) suggests that Egypt might have been divided into four *epistrategiae* (regions) rather than three, and eleven *nomes* (districts) but Van Minnen (2007, p.210 – 211) suggests that there were as many as forty metropoleis which were each the capitol of their own *nomes*.
[224] Rowlandson (1996, p.8 – 18).
[225] The *idios logos* had been a position since the reign of Augustus, see Rathbone (1993, p.99 – 111); Bowman and Rathbone (1992, p.113).
[226] See Bowman (1996, p.696). For changes to the administrative systems in 3rd century Egypt: Bowman (2008d, p.321); Frakes (2001, p.68); Lloyd (2010, p.251).
[227] See Bowman (2008d, p.321); Frakes (2001, p.68); Lloyd (2010, p.251); Parsons (2012, p.56 – 57); Van Minnen (2007, p.207).
[228] Bowman (2008d, p.321). The exact nature of these reforms is disputed and has been the subject of much scholarship. Although they are standard "units" of measurement the nature of the measurement, and to whom it applied, seems to have varied in different regions. A sample of the scholarship might be Bowman (2008a p.38 – 40) for a general overview; See Boek (2008, p.46 – 63, 66) for a thorough discussion of taxation; Carrie' (2008, p.277 – 281) on developments in administration during the late 3rd century under Diocletian; Corbier (2008a p.360 – 271) for a general discussion on taxation; Deleage (1975, p.254 – 259) for an "older" but thorough discussion; also Goffart (1974, p.33 – 37) for detailed analysis of taxation under Diocletian, and Jones (1964, p.27) for a standard outline of Diocletian's reforms, see also Jones (1957, p.280 – 292).
[229] Monson (2007, p.11) suggests that the degree of urbanization was unmatched until 19th or 20th century Egypt

"gymnastic" class continued to be attractive and the papyri list payments made for membership at traditional rates until A.D. 297[231], since the "gymnastic" class was associated with the "elites" and carried preferential tax-rates.

Given that the poll-tax needed to be paid in silver through-out the study period, monetary wages should have remained important. The poll-tax, the *laographia* was a Roman introduction to Egypt[232] but it needed to be paid in cash. The rate varied. It was 16 drachmas per year in some areas, and in Arsinoite it was 40 drachmas per person based on the surviving poll tax rolls of Karanis in A.D. 171[233]. The *laographia* should not be confused for the "poll-tax" the 3rd century, the ἐπικεφαλίων (epikephalion) which was also a cash payment[234]. Bowman[235] states that the ἐπικεφαλίων is a new Diocletianic tax of the A.D. 290s although it is clear that there was a four-drachmas tax of the same name in the early – mid. 3rd century A.D. If it was the same tax then it suddenly increased to 1,200 drachmas under Diocletian[236]. The need to pay these taxes in cash underscores the need to maintain a monetary economy rather than a barter economy. Indeed evidence that money remained important despite the debasement of the currency is seen in the papyri evidence. The important Capitoline Games were held at Oxyrhynchus in A.D. 273/4 and their winning *pancraticist* was asking the Council for monetary pension in A.D. 289 (papyrus P. Oxy. XXVII, 2477)[237]. Further

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[230] See a recent estimate of 1.5 million in Wilson (2011, p.185-187); see also Monson (2007, p.11); and Van Minnen (2007, p.209).

[231] The cost of membership for a child to be admitted to the "gymnastic class" was 12 drachmas in A.D. 209 and 254 (Papyri P. Oxy. X.1267 and LXXIV, 4994); 12 drachmas in A.D. 273 (Papyri P.Ups Frid. 612); 12 drachmas in A.D. 285 in (Papyri P. Oxy. XLVI, 3295); 12 drachmas in A.D. 287 (Papyri PSI 3.164). It was still 12 drachmas in A.D. 291 (Papyri P. Oxy. XXXVIII, 2855), and 12 drachmas in A.D. 297 (P. Oxy. LXV, 4489). Thereafter the surviving evidence for applications seems to cease. It is not clear whether 12 drachmas was paid throughout the study period, or it was simply they became the title of the tax and a different amount was paid. See Bowman (2008d, p.323) for the Gymnastic class and also Yiftach-Firanko (2010, p.45 – 65) for a study of the gymnastic class generally, as well as Bowman and Rathbone (1992, p.121 – 122).

[232] See Capponi (2011, p.18 – 21).

[233] See Alston (2002, p.229, n.20); Bowman and Rathbone (1992, p.112 – 133); Youtie (1977, p.141 – 144). For an introduction to the ostraka receipts from Thebes see Worp (1989, p.42 – 62) and for examples from the Fayum see Sijpesteijn (1991, p.25 – 42).

[234] See Evans (1957 p.262).

[235] Bowman (2008d, p.320).

[236] Introduced in A.D. 297/8 this was an urban-tax in cash known only at this time from Oxyrhynchus, and unrelated to individual wealth, see Corbier (2008a, p.379). Thus it is not clear how they are related but the 3rd century ἐπικεφαλίων is as follows: A.D. 239, Thebes, four drachmas (O.Ashm.49); A.D. 241, Thebes, four drachmas (O.Bodl.2.436); A.D. 255, Thebes, four drachmas; A.D. 296 - 7, Oxyrhynchus, 1,200 drachmas (P.Oxy. XXXIV, 2717); A.D. 298, Oxyrhynchus, 2,400 drachmas for two payees. (P.Oxy XXXI, 2578); A.D. 298, Oxyrhynchus, 1,200 drachmas (P.Oxy. XLII, 3036 - P.Oxy. XLII, 3040); A.D. 299, Oxyrhynchus, 1,200 drachmas (P.Oxy. XLII, 3041 and P.Oxy. LXV, 4490, and SB.22, 15701); A.D. 301, Oxyrhynchus, 1,200 drachmas (P.Oxy. XLIII, 3142); A.D. 301/2, Oxyrhynchus, 1,200 drachmas (P.Oxy. XXXIV, 2716 and PSI.3.163); A.D. 303 – 304, Oxyrhynchus, 2,400 drachmas for two men (P.Oxy.Hels. 28).

[237] And also CPH 55 from Hermopolis dating to A.D. 266 that specifies the payment of a stipend for victories in two sets of games at 180 drachmas a month. See also CPH 70 dating to A.D. 267 from Hermopolis in which an

evidence of the continued importance of monetary payments is also see in the monetary payments for entry into Guilds in the late 3rd century, for example, papyrus P. Oxy. XXVII, 2476 dating to A.D. 288 – 9 records the cost of 850 drachmas to become a "High Priest" of an actors' guild[238]. Property continues to be exchanged, loans are made, building programmes and repairs to the cityscape and public buildings are maintained[239]. The range and variety of monetary payments at the end of the 3rd century A.D. clearly point to the continuity of the urban monetary economy[240] in a period of supposed inflation[241].

The overall evidence from the papyri however would seem to be one of continuous urban and economic activity during the 3rd century. This is also demonstrated, for example, by the fact that contracts can be registered at banks rather than just the authorities[242]. The fact that the authorities accepted contracts registered at banks indicates the confidence in the urban economy, stability of the financial structures of the 3rd century, and the multiplicity of economic behaviour. The range of monetary contracts agreed include loans, monetary wages, food or agricultural payments and (in certain cases like those of day wages) daily wages supplemented by equivalences of food[243]. This demonstrates the stability of the economy in the 3rd century and that urbanism, markets, and monetarisation are interrelated in Egypt and its administrative establishment (for a discussion of contracts, see footnote 308, p.70).

Despite the debasements of the 3rd century monetary payments seem to have retained their importance because contracts continue to be made for monetary wages throughout the

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Olympic victor demands a pension for his victory that totals 2,000 drachmas in silver, or 200 drachmas per month. Also see papyrus P. Oxy. XLIII 3116, dating to A.D. 275-6 where a victorious athlete from Oxyrhynchus is petitioning the senate of that city for immunities from taxation. See also footnote 494, p.100.

[238] A certain Hatres is recorded as having made a payment of 850 drachmas to become "High Priest of the Holy Artistic Worldwide Grand Society of Dionysiac Artists" in A.D. 288 – 9 (papyrus XXVII, 2476).

[239] See Rathbone (2005, p.705-6). The papyri from Hermopolis are examples of the investment being made in the urban fabric by the local councillors. In Antinoopolis, in A.D. 258, the city council voted the significant payment of 18 talents for the repair of the baths and 7 talents for the water supply and chaff (papyrus Archiv IV, 116). Ongoing (and fairly large) works to the baths and cityscape are recorded in Hermopolis in A.D. 266 (papyri CPH 67, 82, 83, 86 and 94; Wilcken Chr 194; CPH 127 / SPP XX, 68 from A.D 267). Further payments to the repair of the cityscape are voted to the "Kasiotic Joiners" in Oxyrhynchus in A.D. 283 (papyrus, P. Oxy. 196). These are usefully summarised in Johnson (1936, p.697 - 703).

[240] Howgego (1992, p.24) makes a similar point that coins are still used in crisis. See also Bowman (2008d, p.323).

[241] See footnote 5, p.16.

[242] Traditionally the department of the *idiologus* was responsible for contracts and their validity, see Johnson (1936, p.771). The duties of the *idiologus* are preserved in papyrus B.C.U. V.I. Papyrus P. Oxy. 238 clearly gives legal validity to contracts registered with the *idiologus*, while P. Oxy 34 V records that copies of the contracts needed to be sent from the *nomes* (districts) to the central record office at the library of Hadrian in Alexandria, see Johnson (1936, p.709, 710 and 771); Bowman (1976 p.161 – 162).

[243] Lo Cascio (2000, p.79).

3rd century; and where such contracts include a payment for subsistence payments for food, they are generally associated with labouring and low-status occupations[244]. Maintenance was ordinarily an allowance of food to slaves, workmen and soldiers of one *artaba* of wheat per month (one *artaba* was a month's worth). It is possible that labourers in vineyards received their maintenance in wine[245], while apprentices (both slave and free) might be given an allowance of clothing[246]. Wine was also issued to workmen and soldiers at one *ceramion* per month[247]. Oil was issued to workmen at a rate of one *cotyle* per month. Obviously the amount issued depended on the contract and employees on the 3rd century Heroninos estate seems to have been paid a wage, food wine and oil[248]. There is no indication that the amount of maintenance is increased at the expense of wages during the course of the 3rd century A.D.

Rathbone[249] makes the claim that taxes in Egypt were relatively "fair" because land and trade taxes seem to have been fixed at traditional levels[250]; while compulsory purchases were at fixed (but fair) prices. Even the corn-dole[251] continued to be distributed at Oxyrhynchus and the lists of recipients revised. Indeed the very "normality" of the arrangements: that names have been selected in a "draw", and in some cases the "draw" has been undertaken to the fill vacant "lots" of those who have died, do not suggest a city in crisis[252]. As a result it is far from clear to what extent the inhabitants of Roman Egypt would have perceived themselves living in a "crisis"[253].

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[244] Duncan-Jones (1974, p.11, n. 5) considers a basic wage for an urban slave in the 1st and 2nd centuries to have been 20 sestercii per month and five *artaba* of wheat. He argues that this equated to one-part payment in kind and 1 – 2 parts payment in cash since wheat sells at 2 – 4 sestercii in 1st and 2nd centuries. The basic wage in the Price Edict of Diocletian is 25 denarii communes per day, plus food and he further argues that in the Price Edict an unskilled labourer earned one-part payment in kind and 1 ½ - 3 parts in cash.

[245] On labourers in vineyards who received their maintenance in wine, see Johnson (1936, p.301).

[246] On apprentices (both slave and free) who were given an allowance of clothing, see Johnson (1936, p.301), and see also Section 6.5, p.96 - 97.

[247] The allowance of wine was issued to soldiers and workmen was the *ceramion.* The *ceramion* was the standard measure of liquid and corresponded to the *metretes* in which there were 12 choes, each of which was 12 *cotylae*). On weights and measures see Duncan-Jones (1976b, p.53-62; 1976c, p.43-5. Obviously 2); Bagnall (2011, p.1-7). For further discussion see footnote 392, p.83.

[248] Employees on the 3rd century Heroninos estate seems to have been paid a wage (below the daily rate), food wine and oil, see Johnson (1936, p.305). For a more modern analysis see Rathbone (1991) for a thorough analysis of the Heroninos Archive from the 3rd century Appianus estate.

[249] See Rathbone (2005, p.717) on "fair" taxes in Egypt, and also Rathbone (1993, p.81-112) for a general overview.

[250] The traditional land tax until A.D. 200 was a "mean" of 316 drachmas per aroura Monson (2007, p.13). A papyrus dating to A.D. 268 – 9 interesting records a rent of 375 drachmas in silver per aroura (papyrus P. Oxy. XIV, 1646).

[251] The corn-dole papyri seem to date from c. A.D. 269 – c. A.D. 272 in Rea (1972, p.30 – 83).

[252] Bowman (2008d, p.323) suggests 4,000 people in receipt of the dole but the papyrus P.Oxy. XL. 2908 notes that in c. A.D. 269 there are 900 *artaba*e available which suggests 900 recipients. See Rea (1972, p.61- 65). These 900 are those with a claim to the dole and the papyri record that individuals registering a claim because the their names have been selected in a "draw", and in some case the papyri mention that the "draw" has been

This research will therefore consider the papyrological evidence to determine the degree of continuity in terms of wages and prices, and to determine how far the changes to the currency, or the troubles of the 3rd century, affected the agreement of wages and prices. To do this the research period (A.D. 235 – 305) will be divided into three sub-periods which are A.D. 235 – A.D. 274/5; A.D. 275 – A.D. 299; and A.D. 299 – 301. The reasons for the divisions are that these periods correspond to changes in the currency. Between A.D. 235 – 274/5 the silver content of the Egyptian tetradrachm dramatically declined[254]. Between A.D. 274/5 and 299 there was a new tetradrachm minted by Aurelian and further debasement occurred to this new coin in c.A.D. 287/8[255] until it was replaced by another new coin, the nummus in A.D. 294 – 6, (though in Egypt this might not have been fully introduced until A.D. 299 due to the rebellion of Domitianus[256]). Finally between A.D. 299 and 305 the Edict of Maximum Prices was introduced in A.D. 301, then shortly abandoned and the face-value of the currency increased[257].

undertaken to the fill vacant "lots" of those who have died. See for example, P. Oxy. XL. 2892 – 2894 in Rea (1972, p.30 – 41). It is possible that there were more individuals in receipt of the dole since the papyri mention those who have performed a "liturgical" duty for the state are eligible for the dole, as are those of the Alexandrians and those of the Antinoites who perform a service for the city. See for example, P. Oxy. XL. 2904 – 2896, 2916 - 2917 in Rea (1972, p.54 – 65, 77 - 83).

[253] See Swain (2004, p.1 – 19) for a discussion of the perception of "crisis".

[254] Cope *et al.* (1997, p.12).

[255] Cope *et al.* (1997, p.12).

[256] Geissen (2012, p.557).

[257] Estiot (2012, p.548).

# Chapter 5. Factors Affecting Wage Stability (A.D. 235 – 274/5)

The following section will consider wage stability between A.D. 235 and 274/5. This is important because it is a period of time during which the silver content of the Egyptian tetradrachm declined from a coin that was c.0.87 grams of silver under Severus Alexander (A.D. 222 – 235)[258], to c.0.2 grams of silver per coin in A.D. 274[259]. Moreover it is also a period of time that is suggested to have been affected by inflation[260]. As a result the papyrological evidence of this period preserves a wide range of costs and wages, and this research has selected the evidence of ass-drivers, potters, and apprentices from which to examine the reaction of wages to currency changes between A.D. 235 and A.D. 274/5.

This chapter therefore explores the factors by which wages in 3rd century A.D. might remain stable despite the steep decline in the silver content of the tetradrachm, see Figure 2, p.50. To understand how wages reacted to the changes to the currency of the 3rd century Egypt it is necessary to outline the actual Roman-Egyptian currency of the 3rd century A.D., and the changes that occurred to that currency[261]. This includes the introduction of a new tetradrachm in A.D. 274/5 by the emperor Aurelian, a possible currency reform by Probus c. A.D. 279, and the replacement of the Alexandrian tetradrachm in c. 298/99 by the nummus coin minted by Diocletian.

## Section 5.1. Silver Currency during the 3rd Century in Egypt

The dominant denominations during the 1st – early 3rd centuries were the bronze drachma and silver tetradrachm. There were four bronze drachmas to each silver tetradrachm, and these tetradrachms equated to the denarius outside Egypt[262]. At the start of the 3rd century

[258] There are few silver analysis of tetradrachms from his reign. Lendon (1990, p.109) cites only one analysis of 0.87 grams but this is consistent with the figures of 0.99 grams for a coin of Commodus dating to (A.D. 180/1) and c.0.82 grams for a coin of Maximinius (A.D. 238 – 238) given by Cope in his analysis of Alexandrian tetradrachms, Cope *et al.* (1997, p.10 – 12). Duncan-Jones (1994b, p.234) also gives a figure of 0.85 grams for the tetradrachm of Commodus.
[259] Cope *et al.* (1997, p.12).
[260] See footnote 5 p.16.
[261] The tetradrachm also had a fixed value outside Egypt. Although Egypt was a closed currency-system (in which Egyptian tetradrachms only were allowed to circulate). Tetradrachms were exchanged in the port of Alexandria for denarii (by which the province met its tax-liabilities in silver). Although it had a lower silver content than the denarius from A.D. 42 Corbier (2008a, p.347) notes that one tetradrachm equaled one denarius and that one drachma equaled a one sestercius. See also Bagnall (2009, p.190); Christiansen (2004b, p.43 – 44); Howgego (1985, p.52); Geissen (2012, p.563); Rathbone (1996, p.325 – 326); Van Minnen (2008, p.226).
[262] On the parity between the denarius and the tetradrachm see footnote 261 (above).

there were also fractional pieces in circulation. These were obols[263] and chalchi[264]. The rates of exchange[265] between the various denominations are understood to be as follows[266]:

**Table 2 Rates of exchange between denominations in 3rd century A.D. Egypt. Data from Bagnall (2009, p.190); Corbier (2008a, p.338).**

| Denomination | tetradrachms[267] | bronze drachmas | obols | chalchi |
|---|---|---|---|---|
| silver tetradrachms | 1 | 4 | 24 | 192 |
| bronze drachmas | | 1 | 6 | 48 |
| bronze obols | | | 1 | 8 |

Rates of exchange in Egypt between these coins had remained stable since A.D. 42[268] but as the silver content of the tetradrachm declined it is argued that more silver tetradrachms would have been required to pay for items that could be purchased with fewer high quality silver tetradrachms[269]. Although Roman-Egypt started the 3rd century A.D. with the full set of currency denominations (outlined above, Table 2, p.61), the 3rd century saw a number of significant changes to its currency. Between A.D. 244 – 249 (under the reign of Philip the Arab) the fractional chalchi pieces ceased to be minted[270]; while from A.D. 250 the tetradrachm was increasingly debased so that the silver content of each coin fell from 0.88 grams of silver per coin in A.D. 250[271] to 0.2 grams of silver per coin by A.D. 274/5[272].

[263] There were six obols for each drachma, see Bagnall (2009, p.190); Corbier (2008a, p.338); Harl (1996a, p.120).
[264] See Corbier (2008a, p.338). There were eight chalkoi to each obol, see Bagnall (2009, p.190); Corbier (2008a, p.338); Harl (1996a, p.120).
[265] During the third century rates of exchange for obols to tetradrachm for tax payment became fixed. 28 obols were exchanged for one tetradrachm from A.D. 215. This is because a surcharge was added when converting obols to drachmas at one obol per drachma, and there were four drachmas to a tetradrachm requiring the conversion of four-sets of six obols, and therefore a four obol surcharge, see Howgego (1985, p.54). This explains the somewhat confusing situation where the calculation of a tax payment was six obols to the drachma but the surcharge meant that the payee paid seven obols to the drachma. The surcharge was also sometimes added in private transactions.
[266] See Harl (1996a, p.120).
[267] A "billon" coin is the name given to the silver-coins of the 3rd century in which the silver content has been so significantly reduced that it is only present in very small levels, see Corbier (2008a, p.342).
[268] See the discussion in Swan (2004, p.238) who argues that the ratio of 25 denarii to the aureus was still in use at the time of Cassius Dio.
[269] See Harl (1996a, p.142). This argument is also made by Katsari (2002, p.6 – 8) with regard to the debasement of the antoninianus.
[270] See Harl (1996a, p.142).
[271] See Lendon (1990, p.109).
[272] See Cope *et al.* (1997, p.12).

Indeed by A.D. 298/99 the traditional tetradrachm had been replaced with a completely new currency, the nummus[273].

## Section 5.2. The Currency Reforms of the 3rd Century A.D.

The reigns of Philip the Arab and his son (A.D. 244 – 249) saw the Roman government take an "active" interest in the management Egypt. A number of directives were issued and it seems that at this time there was some widespread reform of the province – probably in terms of taxation and assessments, though the actual extent of their reforms are far from clear[274]. It is perhaps significant that during their reign the fractional coin, the "chalchus" disappears from use perhaps as part of the wider reforms to the province[275]. Despite these reforms however, there was however no major debasement of the Alexandrian tetradrachm until the reign of Gallienus in A.D. 264/5.

The debasement of the Alexandrian tetradrachm in A.D. 264/5 saw a significant change in the silver content of the tetradrachm, and also in hording patterns. Prior to the debasement of Gallienus the hoard evidence seems to suggest that older tetradrachms circulated with the new tetradrachms[276] as these hoards are dominated by the large coin outputs of Nero[277], Trajan, Hadrian, Marcus Aurelius, and Commodus[278]. Since the coinages

[273] See Cope *et al.*, (1997 p.12); Carson (1990, p.237 – 238).
[274] See Bowman (2008d, p.315, 317-318); Parsons (1967, p.134 – 141).
[275] See Harl (1996a, p.142).
[276] The coins of Trajan and Hadrian were all minted to the same standard as Nero's issues and seem to have been used interchangeably with them, see Howgego *et al.* (2013, p.8- 10); Christiansen (2004a, p.102). There is certainly no reference to any differences between their usage in the papyrus and they co-exist with Neronian coins within the hoard evidence. The years of A.D. 125 – 126 during the reign of Hadrian saw a peak of production but the sudden increase in production is not associated with any other historical events. It suggests to that perhaps the issue was to replace or increase the number of tetradrachms that had last been minted in significant quantities under Nero some 60 years earlier. The reign of Hadrian also saw another major output of bronze, see Christiansen, (2005b p.280; 2005a p.839 – 842).
[277] This reign saw a significant output of currency, with a high output starting in A.D. 63 – 64 and peaking in A.D. 64 – 65, see Christiansen (2004a, p.93).
[278] During the reigns of Marcus Aurelius and Commodus the tetradrachm in Egypt was debased (A.D. 180 – 181), see Howgego *et al.* (2013, p.8 – 10, 12, 19 – 26); Rathbone (1997, p.187 – 188). This newer coin was thinner than its predecessors and from the sole reign of Commodus (A.D. 180 – 191) was produced in large numbers. Although these coins were minted to a lower standard of silver than those of Nero, Trajan and Hadrian they seem not (from our sources and the hoard evidence) to have circulated at any different rate from the older, better, tetradrachms. Like the coins of Nero, Trajan and Hadrian these debased coins seem to have been used at their face-value was perhaps because there was still significant quantities of bronze in circulation, see Christiansen (2004a, p.102, 108; 2005b, p.280). Since the issues of Marcus Aurelius (despite their lower silver content) were not being preferentially hoarded it means that they added to the total sum of currency in circulation. Christiansen (2005b, p.280) wonders if Commodus attempted to replace the previous currency, see also Howgego *et al.* (2013, p.19). If he did he was unsuccessful or his output of coins was too low to replace previous issues – in both cases it is possible that the limiting factor was the deathtoll of the plague, see Christiansen (2005b, p.280). It is also possible that Commodus did not have the silver for a total currency reform – perhaps because of population decline with the plague or rebellion, though Howgego *et al.* (2013, p.13,

of these emperors seem in the 3rd century A.D. to be circulating without preference for particular issues they will have added to the currency in circulation. The cumulative effect of their minting can be analysed in graphic form (see Figure 4 p.64) which shows that the massive outputs in the 1st century A.D. would add to the overall volume of money in circulation. It also shows that between the last major output of tetradrachms under Marcus Aurelius Commodus (c. A.D. 180-190), and the debasement of Gallienus in A.D. 266, the overall volume of tetradrachms began to decline, but the quantity of the 1st and 2nd century outputs meant that there were still large numbers of "good" tetradrachms circulating until A.D. 265[279].

Part of the reason that there were still significant numbers of "good" tetradrachms circulating until A.D. 265 is the low wastage rate of these coins. Duncan-Jones has suggested that the wastage rate for the tetradrachms of Nero is less than 1% of loss per year[280]. This figure is consistent with the hoard evidence that shows that all hoards ending between Hadrian and Marcus Aurelius were dominated by between 47.3% - 86.11% of Nero's tetradrachms[281], and applying a "mean" using a wastage rate of less than 1% we would therefore expect an average dominance of: 66.7%. Since Nero's tetradrachm was still the dominant coin circulating over 150 years after they were minted their wastage rate has to be significantly less than 1% per year of the coin-volume per year[282] and closer to a figure of 0.5%, or even 0.25% of per year, which would mean that the total coin-stock would take about 200 – 250 years to be lost. This is in line with Duncan-Jones' estimate (See footnote 280). Figure 4, (p.64) therefore follows Duncan-Jones' and applies a wastage rate of 1/250 for the loss of coin per year to a total output of Nero of 100%. The subsequent mint outputs

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26) suggest from differing chemical signatures that there is not an consistent procurement policy for silver to the provincial mints, unlike the mint at Rome.

[279] The output of Neronian tetradrachms continues to dominate hoards for over 100 years, and they are also in quantities of between 47.3% - 86.11% in all hoards ending between Hadrian and Marcus Aurelius, see Christiansen (2004a, p.98). This suggests that the wastage rate that is less the 1% per year. If wastage was 1% or more then unless they were being preferentially hoarded we would expect that they would all be lost or hoarded by A.D. 163 but this is not the case as they make 47.3 – 86.11% of all hoards between Hadrian and Marcus Aurelius, see Christiansen (2004a, p.90 – 95) while Harl notes that the bronze output of Nero continued to circulate for 150 years after his major output, see Harl (1996a, p.120). Duncan-Jones (1994b, p.205) suggests a wastage rate of 1/250 for antoniniani of empire and a larger figure for tetradrachms in Egypt. This means that it will take 250 years for the total coin-stock to be lost. Esty (2005, p.173 – 174) challenges general assumptions based on hoard evidence but the evidence of hoards seems unambiguous. If coins are not being preferentially hoarded (for which there is no evidence) and the loss rate were greater than 1% per year we would expect to see Neronian tetradrachms vanish within 100 years.

[280] Duncan-Jones (1994b, p.205) suggests a wastage rate of 1/250. This means that 100% of the mint output would be lost every 250 years, and he suggests that the rate for Egypt was even less than 1/250.

[281] See Christiansen (2004a, p.98).

[282] See Howgego (2013, p.19); Christiansen (1994, p.483).

of 100% are then added to reminder of the coins in circulation. As a result the cumulative number of coins in circulation continues to increase. The effect of these increases is graphically demonstrated by Figure 4, (below).

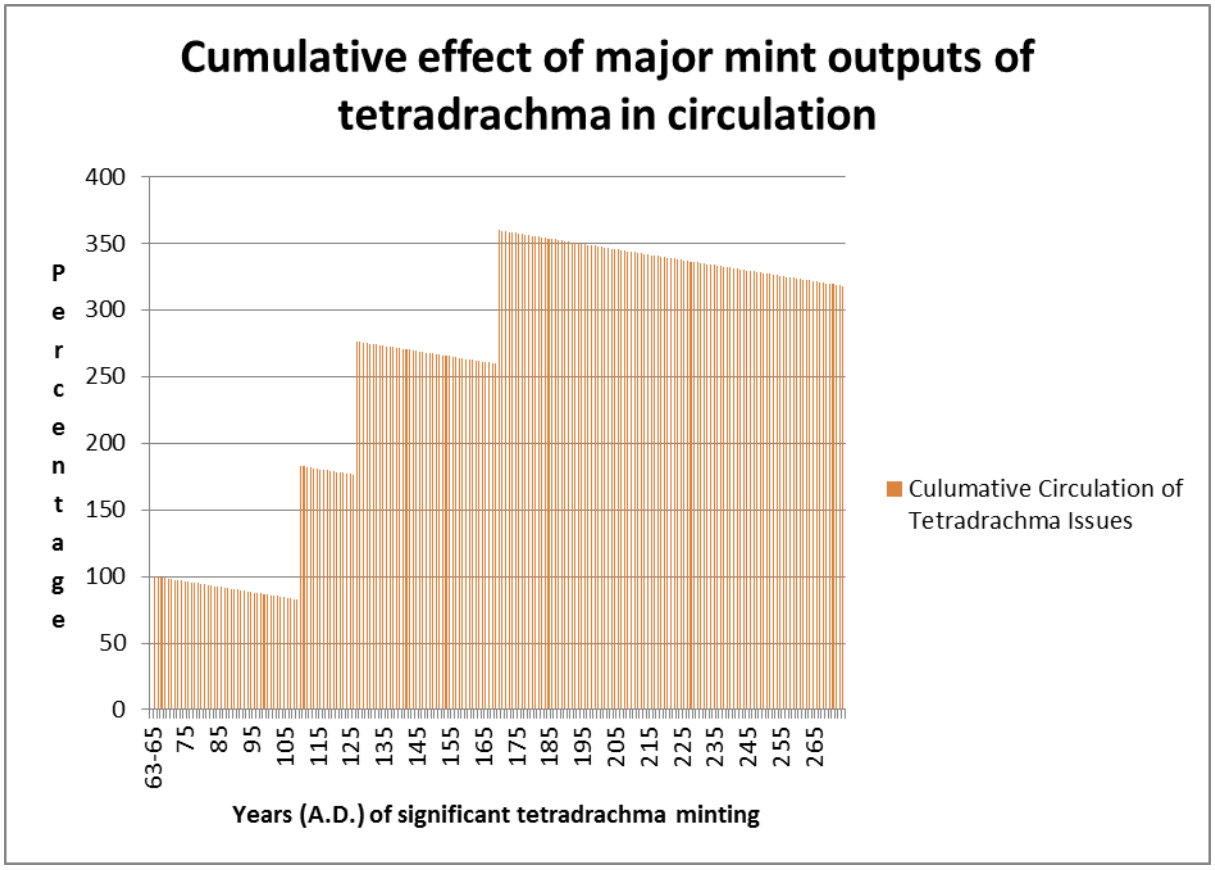


**Figure 4 Cumulative effect of major minting outputs of tetradrachms on the amount of circulating coins until the reforms of Gallienus in A.D. 268[283].**

It is not the purpose of this graph to guess at the numbers of coins minted during these outputs since this remains controversial[284] although it is clear that production increased substantially under the sole reign of Gallienus. Given the high volume of coinage in circulation by A.D. 265, it is not immediately clear why Gallienus felt the need to significantly debase the currency in A.D. 265. The volume of currency circulating in Egypt however must have been a tempting source of silver given the challenges that Gallienus was

[283] Data based on the output suggested by Christiansen (2004a, p.90 – 95, 102), Howgego *et al.* (2013, p.8- 10, 12, 19 – 26) and Rathbone (1997, p.187 – 188); and also the wastage rates of Duncan-Jones (1994b, p.205).

facing[285]. Indeed under Gallienus the silver content of the Alexandrian tetradrachms fell from around 0.88 grams of silver per coin (under Decius in A.D. 250) to 0.67 grams of silver per coin (in A.D. 263 - 4), and to 0.43 grams of silver and less (from A.D. 264 – 5)[286].

The tetradrachm reforms that occurred between A.D. 263 – 268, under the emperor Gallienus, resulted in the major debasement of the tetradrachm. This debasement also seemed to coincide with the debasement of the main silver coinage of the wider empire (the so-called "antoninianus" or "double denarius"). In Egypt Gallienus significantly reduced the silver content of the tetradrachm after the reconquest of Egypt and this occurred in stages[287]. It is noticeable that the debasement of the currency coincides with papyri that begin to specify payments to be made in "old" and "new" coins[288], and suggest some unwillingness to amongst the populace to accept the new coins being minted[289]. Indeed Christiansen goes so far as to refer to the debasements of A.D. 259 – 267 as a "new currency" for Egypt,[290] but just how far this actually was a "new coinage", or how far the increased output simply replaced the existing money supply, is not clear since there is no immediate increase in wages or prices in response to the drop in the silver content. It is possible that initially the increased output of coinage was absorbed by existing economic activities and there were still significant numbers of good quality tetradrachms circulating until the mid 3rd century[291] for the elites, banks, and aristocracies to guarantee their loans and payments. Indeed the debased coins that were introduced moreover from A.D. 263/4 could be used to taxes and to pay "down" the social scale[292]. As a result the existing good coins in circulation would guarantee the coinage when initially debased by Gallienus in the A.D. 263/4[293].

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[285] For three useful modern summaries of the reign of Gallienus see: Ando (2012, p.160 – 172); Hekster and Zair. (2008, p.5, 15-16, 24 – 27, 60 – 61); Drinkwater (2008, p.41-48).
[286] See Cope *et al.* (1997 p.12).
[287] This was perhaps to match the debasements in the main empire and keep a profitable exchange rate for the authorities on the export of goods in and out of Egypt. Egypt was a "closed-currency" area and tetradrachms had to be exchanged for antoninianus when leaving Egypt at "official" exchange banks. For a discussion as to how the silver content of the denarius and tetradrachm compared see Howgego *et al.* (2013, p.7, 11).
[288] Rathbone (1996, p.336) and Christiansen (1984, p.297 – 298) both suggest that this is indicative of concerns with the currency. See footnote 88, p.29 for a list of the relevant papyri, and footnote 197, p.49 for an analysis of the reasons.
[289] At the same time Christiansen argues that the drop in weight and silver content might have ended the credit systems of Egypt. Thereafter cash began to be preferred, see Christiansen (2005b, p.281).
[290] See Christiansen (2004a, p.117).
[291] See Figure 4, p.64.
[292] By contrast, bronze remained plentiful until under the reign of Severus Alexander but there after it ceases to be minted and is replaced by bronze "tessera" tokens or older coins, see Christiansen (2005b, p.280).
[293] Prior to A.D. 264 tetradrachms were exchanged at their face-values despite different silver contents, see Christiansen (1984, p.280). It was tradition and traditional confidence in the currency that perhaps ensured the stability of these new coins (at least initially). Indeed the populace might not have been particularly aware of the

Regardless of the reasons for the debasement, the presence of large numbers of good tetradrachms circulating in Egypt would have limited the initial impact of the debased coins on the economy minted by Gallienus in A.D. 263/4, and perhaps explains why there seems to be little evidence for increases in prices and wages until the reforms of Aurelian in A.D. 274/5 because the debased coins could be exchanged (perhaps illegally) at agreed rates with older, better, coins.

### Section 5.3. Factors limiting wage increase in Egypt: 3rd century A.D.

If the stability that is evidenced in the Egyptian wages (and prices) of the 3rd century A.D. until A.D. 274 is not "obviously" connected to the falling silver content of the tetradrachm then why do they seem to change at all?[294] To demonstrate wage stability in 3rd century Egypt it is necessary to consider the factors that restricted wage increases in the first half of the 3rd century A.D. in Egypt. Since wages were effectively the exchange of metal (within a coin) in return for a service or commodity it is firstly important to understand what constitutes a "price" or a "wage".

To consider price and wage agreements it is useful to start with Polyani's[295] idea of market-place exchange. Polanyi has argued that costs within a market-place exchange system are governed by the needs of a "supply crowd" and "demand crowd". This also applies to the payment of wages in a market-place setting. For wages to be stable the needs of the "demand crowd" must be continually met by the "supply crowd" at the same rate: when one worker (supplier) dies then another worker takes his place, and the availability of employment reflects the exact number of suppliers. Provided that there are no other factors, needs, or wants operating in the system, the example describes a stable unchanging "system" that would produce stable wage levels. Of course societies and economies do not operate in this manner and to understand why wages did not seem to change in the first half of the 3rd century A.D. in Egypt it is necessary to consider the factors that affected wage levels[296].

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changes to the silver content at first, or if they were, it is not clear that lower-class labourers could been able to refuse them, and it is possible an employer could pay his contractors with the poorer coins and the contractors would have to accept them.

[294] Lendon (1990, p.109112 – 113) regards it as a "loss of faith" in the stability of the currency.

[295] Polanyi (1957b, p.267).

[296] Although this paper considers "market-place" wages Pryor (1977, p.154 – 155) has identified a number other "wage-exchanges". These are: commercial transactions, non-commercial transactions like gifts and offerings, sacred transactions (offerings and sacred labour), indentured and apprenticed labour, donatives or prestige gifts. This paper considers commercial and apprenticed wages.

Often studies attempt to determine economic growth[297] in the 3rd century but the apparent stability of wage levels in 3rd century A.D. Egypt cannot be considered solely in economic terms. Roman society, it is argued was inherently conservative in its outlook and it is therefore the contention of this section that there were strong social, political, environmental factors, not just economic factors, that restricted the upward movement of wages in 3rd century A.D. Egypt. These factors combined to keep wage levels remained remarkably stable and might be illustrated by the following diagram (Figure 5, p.68).

[297] One of the more useful studies is Scheidel (2006, p.1 – 7) who considers the markers that indicate economic growth. He considers the following markers: demography, geographic mobility, net free population, net expense of slaves, commercial development and in-flow of tribute. For the 3rd century A.D. he considers the strength of these markers to be as follows: demography (moderate), geographic mobility (moderate), net free population (high), net expense of slaves (low), resource redistribution (moderate), commercial development (stagnant) and in-flow of tribute (low). Given that only one marker scores "high" and the remainder are moderate he would not characterise the 3rd century A.D. economy as a "growth" economy, see Scheidel (2006, p.2, table 2). The perception of the markers relies, of course, on assumptions. How far economic growth can be said to be stagnant in the 3rd century depends very much on where and when one is considering the evidence. A port town, through which the 3rd century A.D. *annona* flowed towards Rome, might well experience a very different economic profile during the 3rd century when compared to a provincial village in the hinterland.

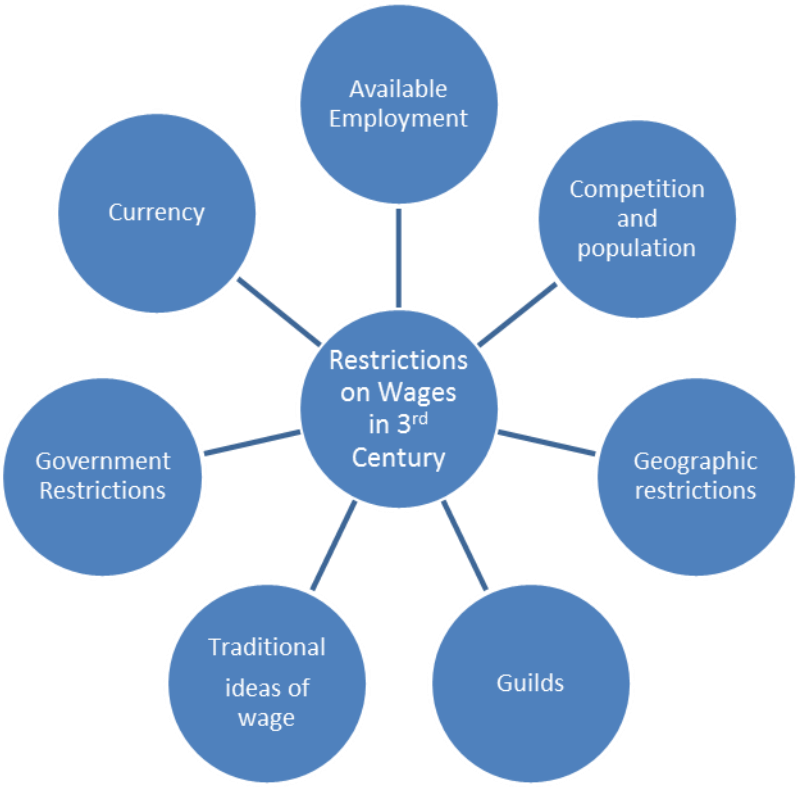


**Figure 5 Factors that restrict wage movement (author's diagram).**

These factors are considered in more detail in the following sections. The purpose of this outline is to illustrate that wage-levels in the 3rd century are not simply affected by the silver content of the currency, but that a range of other factors combine to maintain wage stability.

## Section 5.4. Economic Factors: Available Employment

The nature of the available employment is a significant limiting factor for the movement of wages. In a pre-industrial society the main employment area was agriculture, and demand for agricultural labour varied with the season[298]. Workers earned cash wages[299] but could, and probably did, have multiple sources of income, partly because free-labourers

[298] See Kehoe (2012, p.120 - 125).
[299] Egypt is regarded as having a large labour market dominated by "free" rather than servile labour, see Kehoe (2012, p.115).

might not be employed on every day in a given month. Indeed they themselves might also lease out property, or receive income from the employment of children or their wives[300]. Kehoe[301] for example points out that at all times the distinction between tenant and owner-cultivator is blurred. A tenant could lease his own land whilst working on another's estate, while town-dwellers might be occasionally employed on farms if there was sufficient demand, yet remain resident in the towns for the remainder of the year. This is perhaps seen in the tenancies agreed at the end of the 3rd century, since Rowlandson[302] notes that there is an increase in urban signatories as labourers within these contracts.

The growth of large estates would have provided a ready employment market, and both Rathbone[303] and Rowlandson[304] have demonstrated that estates constantly needed to hire external labour since the labour needs of estates were not fully met by their tenants. And whilst the rise of large estates would have placed the "wage-setting" power in the hands in the hands of fewer individuals it is noticeable that at the end of the 3rd century A.D. contracts still varied from short to long-term, which suggests that there was still a significant labour market at the end of the 3rd century A.D. and many workers available for work[305]. Moreover since leases continued to be agreed for short-term periods between A.D. 235 and 305, this meant that the power to leave contracts remained with workers at this time[306]. This also indicates the continued presence of a labour market, and because there were still multiple employment opportunities, large estates did not dominate the market. Indeed during the 3rd

[300] For free women and children employed in good conditions at Mons Claudianus see Gates-Foster (2012, p.743). See also Gibbs (2012, p.41). See Malouta (2012, p.288 – 304) on the position of women generally in Roman Egypt, and for children as wage-earners, see Malouta (2012, p.299). Huebner (2013, p.62 - 64) also gives a detailed study in familial relationships, and notes that with the high mortality rates sons had often to support an extended family; and that girls also contributed to a family's income from an early age, becoming full-time agricultural labouers at age 14; that food and clothing for a child might be 72 drachmas per annum.
[301] Kehoe (2012, p.120 - 125).
[302] Rowlandson (1992, p.498; 1996, p.256).
[303] Rathbone (1991, p.148 – 174).
[304] Rowlandson (1996, p.228 – 236).
[305] See Bagnall (1985 p.306 – 307).
[306] See Kehoe (2007, p.100). Note also that the later *emphyteusis* contract that tied coloni to their estates (but prevented landowners from seizing the property of tenants to pay tax liabilities) was not yet the normal type of contract in 3rd century Roman Egypt. In the mid. 3rd century Valerian and Gallienus legislated to protect tenants so that landowners could not arbitrarily raise rents in tacitly renewed leases, see Kehoe (2012, p.118). Further evidence of the tacit renewal of leases in Egypt comes from the phrasing of the leases in which tenancy is associated with rent payment. Rowlandson (1992, p. 499) gives a translation of a typical rental-rolls renewal dating to A.D. 411 (P. Oxy. LV 3803) in which the tenant agrees to "undertake to lease… in conformity with the previous rental-rolls.", though she argues that this is a process that is happening earlier. Kehoe (2007, p.114 - 124) too notes the tacit renewal of the "rolls", and that tenants are staying on the land. He suggests that it is difficult for landowners to find good tenants, and for tenants leaving the estate is expensive, hence the acceptance by both parties of a renewal. He also discusses *emphyteutic* possession as quasi-ownership, and the allocation of risk to different parties on estates.

century there are neither more, nor fewer, leases preserved than in any other period[307], and the papyri evidence demonstrates that during the study period (A.D. 235 – 305) there continued to be a wide range of contract and types of remuneration in Roman Egypt[308].

Employment in towns is harder to assess. The 3rd century is generally regarded as a time of urban stagnation, if not contraction and decline[309], although the papyri evidence of Egypt suggests that this is not necessarily the case. This is echoed by Erdkamp[310] who has noted that in the eastern part of the empire there is no evidence that the landowners "transferred to the countryside" to avoid their duties, nor that all towns of Syria, Palestine and Arabia declined during the 3rd century A.D.[311], though this view is contrary to accepted views of the 3rd century decline. The cities themselves, however, still had large populations and more significantly, remained centres of administration[312]; and if there was not industrial and residential expansion, existing towns with their "production-quarters" were the focus not just of governmental activity, but also religious activity, craft production[313] and redistributive activities. Opportunities will have existed not only in these industries but also those industries that supported and supplied and even recycled them[314]. The scale of such operations can be

[307] See Rowlandson (1992, p.498). There has been much research on estates and landholdings but further recent research might be Blouin (2012, p.22 – 39) who reviews land types in Egypt; and also see both Monson (2007, p.1 – 11) and Rowlandson (2006, p.173 – 196) on public land in Egypt; Kehoe (1988, p.86 and 227) considers Imperial Estates outside Egypt but is a useful overview on the differences.

[308] The most common legal contract for 3rd century Oxyrhynchus was the *cheirographia.* The *cheirographia* was the principal legal document of Oxyrhynchus during the 1st – 3rd centuries A.D. For a full discussion see Yiftach-Firanko (2008, p.325 - 335), and also see Rathbone (2005, p.712) more generally. In summary the *cheirographia* was a standard legal contract that did not require legal witnesses for its validity. It had a standard structure and had a *hypographe* (a short note of the transaction). Unlike older *agoranomic* contracts (that required six witnesses and entry by the state notary for legality) that continued in use until the end of the 3rd century in Arsinoite and Herakleopolites, the *cheirographia* was particularly popular in Oxyrhynchus: it was quick to create and could be issued on the day of request. After A.D. 160 it replaced (in stages) all the other types of contract – a process Yiftach-Firanko (2008, p.325 - 335) suggests was associated with the privatization of the "*graphia*" or scribal services as the central government reduced its involvement in direct administration.

[309] See footnote 4, p.15.

[310] Erdkamp (2012, p.262).

[311] See also a recent balanced restatement of the different fates of towns in different areas in, see Hekster and Zair (2008, p.31 – 44).

[312] As Horden and Purcell (2000, p.167) point out: trade continues even in periods of decline.

[313] Craft-production (particularly weaving) would be workshop-based, centred on a master artisan with several assistants, see Kehoe (2012, p.125) and see Jones (1974a, p.350 – 367). Located together in districts or particular villages the cumulative production levels could be high despite that fact that the individual workshops are small in nature. The papyrus (papyrus P. Ryl, 98) from A.D. 172 is typical of this. It refers to the weaving monopoly in the village of Archelais. The implication is that weaving is a major industry of the village, see Johnson (1936, p.386).

[314] See Mattingly (2007, p.173 – 178) . From either Arsinoe or Oxyrhynchus we have clear evidence of reuse and redistribution in the town. Papyrus P. Lond III 755 contains a survey of columns in disused buildings that will be reused. These are fully described by Papaconstantinou (2012, p.215 – 231).

glimpsed in the 3rd century city accounts for the baths at Oxyrhynchus[315]. Moreover the distinction between towns and county is an arbitrary one and does not necessarily reflect an economic separation between the two categories. Perhaps the clearest example of this is the increasing involvement of urban leesees as signatories on late 3rd century contracts[316]. Movement to and from the countryside would depend on the work available on farms and estates (both imperial, private and temple estates[317], for example), and around the towns and villages.

In most cases the remuneration for labour was in cash, and though some contracts specify payment in kind, these might be more likely for tenants (for who the lessors often paid the taxes) than hired-labourers[318] who needed cash to pay their own taxes. Indeed evidence for estates indicates that some tenancy wages were agreed in proportion to the amount of payment-in-kind agreed between the parties. Since an estate could provide accommodation and rations[319], tenants might only be paid a "stipend", conversely hired-labourers received no tax payment but might receive a wages only, or a wage and some sort of food allowance[320]. In 3rd century A.D. Egypt we clearly see the presence of short-term or "daily" labour employed alongside of estate-workers. The papyri relating to the Heroninos Archive of the mid 3rd century indicate that there is a "free" labour market on which the estates could draw in the 3rd century Egypt. This is because day-labourers are frequently

[315] See papyrus: Archiv IV, 116 Antinoopolis in Johnson (1936, p.686 - 691). The papyrus includes the sources and supply of materials for building, maintenance, and repair of the baths and their piping infrastructure, and even night-time works.
[316] See Rowlandson (1992, p.498). Rowlandson (1992, p.496) notes that in the late 3rd century leases started to allow tenants to choose crops; and that around A.D. 260 leases in Egypt become less personal. She argues that this points to more institutional involvement or more landlords absent from the tenants. It also coincides with a decline in crop-rotation (within leases) and the replacement of this system by the growing of flax, see Rowlandson (1992, p.498 – 499).
[317] Sacred estates formed powerful economic centres in their own right. Their importance was such that Roman authorities even acted (in Asia Minor) to maintain the long-term viability of cult-centres which seemed in decline, see Digna (2005, p.214 – 217). Of course temples and sanctuaries were also a "draw" for worshippers and the more successful a cult-centre, the more pilgrims and worshippers it would attract, see Silver (1995, p.34). The more worshippers, the greater the economic impact that cult-centre would have on the surrounding towns and villages. In Egypt the economic power of cult-centres was long-established. Something of the range of economic activities and business enterprises beyond simply religious worship can be glimpsed in papyri from papyri SP XXII, 183 which lists the temple accounts for A.D. 183, see Johnson (1936, p.662 – 670), and papyri BGU 362 and which are temple accounts for A.D. 215, see Johnson (1936, p.662 – 670). As one would expect both of these contain a bewildering range of activities including, for example, the hiring of sub-contracts to maintain temples structures, expenses for the various celebrations, the commissioning of decoration for statues, taxes from temples lands, and managing loans – to name but a few, see Johnson (1936, p.662 – 670).
[318] The landowners could, and did, pay taxes on behalf of their tenants. This was often stipulated in the contracts but it is interesting that during the 3rd century A.D. landowners were increasing responsible for the collection of taxes from their tenants, see Kehoe (2007, p.167).
[319] Kehoe (2012, p.122).
[320] See Rathbone (1991, p.109 – 125).

listed as recipients of wages[321]. If 3rd century Egypt did indeed have a "free-market" we might expect to see movement in the wages paid to workers in response to economic pressures like the debasement of the tetradrachm[322] or the plague[323]. If the 3rd century plague were as bad as Van Minnen[324] argues, the loss of life caused by a significant outbreak of plague for example, should be visible in the monies paid to labourers during a "supposed" labour shortage. This is, however, not the case in the mid 3rd century during which wages are relative stable until A.D. 269 (see Chapter 6, p.82 - 101). There is an increase in c.260 in wages for the estate workers classed as *oiketai*, while the better paid *metrematiaioi*[325] had their wages increased to 20 drachmas, but that perhaps reflects an increase in prices or a reorganization on the death of the estate-owner rather than the effects of plague[326]. Moreover there is no corresponding increase in rates for day-labourers. These remained fixed at a standard rate of four drachmas per day from the start of the study period (A.D. 239) and until A.D. 269 (see Section 6.3, p.87).

## Section 5.5. Geographical Limits

Geographical limits on wages are clear in a province like Egypt where there is a limit to the extent of arable land provided by the flood waters of the Nile[327]. Areas beyond the Nile-ribbon needed to be fed by either oasis or canal[328]. Production areas are therefore limited

[321] See Rathbone (1991, p.148 – 174) on wages in Egypt. For comparison Cuvigny (1996, p.139 – 145) has considered the wages of workers at Mons Claudianus noting that they were comparatively well-paid in the 2nd century A.D. compared to rural workers. At the Mons Claudianus quarries the most common wage between A.D.136 – 146 was 47 drachmas per month. In some cases sons earned half of this, 37 drachmas and 4 obols. In Dacia miners earned up to 144 drachmas per month, but their monthly wage was not calculated on a 30-day cycle – perhaps the maximum working days in a year. Gibbs (2012, p.38 – 55), Kehoe (2012, p.114 – 130) and Scheidel (2008, p.1 – 10) have all recently considered the issues of employment in Roman Egypt. Gibbs considers the nature economic environment, Kehoe considers contract labour with reference to Egypt and Scheidal considers means of determining the value of wages. See also Scheidel and Friesen (2009, p.61 – 96). For a fuller discussion of the Roman Economy generally see Scheidel (2012a, p.1 – 22).

[322] See Cope *et al.* (1997, p.7); Lendon (1990, p.112). An increasing population, for example, would create more competition for employment and drive down wages – particularly laboring in a pre-industrial, agricultural, economy where the variety of employment might be limited, see Cuvigny (1996, p.140 – 141).

[323] The scale of the 3rd century A.D. plague is hard to assess for the accounts of the 3rd century are heavily moralistic and regard it as "divine judgement" Corcoran (2006, p.35 – 49). For an assessment of the plague see footnote 207, p.51).

[324] Van Minnen (2007, p.209 – 211).

[325] *metrematiaioi* are more senior figures and are paid significantly more than the "*oiketai*". Both are permanent salaried staff attached to an estate with some degree of dependence (they are not day-contractors). In the mid 3rd century the difference between the two classes are as follows: *oiketai* are paid 4 – 12 drachmas, and one *artaba* of wheat per month; *metrematiaoi* are paid 4 – 60 drachmas per month, and 1 *artaba* of wheat. For further analysis see, Kehoe (2012, p.119-121); Rathbone (1991, p.102).

[326] See Rathbone (1991, p.143 – 144). Though Rathbone (1991, p.403) wonders if in A.D. 260/261 there is a post-plague shortage of labour since the *oiketai* wage increases.

[327] Blouin (2013, p.291 – 318) however has demonstrated the need for caution in such assumptions as she explores the exploitation of micro-climates and taxes on the exploitation of seasonal lakes.

[328] For a detailed analysis of the Fayyum see Monson (2007, p.1-11), and also a useful introduction by Gazda (1997, p.1 – 5).

to the reach of irrigation[329]. An example of this restriction is seen in Bagnall's study of the tax-receipts from Karanis in the early 4th century[330]. In this study he notes a dramatic drop in the number of tax-payers, which he associates with a decline in the population. Interestingly one reason that the inhabitants of Karanis mention for their difficulties in the 3rd century is the failure of irrigation system[331]. In a province with an increasing population such a limit would act to depress wages – particularly if employment was limited in towns. In both cases there could be more workers than opportunities, in which case we might see efforts by workers to restrict access to employment in order to maintain wage levels, in the form of apprenticeships or professional associations.

### Section 5.6. Guilds

In Egypt in the 3rd century A.D. there were a multitude of guilds, or *collegia* (as they were known in the rest of the Roman Empire). The guilds formed networks of artisans and manufacturers. They created a difference between members (for who there were significant privileges[332]) and non-members by a restrictive membership process: usually a period of training and a significant monetary payment[333]. Guilds fell under the authority of the office of the "*idiologus*" to whom the guilds had to apply for registration and approval[334]. Those that were not approved were classified as illegal. To be approved guilds needed to register their laws and rules[335], and file reports on their activities[336]. Guilds, of course, promoted wage stability for their members. Guilds were a common feature of Romano-Egyptian society. Tenants on estates, for example, could form guilds[337], entertainers would form themselves into guilds with whom the city elites would negotiate when hiring for festivals, and we even hear of a certain Hatres, High Priest a guild of "Dionysiac Artists" (see footnote 238). We also read of a guild of joiners (called the *Kaisotic* guild in papyrus P. Oxy. 196), silversmiths in A.D. 301[338] and weavers (for whom we have most evidence)[339], carpenters (from the

[329] Kehoe notes the annual flooding in Egypt was an "all or nothing" event, in that it was not affected by rainfall in Egypt, and thus the irrigation of areas lead to a kind of stability, see Kehoe (2007, p.114).
[330] Bagnall (1985, p.289 – 308).
[331] Bagnall (1985, p.289 – 308).
[332] See Temin (2013, p.110).
[333] Guilds or *collegia* used rituals and admission procedure to separate themselves from non-members, similar to cults, see Hawkins (2012, p.189-192). For a recent overview see Temin (2013 p.109 – 115).
[334] See Johnson (1936, p.392-3).
[335] Hawkins (2012, p.189-192) notes that guilds or collegia needed a system of rules to maintain standards of work and behaviour, since their good reputations were important. These rules also included arbitration systems for disputes between members. See also footnote 448, p.92.
[336] See Johnson (1936, p.392-3).
[337] See Johnson (1936, p.392-3).
[338] See papyrus no. 38 in the Antinoopolis Papyri. This provides evidence that the A.D. 301 Price Edict must have been published in Egypt during the first three months of the year since the declaration of the silversmiths is

slightly later date of A.D. 316)[340], and iron-workers who are attested from the 4th century. These are just some of the numerous examples. Guilds were a normal part of urban life and provided security for their members, and a means by which commercial activities could be monitored and controlled. In A.D. 246 the guild of weavers set a maximum limit to the number of "webs" produced by individual weavers in their houses. This was three "webs" and presumably means that production was controlled so that prices were controlled[341]. In this way they would seek to maintain the wages of their members rather than reduce them by over production or over competition. Guilds moreover provided a point of contact between the authorities and the individual members. The guild-system also allowed the authorities to lease production monopolies to guilds and then localize production in specific districts[342]. The papyrus P. Ryl, 98 dating to A.D. 200 provides an example of the system in practice since it concerns control of the weaving monopoly in the village of Archelais[343].

dated the 8th April. The cost of one pound of worked silver is 62 denarii (in silver coin) and the cost of unworked silver is 31 denarii (in silver coin) published by Roberts (1950, p.91 – 92).

[339] Slaves and free-born children would be apprenticed to a "master". Slaves might use their training to eventually buy their freedom whilst apprentices could (at the end of training) be sub-contracted to workshop owners though these might be short-term rather than permanent employments, see Kehoe (2012, p.125). Alternatively they could work for themselves with guild approval.

[340] See papyrus P. Oxy I, 56. In A.D. 316 the guild of carpenters is required to provide a report to the authorities for the cutting down of a "Persea Tree", see Johnson (1936, p.110 – 112).

[341] See Johnson (1936, p.276).

[342] See Boek (2008, p.51).

[343] See Johnson (1936, p.386). We know too of the Alum monopoly, see Johnson (1936, p.387).

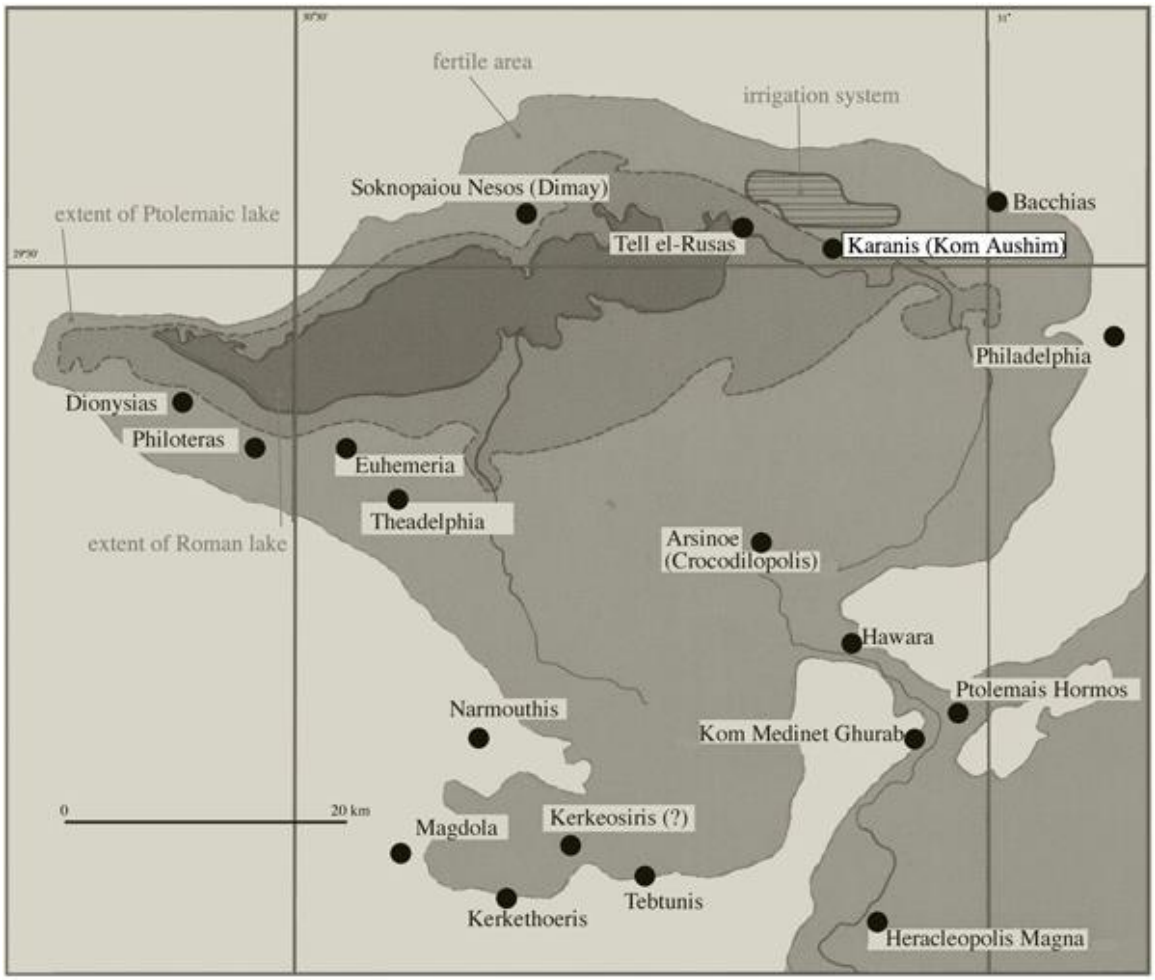


**Figure 6 Map of the Fayum and the environs of Karanis**[344]

Guilds would report the prices that their members were charging, for example, the declaration of the silversmiths in the Antinoopolis Papyri who reported to the authorities that the cost of one pound of worked silver in A.D. 301[345] was 62 denarii while one pound of unworked (poured) silver was 31 denarii[346]. Likewise the Oxyrhynchus guilds of iron and bronze workers reported the values of their metal in papyrus, P. Oxy I, 84 (dating to A.D. 316 for the guild of ironworkers) and papyrus P. Oxy I, 85 (dating to A.D. 338)[347]. This allowed the cities to monitor and act against pricing that was deemed unfair.

[344] Hosted as: http://www.lsa.umich.edu/kelsey/galleries/Exhibits/textiles/classroom/class1a.html [accessed 06/05/2014].
[345] The Prefect required statements from the guilds to ensure compliance with the "Edict". The Price Edict must have been published in Egypt during the first three months of the year as the declaration of the silversmiths is dated the 8th April.
[346] See Roberts (1950, p.91 – 92, no.38). This declaration is published by the silversmiths in the year of the Price Edict and possibly refers to the Edict in that prices are being declared, "in accordance with the edict of the Prefect".
[347] Grenfell and Hunt (1898, p.146-7).

The guild-system also allowed the authorities to collect trade-taxes from the members. Taxes were leveled on all members of a guild – default by one member would simply increase the liability on the remaining members. This is clearly a feature of taxation during the whole of the 1st – 3rd centuries A.D. and not just a feature of the 3rd century[348]. Guilds were also the means by which the government or the town councils communicated with craftsmen for taxes or *annona* goods[349]. No doubt these requisitions were in addition to local taxes, leases and payments to the authorities. The formalization of these requisitions as a tax is a feature that becomes more obvious from the 4th century. The guild of weavers in A.D. 274 provides an interesting example of the negotiations between the authorities and a guild. The "cloth" weavers have clearly been instructed to prepare a certain number of garments. The guild of weavers asks for more money since they argue to the authorities (via a representative) that the cost of raw materials has increased[350].

## Section 5.7. Tradition

In a society like that of Roman Egypt tradition was important. Daily rates for wages were known and fixed. From the evidence of estates the daily wage in the 3rd century A.D. was two drachmas and two obols[351], and in the mid. 3rd century A.D. labourers in the Fayyum earned a median wage of around two bronze drachmas per day[352], while skilled or heavy labour was paid for at a higher rate of four drachmas per day (one silver tetradrachm coin)[353].

[348] It is regularly repeated that a feature of late Roman taxation is that all members of a guild became responsible for its payment. Papyrus (SPP IV 70/1) dating to A.D. 73 clearly demonstrates that communal liability is a feature of taxation from the 1st century A.D. In Arsinoe a guild of five members finds that one has run-away, one member is unable to pay, and one member has died. The full liability devolves onto the remaining two, see Johnson (1936, p.394).

[349] This famous papyrus has the council requiring the production of clothes for the *annona*, and the agents complaining that the price of materials and labour have increased (P. Oxy. XII, 1414). See also Sheridan (1999, p.211 – 217) linking this document to the payment of the *anabolika*.

[350] See Johnson (1936, p.702). It is interesting to note that the costs discussed are reckoned by the guild in denarii and not drachmas suggesting that this is part of the *annona*.

[351] Temin (2013, p.254) states that in the mid 1st – 2nd centuries A.D. the daily wage in Egypt was between seven and eight obols or around one drachma; and that monthly wages were 20 – 25 times the daily wage. He argues that this indicates monthly wage-earners were no more skilled than daily wage-earners, but it is not clear if Temin is comparing contractors or tenants on estates.

[352] Estate workers were less well paid but had the security of long-term wages, taxes paid, and in some cases were given accommodation. The *oiketai* who were the most poorly paid on an estate earned four drachmas per month prior to A.D. 260, and 12 drachmas per month thereafter. The *metrematiaioi* who had shorter terms of contract earned around eight drachmas, increasing by A.D. 260 to 20 drachmas per month. In both cases the addition of tax payments would suggest that a monthly wage was around 60 drachmas per month, or two drachmas per day, see Rathbone (1991, p.121 – 143). Children were also employed as labourers, and they were paid one drachma and five obols, see Kehoe (2012, p.122 – 123).

[353] See Kehoe (2012, p.122 – 123). Four drachmas paid for a period of one month (thirty days) would total a monthly wage of 120 drachmas. In Dacia miners earned up to 144 drachmas per month, see Cuvigny (1996, p.139 – 145) and footnote 321, p.72. In Egypt potters were earning 400 – 500 drachmas per month (depending on the task) in A.D. 243 (P.Oxy. L. 3595) and 200 – 500 drachmas per month (depending on the task) in A.D.

This would mean that a labourer who managed to find employment for one month (30 days) would earn 120 drachmas. Evidence that this is a "real" figure comes from two papyri that give the wages for sailors performing a mandatory one month liturgy in A.D. 266. These unpublished papyri give 160 drachmas as the monthly wage[354]. These are similar to papyrus P. Oxy. LVII, 3912, also of A.D. 266 in which another sailor is "contracted" for 160 drachmas per month[355]. Competitive wage increases are not a feature of Roman Egypt in the 3rd century[356] and these daily payments seem to have remained remarkably stable over time[357]. For example, the daily wage for an ass-drive in 3rd century A.D. Egypt was one silver tetradrachm (which equated to four bronze coins) while in A.D. 301 the daily payment for camel and ass-drivers in the Price Edict of Diocletian was two silver coins (two nummi).

### Section 5.8. Government and Taxation

Government is said by Rathbone to have interfered very little in the setting of wages during Roman Egypt in the 3rd century A.D. [358]. This statement is slightly disingenuous since the government was very clearly interested in the prices of goods. Indeed the Price Edict of A.D. 301 that clearly sets the maximum wages paid to workers[359] is an example of

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260 (P. Oxy. L. 3597). Vineyard workers by contrast were earning 50, 100 – 200 drachmas per month (depending on the task) in A.D. 257 (P. Oxy. XLVII.3354).

[354] See Elmaghrabi (1982, p.162 – 180).

[355] See Haslam *et al.* (1990, p.132 – 137).

[356] The idea that wages should be fair rather than competitive is recorded in the early papyrus B.G.U. 1121. This records a contract to lease a papyrus marsh in 5 B.C. and contains the provision that it will not be lawful for the workmen under the lease to receive more than the wages current in the neighbouring district of "Colpus", see Johnson (1936, p.359). Clearly wages are fixed in relation to other wages in the area – presumably to maintain wage stability.

[357] This stability in small payments is also seen in *sportulae* dedications. For a fuller discussion and a list of sportulae inscriptions see Appendix 8: Sportulae Inscriptions, p.317. Further evidence of the stability of low-status payment can also be glimpsed from literary evidence. Between the cultures of 5th century B.C. Athens, the Roman Empire of the 1st and 6th centuries A.D. prostitution exhibits the same basic cost in literature regardless of the currency. The literary cost of one or two obols in 5th century B.C. Athens becomes around two assess in Pompeii (in the graffiti and literature, and the equivalent of three obols), and three obols in the writings of Procopius. See Procopius *anecdota* XVII. 5 "But it was an object of concern for Theodora to devise punishments for the sins of the body. Prostitutes, of course, a full 500 being gathered in the middle of the market for 3 obols, being the wages for a scanty livelihood…" (author's translation): Ἀλλὰ καὶ ὑπὲρ ἁμαρτάδων τῶν ἐς τὸ σῶμα κολάσειςτῇ Θεοδώρᾳ ἐπινοεῖν ἐπιμελὲς ἦν. πόρνας ἀμέλειπλέον ἢ πεντακοσίας ἀγείρασα ἐν ἀγορᾷ μέσῃ ἐς τριώβολον,ὅσον ἀποζῆν μισθαρνούσας

[358] See Rathbone (2005, p.717) on wages. A noticeable exception is of course the liturgical duties that occurred throughout the Roman period. These duties sometimes carried with them a wage. See for example the sailors of A.D. 266 who earned 160 drachmas per month in papyrus P. Oxy. LVII, 3912, see Haslam *et al.* (1990, p.132 – 137); Elmaghrabi (1982, p.163 – 180). Sometimes maintenance was also paid. For example, in c.A.D. 269 – 273 liturgical duty carried with it the right to a grain allowance, see Rea (1972, p.54 – 65, 77 - 83). See Drecoll (1997) for a detailed study (in German) of liturgical duties in Egypt in the 3rd and 4th centuries A.D. For the elites there was the expectation that they carried out such duties as part of their status and there were property qualifications associated with the various roles; but we are poorly informed as to which duties carried a cash payment.

[359] There is some evidence that state seems to privatise its legal services through the closure of notary offices in some areas during the 2nd century, and the transfer of that business to private scribes. See Yiftach-Firanko (2008, p.325 – 340).

government interference in the "free-market"; and though the success of that interference is far from clear there are examples however that suggest the local government (at least) was monitoring payments to maintain costs and wages at acceptable levels. In A.D. 275 an oil seller is forced to swear that he will supply oil in the market. This clearly demonstrates an awareness of profiteering and an attempt to halt "black-market" trading. Earlier examples are the "regulation" of peaches (Papyrus SB 7242)[360]. Although there is not a heavy government involvement, wages and prices were not allowed to rise beyond "acceptable" limits (see footnote 356), and to provide a stable economic environment to collect revenue in the form of taxes[361].

The effect of government policies (particularly taxation) on wage stability is hard to assess. A simplistic[362] picture would suggest that if the tax demands increased then wages would increase to pay those taxes but the degree to which taxes rose[363], and the range of taxes applicable make comparison difficult[364]. Drawing on Boek's[365] assessment there were a wide

[360] Papyri "SB 7242" dating to c. A.D. 200 that notes peaches are going to be subject to "regulation" and the writer urges the correspondent to buy them all so they "can only be bought through you" , see Johnson (1936, p.: 386 – 387).

[361] Kehoe (1988, p.61 - 69) in particular has demonstrated the interest the Roman authorities had in maximising productivity in the Imperial Estates of North Africa, but that this was achieved through the legal framework in support of tenants (*coloni*) and their overseers (*conductores*); and also see Vos for a similar summary (De Vos, 2013 p.185).

[362] Monson (2007, p.2 -3) gives a more sophisticated tool to consider the impact of government policy on province. Monson notes that emperors are faced with a choice: revenue now from a province against expected income in the future. In times of instability (like the 3rd century A.D.) emperors prefer present income to an uncertain income in the future. The value of future income therefore equals the expected income – a discount based on the extent of uncertainty. Present Income (PI) = Expected Income (EI) – Discount. In times of threat the "elites" will seek to maximise present income at the expense of future income and the "discount" will be large. Owners of large estates, or city-leaders might raise local taxes whilst emperors might debase the currency to ensure a supply of silver. A practical example is the investment that both Caesar and Cato the Younger make in the corn-dole during the street riots in Rome. The high "discount" rate means that both individuals have chosen immediate stability (by introducing the corn-dole) and that this outweighs the long-term effects on rural production, urban businesses, and urban crowding, see Monson (2007, p.2 -4).

[363] *Laographia* was the general term of the poll-tax though whether the same tax was the late 3rd century *Epikephalion* or "head-tax" is not entirely clear since the evidence of ostraka and papyri list payments, rather than explanations of the taxes.

[364] For a very recent reconsideration of these taxes see Jördens (2012, p.56 – 67); also Bowman (1976, p.168 – 169) for a short summary; Rathbone (1993, p.81 – 112) for a more detailed analysis of the taxes as established by Augustus, and the extent of his innovations; Sheridan (1999, p.211 – 217) on the *vestis militaris* and the *anabolikon*; and for a comprehensive study of the taxes associated with all the different land-types and crops, see Blouin (2012, p.22 – 39; 2007, p.135 – 166); and for the "thoroughness" of taxation see the evidence for exploiting micro-climates, and the taxes on the exploitation of seasonal lakes see Blouin (2013, p.291 – 318). See also footnote 228 p.55.

[365] In Boek (2008, p.50-51). See also more the standard treatment in the Cambridge Ancient History: Corbier (2008a, p.361 – 378) on the need for tax Corbier (2008a, p.361 – 3); the munera as a tax on the wealthy, see Corbier (2008a, p.365 -6); the traditional tax systems and their stability until the late 3rd century, see Corbier (2008a, p.367 – 8); the tax system in Egypt, see Corbier (2008a, p.368); trade and cash taxes, see Corbier (2008a, p.368 – 9); tax collection and tax-farmers, see Corbier (2008a, p.370 – 375); the relationship between coinage and taxation, see Corbier (2008a, p.375 – 6); rigidity and changes in the tax systems, see Corbier

variety of taxes for which the Egyptians could be liable[366]. Beyond state-taxes like the land and poll-taxes there were local taxes and transport or *portoria* taxes. There were trade taxes, levies on sales, monopoly taxes, capitation taxes (taxes on numbers of individuals engaged in a profession and various *ad valorem* taxes)[367]. Taxes also included rentals from city and sacred estates. State taxes that consisted of the *tributum capitis* (the poll tax[368]) which was paid in cash[369] by all males (slaves included) outside Alexandria[370], a land tax that was collected in kind (for grain land[371]) or money (for vineyards and olive-yards)[372]. Around A.D. 275 Aurelian reorganized the ad hoc linen tax (*vestis militaris)* and reorganized it into a more structured tax in kind on linen known as the *anabolikon*[373], that the by the later 3rd century seems to have become the *annona militaris*[374] - regularized as a tax under Diocletian around A.D. 287[375].

## Section 5.9. Conclusion

During the 3rd century A.D. the only major "political" crises within Egypt were the usurpation of Macrinus and Quietus (A.D. 260 - 261), the Palymran conquest of Egypt (A.D.

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(2008a, p.376); and the debate on the nature of Diocletian's reforms (dating them to A.D. 287) including the replacement of the *tributum soli* (property tax) and the *tributum caput* (poll-tax) with the *caput* and *iugum* assessments, see Corbier (2008a, p.377 – 379). Duncan-Jones (1994b, p.47 – 56, and table 4.7, p.57) also considers taxation in Egypt and notes that tax revenues seem to fall over time. Rathbone (2005, p.705 – 712, 717) too considers taxation in Egypt.

[366] Though landowners might choose to pay taxes on behalf of their tenants.

[367] See Boek (2008, p.50 – 51).

[368] There are many poll tax demands and receipts preserved in the papyrus evidence. The poll-tax lasted until the end of the 3rd century and was levied outside Alexandria. Rates were fixed at eight drachmas per year in lower and middle Egypt, and 40 drachmas per year in Asinoite, see Boek (2008, p.47 – 48). An example is papyrus P. Oxy. XLII, 3107 which notes that in A.D. 238, 20 drachmas was demanded of slaves. In A.D. 296/7 the reference to the "head tax" at Oxyrhynchus appears and this was 1,200 drachmas. This became 1,600 drachmas in A.D. 306/7, and finally 2,400 drachmas in A.D. 312, see Corbier (2008a, p.379) – though Bowman (1976, p.168) notes that the nature of this *epikephalion* is uncertain – thus it is not clear if this tax is exactly the same as the tax dating to A.D. 238). See also Rathbone (1993, p.87 – 97) for an analysis of the poll-tax *laographia* as originally established by Augustus.

[369] The importance of the poll tax to the monetary economy of the empire lies in the fact that it had to be paid in cash, see Christiansen (2004a, p.45). This meant that no matter how debased the currency, cash was still required for the payment of the poll tax and therefore cash-wages remained important. Howgego (1992, p.24) makes a similar point that coins are still used in crisis.

[370] Beyond tax exemptions for the Alexandrian class there were also favourable tax-rates for members of the *gymnasium*. Since children became liable for taxes at age 13 membership of the *gymnasium* carried with it a 12-drachma tax rather than a 16-drachma poll-tax, see Lidov (1968, p.53).

[371] This seems to have been ¾ - 2 *artaba* of grain per aurora (private land) and higher for public land. Further charges seem to have increased the tax due by 5 – 10%, see Boek (2008, p.46 – 47).

[372] Boek (2008, p.46 – 47).

[373] See Sheridan (1999, p.215 – 216) for an analysis; and the argument that Aurelian's taxes on glass and papyri for the *anabolikon* are based on a misreading of the text, and that the tax was sometimes a cash tax and sometimes a tax in kind.

[374] To collect the *annona militaris* the government issued their requirements to the "*praepositus pagi*" (in charge of a district), who informed the "*exactor susceptores*". They then notified the village "*comarchs*" (officials in each village who ensured the fair distribution of the tax demand and were responsible for its collection), see Boek (2008, p.60).

[375] See Boek (2008, p.67).

269 – 273) and the rebellion of Domitianus A.D. 297-298[376]. Although these were significant matters for the Roman administration and government the effects seem to have been short-term. In each case we see life continued as normal. They seem to have had little impact on wages which remain at expected rates. This suggests that such troubles are short-term and did not result in major long-term upheaval and disruption[377]. The evidence for economic stability during the 3rd century has already been considered in Chapter 4 (p.49 - 60) and it would seem that despite these problems that town-life seems to have continued into the 4th century A.D. Short-term leases (indicative of a labour-market) continue to be agreed[378] while cash and credit agreements also continue to be made during this period.

Indeed until the mid 3rd century the silver currency of Egypt was very stable. In the early 260s, however the tetradrachm began to be rapidly debased. This is assumed to have led to inflation[379] but a close examination of the papyrus evidence suggests that it is only the changes in A.D. 275 (when there was a major transformation to the circulating currency) that seem to have had an effect on how wages and prices are expressed[380]. The reasons for the notational 10-fold increases in wages and prices given by Rathbone and Lo Cascio[381] are not exactly clear. The most common cause cited is the debasement of the currency but although the Egyptian tetradrachm currency was significantly debased in A.D. 264-6[382]; and these debasements did not result in price increases[383]. The alteration of the silver currency in A.D.

[376] The rebellion of Quietus and Macrinus is well-attested but the supposed revolt of Firmus would now seem to be a conflation of two separate events, see Bowman (1976, p.158). The final usurpation was that of Domitianus in c.A.D. 297- 298, see Geissen (2012, p.557).
[377] Crop failures and harvests, though their immediate effects must have been incredibly traumatic, were short-term events.
[378] Kehoe (2007, p.100).
[379] See Chapter 2, p.37 - 42 and footnote 4, p.15
[380] See Howgego (1995, p.121 – 124) who questions a direct relationship between debasement and price increases.
[381] See Rathbone (1997, p.190); Lo Cascio (2008, p.887). Harl by contrast suggests a 4-fold increase Harl (1996a, p.147).
[382] For the analysis of the Alexandrian tetradrachm see Cope *et al.* (1997, p.7-12); Lendon (1990, p.112). A full summary is included in Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235. The tetradrachm of Commodus contained c.0.99 grams of silver and each coin weighed c.11.9 grams. This had dropped by the reign of Maximus Thrax to 0.82 grams of silver. In A.D. 263-4 the silver content fell from 0.67 grams of silver per coin to 0.43 grams of silver per coin (and the weight fell from c.11.9 grams per coin to 9.85 grams per coin). In A.D 266-7 the silver content had again dropped to 0.26 grams of silver per coin while the weight per coin seems to have been c.8.68 grams, see Cope *et al.* (1997, p.12 - 150). On the problems of analysing the weights and silver contents of coins accurately see Butcher and Pointing (2012, p.64 – 65) who notes the problems with Walker's interpretation of his results. For the reactions of the binary copper-silver alloys used and the effect of metal leaching on weight analysis, see Butcher and Pointing (2012, p.66 - 67), and finally the different interpretations possible of the evidence depending on the presentation of the data, see Butcher and Pointing (2012, p.69).
[383] There are two clear increases in prices and wages: A.D. 160 – 190 (a doubling); and A.D. 274/5 (a 10-fold increase), see Rathbone (1997, p.190). In the former case (A.D. 160 – 190) there is a debasement of the

275, moreover, resulted in the "improvement" of the silver content of the tetradrachm. In this instance, if the silver content of the tetradrachm was in proportion to wages and prices we might have expected to see prices fall rather than increase. Clearly the silver content of the tetradrachm is not a factor in the setting of wages in Egypt, until the late A.D. 260s, at the earliest[384]. The fact that wages in Egypt seem to have remained stable until A.D. 274/5 is fully considered in Chapter 6 (p.82 - 101), which will examine the wage evidence of potters, ass-drivers, and apprentices between A.D. 235 – 274/5, with reference to the silver content of the currency.

tetradrachm but the debased coins still seem to be circulating without distinction with the better (earlier) tetradrachms, see Christiansen (2005b, p.280). The increase in A.D. 160 – 190 is therefore not directly related to the debasement and the most common explanation is that the increases are associated with the plague, see Rathbone (2005, p.713). Even the increase in wages paid in to *oiketai and metrematiaioi* on the Appianus estate by A.D. 260 need not be directly related to debasement since Rathbone (1991, p.143) notes that the increase could be due to an overhaul of all contracts on the death of Appianus. This is important because the increase pre-dates significant debasement of the currency.

[384] Duncan-Jones (1974, p.11) notes that the purchase power of precious metals in ancient coins is hard for us to assess. The value of those metals and the differences in ancient pricing systems means that the only valid measure of the purchase power of coins is provided by ancient prices and wages.

## Chapter 6. Evidence of Wage Stability until A.D. 274/5

The 3rd century is generally considered to be a time of inflation[385]. The purpose of this section is therefore to demonstrate that wages were stable until A.D. 275 despite the debasement of the Alexandrian tetradrachm during this period[386]. To demonstrate this theory of stability this section will consider the wages for potters until A.D. 243 – 260 (see Section 6.1, p.82), wages for ass- and ox-drivers A.D. 235 – 269 (see Section 6.3, p.87), and wages for apprentice weavers slaves or children until A.D. 271 (see Section 6.4, p.92).

### Section 6.1. Wages: Potters

Egyptian papyri preserve three contracts dating to the middle of the 3rd century concerning leases for potteries[387]. The wages and payments in these contracts clearly show that there is wage stability for potters during the period A.D. 243 – A.D. 260. They suggest that there was still confidence in the currency; and that if there was a significant mid 3rd century plague, neither shortages of workers, nor an increase in workers 14-years after the supposed plague affected wage rates affected wages in the following contracts. The contracts in question are fully published by Cockle[388], and are as follows:

- A.D. 243: two-year lease for a pottery (P.Oxy. L 3595)
- A.D. 245-255: one-year lease on ¼ share of a pottery (P.Oxy. L 3596) [389]
- A.D. 260: one-year lease on a ⅓ share of a pottery (P.Oxy. L 3597)

The contracts are all similar in nature. In each a lessor provides all the materials[390]. The lessee undertakes to produce an agreed number of pots and in the case of the contract

[385] See footnotes 4, 5, and 6, p.15 - 16.
[386] This is because the tetradrachm dropped from a coin of c.0.88 grams of silver in A.D. 238-9, to a coin of 0.4 – 0.26 grams by A.D. 266-7, Cope *et al.* (1997, p.12) but there seems to have been no corresponding increase in wages, see the following discussion in Chapter 6 (p.82 - 101).
[387] The contracts are all published in Bowman *et al.* (1983, p.234 – 244) and have been further analyzed by Cockle (1981, p.87-97) in the Journal of Roman Studies. For more on potters who were at the bottom of the social order see Mayerson (2000, p.97-100).
[388] Cockle (1981, p.87-97).
[389] Perhaps: A.D. 219/20, 223/4, 239/40 – but these dates are less likely, see Bowman *et al.*, (1983, p.238 – 241). Even if the papyrus does date to one of these earlier dates it is still evidence of price stability since the wage rates will show no change from these dates until A.D. 260.
[390] For example kilns, wheels, clay, equipment, firing materials, pitch and water.

from A.D. 243 all necessary workmen[391]. In each case the contracts specify the rate for producing 100 *ceramia*[392] (jars). The quantities of jars each lessee is contracted to produce are as follows:

**Table 3 Wages for production of a "set" number of *ceramia.* Data from Cockle (1981, p.87-97).**

| Date A.D. | Quantities | Total Salary | Wage (drachma) |
|---|---|---|---|
| 243 | 15000 x *ceramia* jars | 4800 drachmas[393] | 32 per 100 *ceramia*. |
| 245- 255 | 4000 x *ceramia* jars | 1440 drachmas[394], | 36 per 100 *ceramia* |
| 260 | 8000 x *ceramia* jars[395] | 1860 drachmas[396] | 32 per 100 *ceramia* |

The contracts also specify the production of certain numbers of "double *ceramia*" and half-*ceramia* (called two-*chou* jars). For these items the lessee is paid in kind: two *ceramia* of good wine and two *ceramia* of sour wine in A.D. 243; one *ceramia* of sour wine and an *artaba*[397] of lentils in A.D. 245 – 255, and in A.D. 260, two *ceramia* of sour wine and one *artaba* of lentils.

[391] The provision of workmen by the lessee is assumed in the contracts from A.D. 245-255, and A.D. 260, see Cockle (1981, p.91).
[392] The *ceramion* (κεράμιον) was the standard unit of measurement by which wine was sold and equated to 4 Roman pounds of water. The *ceramion* consisted of four units called "*choes*" and four choes equalled a ceramion. The "standard" *cermaion* of four-*chous* was also subdivided into 32 Maximian "*Cotylae*" (the smallest unit of liquid), see Harl (1996a, p.316). In these contracts, however, 1/20 of a *ceramion* was a Maximian *Cotylae* not 1/32. Clearly there were variable measurements and Cockle (1981, p.95-6) suggests that there were local standards. See also Bagnall (2009, p.188) for the measurements of liquids.
[393] The contract states that the salary per month from the months of Thoth to Pachon is 400 drachmas per month (100 tetradrachms); Payni and Epeiph is 500 drachmas per month (125 tetradrachms); Mesore is 200 drachmas per month (50 tetradrachms). Tetradrachm rates are calculated by dividing the number of drachmas by four. This is because there were four drachmas to each tetradrachm Bagnall (2009, p.190); Corbier (2008a, p.338); Harl (1996a, p.120).
[393] One *artaba* of wheat in Egypt equated to 4 ½ *modii* in Italy. See footnote 397 p.83.
[394] The monthly payment schedule is corrupted but the lessor undertook to provide the following monthly maintenance. One *cermaia* of sour wine and an (?) *artaba* of lentils.
[395] Actually the salary is 2560 drachmas from which he will have to deduct 700 (a slave's dues to the master who sets him up in business) leaving 1860 drachmas.
[396] The contract states that the salary per month from the months of Thoth to Tybi is 200 drachmas per month (50 tetradrachms); Mecheir is 300 drachmas per month (75 tetradrachms); and Epeiphi to Mesore is 500 drachmas (125 tetradrachms). The remaining 60 drachmas is unaccounted for in the schedule and was probably a balancing payment at the end of the lease. For tetradrachm rates see footnote 393 (above).
[397] One *artaba* of wheat in Egypt equated to 4 ½ *modii* in Italy, see Bagnall (1989, p.69), and four *modii* of wheat would support a male for one month, see Harl (1996a, p.271).

**Table 4 Additional production with the payment of maintenance. Data from Cockle (1981, p.87-97).**

| Date A.D. | Quantities | Wage |
|---|---|---|
| 243 | 150 x double *ceramia*[398]<br>150 x two-*choes* jars | two *ceramia* of good wine<br>two *ceramia* of sour wine |
| 245- 255 | 100 x double *ceramia*[399]<br>15 x two-*choes* jars | one *ceramia* of sour wine<br>one *artaba* of lentils |
| 260 | 100 x double *ceramia*[400]<br>30 x two-*choes* jars | two *ceramia* of sour wine<br>one *artaba* of lentils |

The three pottery contracts (papyri 3595, 3596, 3597) are important because they provide evidence of stability in costs between A.D 243 and A.D. 260. They demonstrate little change in wages between these two periods[401], suggesting confidence in the currency during this period. This is expressed in the graph below in the form of tetradrachms. Since there were four drachmas to one silver tetradrachm in this period[402] the wage per 100 *ceramia* is expressed as a wage between eight and nine tetradrachms. The silver content of this coin remained roughly 0.8 grams of silver.

[398] This would be an eight-chou jar. Both the 150 double *cermaia* (the eight-chou jar) and the 150 x two-chous jar are paid in kind: two *cermaia* of good wine and two *cermaia* of sour wine.
[399] This would be an eight-choes jar. Both the 100 double *cermaia* (the eight -choes jar) and the 15 x two-chou jars are paid in kind: one *cermaia* of sour wine and one *artaba* of lentils.
[400] This would be an eight-choes jar. Both the 100 double *cermaia* (the eight 8-choes jar) and the 30 x two-choes jars are paid in kind: two *cermaia* of sour wine and one *artaba* of lentils
[401] Tetradrachmas of Nero, Hadrian and Trajan had 2.21 grams of silver; tetradrachms of Marcus Aurelius had c.1 grams of silver, tetradrachms of Commodus had 0.99 - 0.6 grams of silver. The issues of other emperors in the early 3rd century A.D. were much smaller but were also in circulation (in very much smaller quantities) tetradrachms of Severus Alexander with a silver content of 0.87 grams of silver; tetradrachms of Maximinus with a content of 0.82 grams; tetradrachms of Gordian III with a silver content of 0.74 grams of silver; tetradrachms of Decius 0.88 grams of silver, see Cope *et al.* (1997, p.10 – 12). For the silver content of coins of Severus Alexander, Gordian III and Decius see Lendon (1990, p.109). Interestingly the rate eight drachmas per 100-ceramina remains the same in A.D. 260 indicating that wages were constant despite tetradrachms with differing silver contents in circulation.
[402] See Bagnall (2009, p.190); Corbier (2008a, p.338); Harl (1996a, p.120).

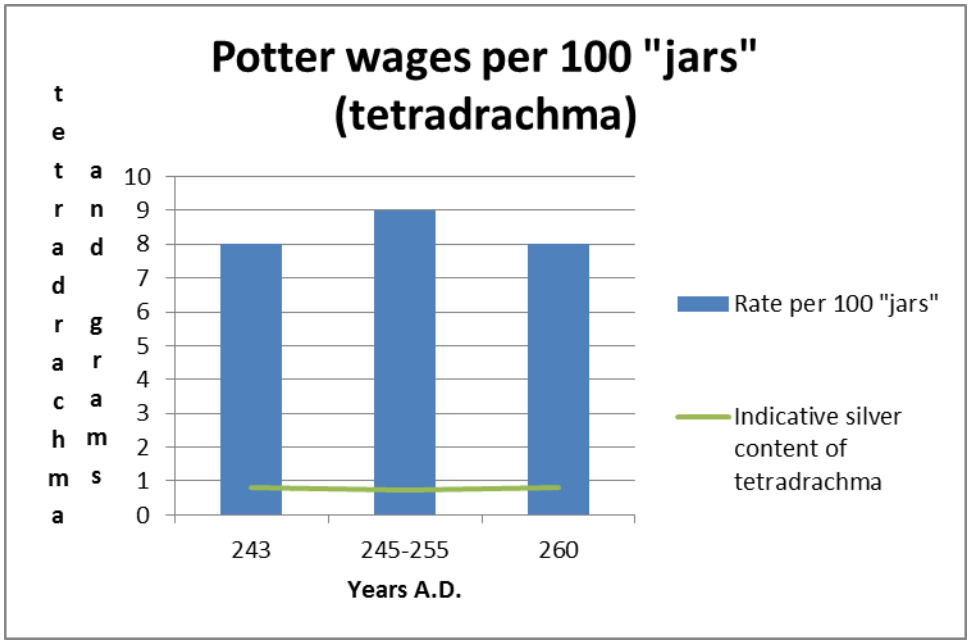


**Figure 7 Wages per 100-"jars" compared with the silver content of the tetradrachm. Data from Cockle (1981, p.87-97); Cope *et al.* (1997, p.12).**

The total salaries for these potters can also be compared. The A.D. 243 contract is for a "whole pottery". By contrast the A.D 245 – 255, and A.D. 260 contracts are for ¼ and ⅓ shares of a pottery. The potential output and salary of the two later potteries can be estimated based on their shares of the pottery. Since the contracts from A.D. 245 – 255, and A.D. 260 are for part-shares the annual quantities required by those contracts need to be "scaled-up" for comparison with the quantity required in A.D. 243 - as demonstrated by Cockle[403]:

**Table 5 Possible total production per pottery. Data from Cockle (1981, p.91).**

| Date A.D. | Share in pottery | Required production | Production for whole pottery |
|---|---|---|---|
| 243 | Whole share | 15,000 four-*chou ceramia* | 15,000 x four-*chou ceramia* |
| 245 – 255 | ¼ share | 4,000 four-*chou ceramia* | 16,000[404] x four-*chou ceramia* |
| 260 | ⅓ share | 8,000 four-*chou ceramia* | 24,000[405] x four-*chou ceramia* |

Cockle's table clearly shows that the scale of production in each case is comparable and her calculation gives the total salaries that might be paid to the potters.

[403] Cockle (1981, p.91).
[404] 4,000 x four *chou* jars multiplied by four (the share in the pottery). This gives the total pottery production of 16,000 x four- *chou* jars.
[405] 8,000 x four- *chou* jars multiplied by three (the share in the pottery). This gives the total pottery production of 24,000 x four- *chou* jars.

**Table 6 Possible total wage per pottery. Data from Cockle (1981, p.91).**

| Date A.D. | Share in pottery | Salary for part share | Possible total salary for a full share |
|---|---|---|---|
| 243 | Whole share | 4,800 drachmas | 4,800 drachmas |
| 245 – 255 | ¼ share | 1,440 drachmas | 5,760 drachmas |
| 260 | ⅓ share | 2,560 drachmas | 7,680 drachmas |

The estimated wage for a full-share of a pottery would seem to have increased in A.D. 260 but the salary paid to the ⅓-share lessee in A.D. 260 was subject to the master's 700 drachmas deduction as the fee for setting up his slave in business[406]. Despite this difference the crucial fact is that the rates of payment (both in coin and maintenance) are largely unchanged between A.D. 243 – 260, indicating that wages are stable in the mid 3rd century.

## Section 6.2. Potters' Wages in Silver

Further evidence that the wages are not affected by the silver content of the tetradrachm at this time can be seen in the silver paid per 100 *ceramia*. As stated above the rate in A.D. 243 was 32 drachmas per 100 *ceramia* (or eight silver tetradrachms per 100 *ceramia*). In A.D 260 the rate was again 32 drachmas per 100 *ceramia* (or eight silver tetradrachms per 100 *ceramia*).

**Table 7 Rate of payment per 100 *ceramia.* Data from Cockle (1981, p.91).**

| Date (A.D.) | Rate per 100 *ceramia* | Rate per 100 *ceramia* (tetradrachms) |
|---|---|---|
| 243 | 32 drachmas | 8 tetradrachms |
| 245-255 | 36 drachmas | 9 tetradrachms |
| 260 | 32 drachmas | 8 tetradrachms |

Since the wage paid, and maintenance provided, have remained static this would suggest that there has been no inflationary increase between these two periods. Table 8 (below) shows the variation in the amount of silver paid per 100 *ceramia* using the circulating coins of the various emperors. The rate of silver content in the currency can be seen in the following table (Table 8, below) that shows how much silver would hypothetically be paid using the various tetradrachms coins in circulation during the 3rd century A.D.[407]

[406] His actual wage was 1860 drachmas.
[407] At a rate of four drachmas to the tetradrachm, see footnote 261, p.60.

**Table 8 Quantity of silver paid to potters using different tetradrachm issues. Data from Cope *et al.* (1997, p.10 – 12); Lendon (1990, p.109).**

| Date | Rate | Emperor | silver content / coin | Quantity of silver |
|---|---|---|---|---|
| A.D. 224-7 | 8 tetradrachms | Severus Alexander | 0.87 grams[408] | 6.96 grams |
| A.D. 237-8 | 8 tetradrachms | Maximinus | 0.82 grams | 6.56 grams |
| A.D. 237-8 | 8 tetradrachms | Gordian III | 0.88 grams[409] | 7.04 grams |
| A.D. 237-8 | 8 tetradrachms | Decius | 0.82 grams[410] | 6.56 grams |

Table 8 (above) that shows that the amount of silver payable using tetradrachms of the 3rd century to the potters at a rate of 8 tetradrachms per 100 *ceramia* in the contracts dating to A.D. 243 and A.D. 260 was broadly the same. This is evidence that wages were stable during the 3rd century until the reforms of Gallienus in A.D. 263-4. This document will therefore consider the wages of Ass and Ox-drivers to determine if the same stability is demonstrated by their wage contracts during the early to mid-3rd century.

### Section 6.3. Wages: Ass and Ox-Drivers

The section will now consider the daily wages of ass- and ox-drivers during the 3rd century A.D. because their daily wages show no alteration despite the substantive debasement in the silver content of the tetradrachm in the mid 3rd century A.D. This suggests tetradrachms were being exchanged at their face-value until the monetary reform of Aurelian in A.D. 274-5, and that wages (until A.D. 274-5) were being set at traditional, accepted, rates regardless of the silver content of the tetradrachm.

[408] Data from Lendon (1990, p.109).
[409] Data from Lendon (1990, p.109).
[410] Data from Lendon (1990, p.109).

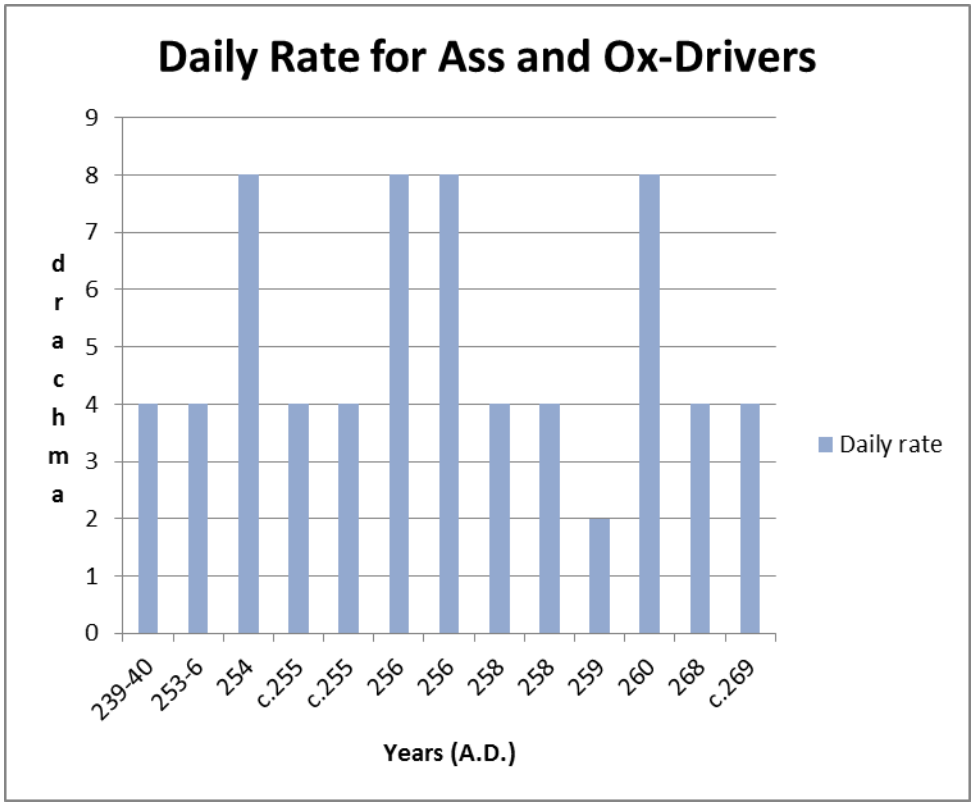


**Figure 8 Daily wages for ass and ox-drivers in drachmas (A.D. 239 – 269). Data from Table 9 (p89)**

During the early to mid 3rd century A.D. the daily rate of payment for ass or ox-drivers was four drachmas per day, as analyzed by Drexhage[411]:

> "In this time the daily wage amounted to four drachmas; and since all the totals are smoothly divided easily by four, I think that these are the wages for several days" (author's translation) [412]

Larger payments (which are generally multiples of four) represent wages for multiple days or perhaps the wages of overseers or "lead"-drivers. The evidence from the archive of Heroninos demonstrates that the unskilled daily wage or the wage of workers who were tied to estates in some form of dependence in the 3rd century A.D. was two drachmas and two

[411] Drexhage (1991, p.345 – 347). See also Cuvigny (1996, p.139 – 145) for wages at the quarries of Mons Claudianus in the 2nd century A.D.; See Kehoe (2012, p.122 – 123) for a more general overview of wages; and see Rathbone (1991, p.148 – 174) for a thorough study wages from the Heroninos archive. See Scheidel (2008, p.1 – 10) for analysis of Egyptian wages generally from the 1st century A.D., and for an analysis of living standards see Scheidel (2010, p.425-462). See Temin (2013, p.254 – 257) for a detailed study of the Roman economy but with reference to Egyptian wages. Reece (1973, p.239 – 245) considers wages in the A.D. 301 Price Edict, as have Groen-Vallinga and Tacoma (2013, p.1 – 63). Szilagyi (1963, p.325 – 377) considered wages in the Western Roman Empire, particularly for the 1st and 2nd centuries.

[412] "In dieser Zeit wird der Tageslohn 4 dr. Betragen haben; und da alle Summen glatt durch vier teilbar sind, halte ich Summen für Löhne mehrerer Tage", Drexhage (1991, p.342).

obols[413]; while skilled or heavy labour was paid at a higher rate of four drachmas per day[414]. It is noticeable in the data below that the basic rate of payment remains four drachmas or one silver tetradrachm per day until c.A.D. 269[415]. A schedule of payments between A.D. 239 and A.D. 269 is as follows:

**Table 9 Ass and ox-drivers: daily wages A.D. 239 – c.269**

| Date A.D. | Item | Rate | Collection |
|---|---|---|---|
| 239-40 | Arsinoite: Ass-driver | 4 drachmas | P. Mich 11/620 Rect. Col 6[416] |
| 253-6 | Theadelphia: Ass-driver | 4 drachmas[417] | SB 6/9408, 2 Spalte 4[418] |
| 254 | Theadelphia: Donkey-drivers | 8 drachmas[419] | P. Lond. 1226[420] |
| c.255 | Theadelphia: Ass-driver | 4 drachmas[421] | SB 6/9409,1 Spalte 4[422] |
| c.255 | Memphis: Ass-driver | 4 drachmas[423] | BGU 1/14 Col. 3[424] |
| 256 | Theadelphia: Ox-drivers | 8 drachma[425] | P. Flor. 3/32 I Col. 2[426] |
| 256 | Theadelphia: Donkey-drivers | 8 drachmas[427] | P. Flor. 32 I[428] |
| 258 | Euhemeria: Ox-driver | 4 – 8 drachmas | P. Flor. 322[429] |
| 258 | Euhemeria: Donkey-drivers | 4 drachmas[430] | P. Flor. 3, 322Col. 4 - 5[431] |

[413] Children were also employed as labourers, and they were paid one drachma, five obols, see Kehoe (2012, p.122 – 123).
[414] On the rate of one tetradrachm per day see Kehoe (2012, p.122 – 123); Duncan-Jones (1994, p.27); Rathbone (1991, p.148 – 174).
[415] Our evidence comes mostly from Middle Egypt only. The daily wage could vary. For ox, donkey or ass-driver the wage could be 24 obols (one silver-coated tetradrachm) per day in Arsinoe in A.D. 239 but in Memphis it was as much as 36 – 54 obols (1 ½ - 2 silver-coated tetradrachms) per day. Prices were probably higher in Alexandria, see Rathbone (1997, p.184 – 185).
[416] Drexhage (1991, p.345).
[417] Other payments for ass-drivers in SB 6/9408, 2 Spate 2 – 3 were eight drachmas, 16 drachmas, 17 drachmas and one obol, and 40 drachmas.
[418] Drexhage (1991, p.346).
[419] A second payment of 17 drachmas and 1 obol is recorded, possibly for multiple days or a "senior driver".
[420] Drexhage (1991, p.347); Sperber (1966a, p.188 – 9); Johnson (1936, p.309).
[421] There are some payments of 8 drachmas which is likely to be for two day's work. A further payment is made for 17 drachmas and one obol (perhaps for an extended period – or a "senior driver" of some sort). The papyrus largely records asses hired out at a daily rate of four drachmas, see Johnson (1936, p.216 – 218).
[422] Drexhage (1991, p.346).
[423] B.G.U. 1/14 Col. 6 also records a payment of 240 drachmas to three camel-drivers. The duration of the contract (and therefore the daily rate) is not known.
[424] Drexhage (1991, p.346) and Johnson (1936, p.309).
[425] Sperber (1966a, p.188 – 9) gives the payment as 8 ½ and 12 denarii (34 and 48 drachmas) per month for ox-drivers, and two and 4 ¼ denarii per month. The account however is not for a full monthly salary. As can be seen from the Greek, and in Johnson (1936, p.219), the account is actually an account of expenses and payments for the month of Phamenoth and these are single payments made on a daily rate and not a month salary. The actual rates of payment from the Greek papyrus are followed: eight drachmas (two day's work).
[426] Drexhage (1991, p.347).
[427] Sperber (1966a, p.188 – 9) gives 2 and 4 ½ denarii. This equals (eight and 18 drachmas) – the larger payment is perhaps a senior driver or for an extended period of days.
[428] Johnson (1936, p.219).
[429] Sperber (1966a, p.188 – 9); Johnson (1936, p.309-10).

| | | | |
|---|---|---|---|
| 259 | Theadelphia: Ox-drivers | 2 drachmas | P. Lond. 1170[432] |
| 260 | Theadelphia: Ass-driver | 8 drachmas [433] | SB 6/9409.3 Spalte 1[434] |
| 268 | Theadelphia: Ass-driver | 4 drachmas [435] | SB 14/11556[436] |
| c.269 | Oxyrhynchus: Donkey transport[437] | 4 drachmas | P.Erl 101 Col. 2[438] |
| 260 - 282 | Oxyrhynchus: Ass-driver | 1 ⅓ drachmas[439] | P. Oxy. 49 3519[440] |

The data can be analysed to show that daily wages are not changing in response to the silver debasement of the tetradrachm which drops sharply during this period. This can be clearly seen when the daily amounts are converted into the silver tetradrachms at the traditional rate of four drachmas, which equates to one tetradrachm[441]:

**Table 10 Contemporary tetradrachm issues. Data from Cope *et al.* (1997, p.12)**

| Date A.D. | Emperor | Silver Content of Tetradrachms |
|---|---|---|
| 237 – 8 | Maximius | 0.82 grams |
| 264 – 5 | Gallienus | 0.43 grams |
| 266 – 7 | Gallienus | 0.26 grams |
| 268 | Claudius II | 0.20 grams |

The daily wage of ox- and ass-drivers in the 3rd century A.D. can be plotted on a graph using the data in Table 9. Only papyri that have a single date are included for comparison. Papyrus P. Oxy. 49, 3519 that has a date between A.D. 260 and 282 is excluded. A trendline showing the level of silver in the tetradrachm is added to the graph to demonstrate how wages respond to a decline in the silver content of the tetradrachm using the

[430] Sperber (1966a, p.188 -9) gives 1 and 4 denarii. This is 4 and 16 drachmas – the 16 drachmas being multiple days or a "senior driver", see Johnson (1936, p.309-10).
[431] Drexhage (1991, p.347).
[432] Sperber (1966a, p.188 -9); Johnson (1936, p.216 – 219).
[433] Payments recorded for 16 and 60 drachmas. The payment of 8 drachmas suggests 2 day's work.
[434] Drexhage (1991, p.348).
[435] Payments are also recorded for 4 and 20 drachmas. In addition the papyrus also records the payment of 32 drachmas to two camel drivers, each.
[436] Drexhage (1991, p.348).
[437] 10 donkeys for transport.
[438] Drexhage (1991, p.314); Johnson (1936, p.309-10).
[439] The monthly wage is 40 drachmas with maintenance.
[440] Drexhage (1991, p.348).
[441] See Bagnall (2009, p.190; Corbier (2008a, p.338); Harl (1996a, p.120).

data in Table 10[442]. The plot for the silver content of the tetradrachm is indicative only, and based on the small number of chemical analysis of tetradrachms. The indicative silver content of the tetradrachm is given by also using the vertical axis as grams.

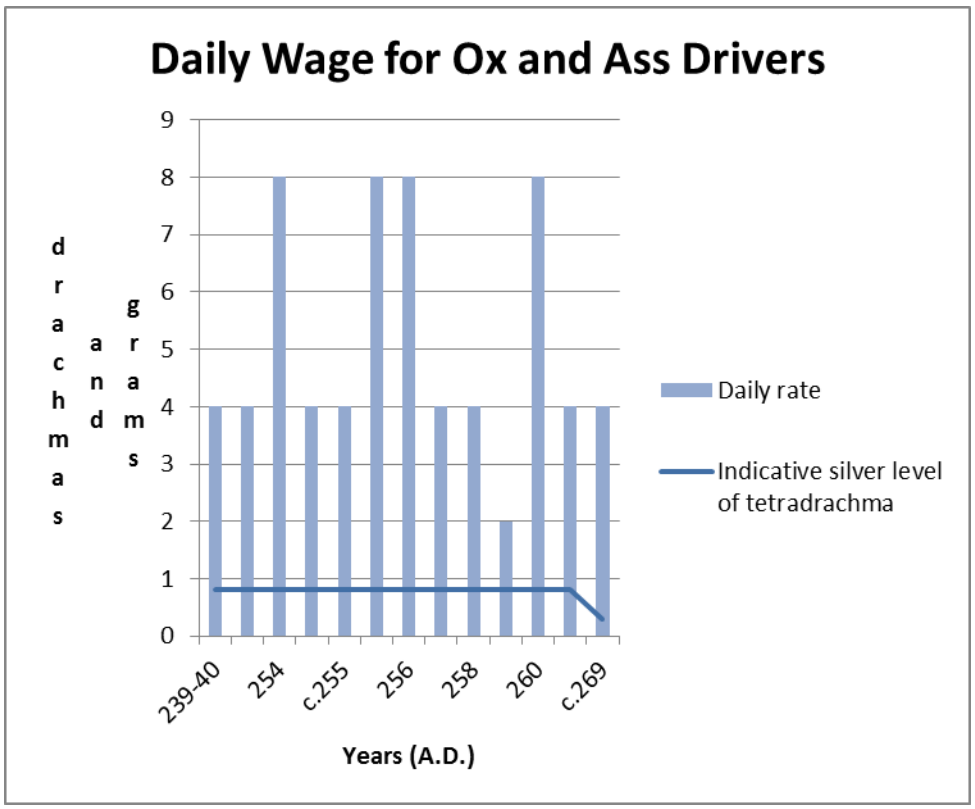


**Figure 9 Daily wage for ass and ox-drivers in drachmas (A.D. 239 – 269). Data from Rathbone (1991, p.148 – 174); Cope *et al.* (1997, p.12)**

The data in Figure 9 clearly shows that there is no corresponding increase in wages as silver content declines. If silver content of coins mattered (rather than the face-value of the coins) for the payment of the daily wages of the ass and ox-drivers we would see a four-fold increase in the number of drachmas needed to pay the daily wage of A.D. 269. This is because four drachmas equated to one tetradrachm[443] which in A.D. 237 – 8 was worth about 0.82 grams of silver. In A.D. 269 the silver content of the tetradrachm had fallen to 0.2 grams of silver per coin[444] and thus for a worker to earn the same amount of silver in A.D. 269 per day as they did in A.D. 235, the ass drivers would need to be paid four-times as many silver tetradrachms. Since there were four drachmas to the tetradrachm this means that a daily wage of 16 drachmas would need to be paid to the worker (the equivalent of four tetradrachms per

[442] See Cope *et al.* (1997, p.12) for the silver content of the currency.
[443] See Bagnall (2009, p.190); Corbier (2008a, p.338); Harl (1996a, p.120).
[444] See Cope *et al.* (1997, p.12) for the silver content of the currency.

day). There is no evidence in the papyri or in the hoard evidence that this happened in the 3rd century prior to A.D. 274/5.

The data above demonstrates that wages did not substantially change between A.D. 239 and A.D. 269 because wages remained at four bronze drachmas (or one tetradrachm) per day[445] despite the debasement of the silver content of the tetradrachm from 0.88 grams of silver per coin, to c.0.2 grams of silver per coin[446]. This indicates that the face-value of the currency, even though it has been debased, has been maintained. During this period, moreover, there were poor inundations of the Nile, when there was insufficient flood water to irrigate the land, and this caused high wheat prices. Neither these prices, however, nor the debasement of the tetradrachm, seem to have substantially affected the daily wages in the contract. Arguments that the number of coins needed to make payments increased during the mid 3rd century A.D. because of the dwindling silver content are modern assumptions, only. Those arguments assume that the users of the currency were aware of the silver content of the coins and were in a position to demand older, better coins for their services. Notwithstanding the comments cited with regard to references to "old" and "new coins"[447] it seems from the evidence of wages for ass-drivers that at least until A.D. 269 coins were still being accepted at their face-values.

### Section 6.4. Wages: Apprentices

A similar pattern of price stability to that of ox- and ass-drivers can be seen in the wages of apprentices during the 3rd century. Indeed the data sequence extends over a longer period than the study period and can be used to demonstrate the long-term stability of wages in 3rd century A.D. Egypt. For craftsmen, membership of a guild was prior to professional practice and this required an apprenticeship period[448]. It seems that intent to train as an apprentice required the official approval of the local authorities and the relevant tax-farmers

[445] As Drexhage (1991, p.342) suggests, larger numbers are probably payments for multiple days of work.
[446] See Cope *et al.* (1997, p.12) for the silver content of the currency.
[447] See Christiansen (1984, p.297 – 298); Rathbone (1996, p.336).
[448] Most trades and traders seem to have been members of "organizations" that provided for both social and economic needs. These organizations were known as "*koina*" or "*sunodoi*". These organisations were primarily religious or social groupings with annual subscriptions and elected "chairmen". They not only provided dinners and for funerals, but managed agreements to divided market "territories", fix prices, and represent individuals to the local authorities. Collectively they paid the κειροναχια (*cheironaxia*) – the handcraft taxes or *annonae*, see Rathbone (2005, p.708). They were often located in specific villages or town districts and many of these organizations became hereditary: Caracalla, for example, when expelling Egyptians from Alexandria noted that it was possible to identify the linen-weavers from their language or customs, see Johnson (1936, p.388).

for that trade[449]. For further discussion on guilds see Section 5.6 (p.73). In the papyri of Egypt we have a number of papyri concerning contracts for apprentice weavers. These contracts specify an apprenticeship of between one and five years. In most cases the master-weaver paid the necessary taxes and often a wage. Other additional forms of payment were sometimes food and clothing allowances. There was no fee paid by the parent but there were fines should the apprentice not finish their training[450].

Three apprentice contracts from the 3rd century can be used to examine wage agreements in the 3rd century. These are contracts P.Oxy LXVII 4596 (?A.D. 264), BASP 22 (c. A.D. 271), and the undated contract PSI 241 (dated simply to the 3rd century). These have been taken from the collections compiled by Johnson[451] but due to the smaller number of comparable papyri to consider wages accurately it is necessary to include contracts prior to A.D. 235 (the start of the study period) since this will allow comparison of the monthly wage over a longer period of time. The inclusion of these will demonstrate the stability of wage-payments over the long-term and the absence of inflation on those payments[452].

**Table 11 Contracts for apprentice weavers (A.D. 66 – 271). Data from Johnson (1936, p.390 – 391); Drexhage (1991, p.376).**

| Date A.D. | Apprentice | Monthly wage | Collection |
|---|---|---|---|
| 66 | Free Boy: 1 year | ?20 drachmas[453].<br>Fine: 100 drachmas in silver | P. Oxy II 275[454] |

[449] This is demonstrated by papyrus P. Mich. Inv 73 Oxy in which a request to be an apprentice is addressed to the tax-farmer, see Johnson (1936, p.391).
[450] In some cases the contracts are actually agreements for "*paramones*". In these cases a loan is advanced and the apprentice undertakes a fixed-term of service in lieu of interest on the loan, or repayment, see Johnson (1936, p.391).
[451] See Johnson (1936, p.390 – 391).
[452] Full transcriptions and translations of those papyri that are discussed in detail are given in Appendix 5: Apprentice Papyri Analysed in Text, p.244 - 261.
[453] This contract does not specify five silver drachmas (which is five tetradrachms) per month but the wording is exactly the same as P. Oxy XLI 2971 from the same year (A.D. 66) in which the only difference is the insertion of the word "silver" in the phrase five silver drachmas per month. On this basis it is suggested that the payment in P. Oxy II 275 should read five *silver drachmas* per month. In P. Oxy II 275 an allowance of 12 drachmas per year for clothes is also given.
[454] Grenfell and Hunt (1899, p.262 – 4).

| | | | |
|---|---|---|---|
| 66 | Free Boy: 2 ½ years | 20 drachmas[455].<br>Fine: 100 drachmas[456] | P. Oxy XLI 2971[457] |
| 183 | Free Boy: 5 years | 24 drachmas (in year five)<br>Fine: 100 drachmas | P. Oxy 725[458] |
| 175 - 199 | Slave Girl: 4 years | 20 drachmas ( year four) | P. Oxy 1647[459] |
| 264? | Free Girl: 4 years | No wage given<br>Advance: 400 drachmas[460] | P.Oxy LXVII 4596[461] |
| 271 | Slave Girl: | 5 drachmas[462]<br>Fine: 200 silver drachmas[463] | SB 18 13305[464] |
| 3rd cent. | Slave girl: 1 year | 20 drachmas (months 6 – 12) [465] | PSI 3. 241[466] |

These contracts show that the standard rate of payment for a child apprenticed as a weaver was around 20 drachmas per month. This figure is unchanged between A.D. 66 and 271. It is also the same rate of 20 drachmas regardless as to whether the child is a slave or free, or a boy or girl. This is evidence that wages were stable and not affected either by inflation or the changing silver content of the tetradrachm between these dates.

[455] Apprenticed for two years and six months; maintained and clothed by the weaver or paid five silver drachmas per month. The fine for a breach of contract is: 100 drachmas.
[456] We can assume that this is in silver since silver is mention as the means of payment in P. Oxy. II 275 which mirrors the terms and conditions of P. Oxy. XLI 2971.
[457] Browne *et al.* (1972, p.57 – 59).
[458] Johnson (1936, p.390).
[459] Johnson (1936, p.390).
[460] The Greek states 400 drachmas in silver. This equates to 100 tetradrachms repayable after four years without interest.
[461] Coles (2001, p.182 – 186).
[462] One year wage: 60 drachmas. This is 5 tetradrachms per month but it is not clear if tetradrachms are meant as these are coins of common transaction by A.D 270. If bronze drachmas were meant then it would be unusual as the slave girl's wage is substantively less than the wage paid to the slave in A.D. 175 – 199. This is similar to the contracts from A.D. 66 in which the wording is exactly the same but one contract specifies tetradrachms and the other simply says drachmas. See footnote 453 p.93 (above). For this reason the wage is interpreted to mean tetradrachms.
[463] 20 drachmas is five tetradrachms.
[464] This is in the following collection: SB 18 13305 but is recorded as BASP 22 by Drexhage (1991, p.376).
[465] The contract states a rate of four obols per day for the last six months only. This must be calculated by 30 days to give a figure of 120 obols per month (for the last six months only). The 120 is then divided by 6 (because there are 6 obols to the drachma, see Table 2, p.61) to give a figure of 20 drachma per month
[466] Johnson gives 20 drachma per month, or 4 obols per day, see Johnson (1936, p.390).

This stability is shown in below (Figure 10, p.95) where the monthly payments have been converted into tetradrachms[467] since these are the coin of payment specified in the contracts. Figure 10 (p.95) also includes two contracts dated generally to the 2nd and 3rd century. Whilst it is frustrating that they are not dated to a particular year they do provide further evidence that the standard rate of pay for a weaving apprentice in Egypt from the 1st to the 3rd centuries A.D. was five silver tetradrachms:

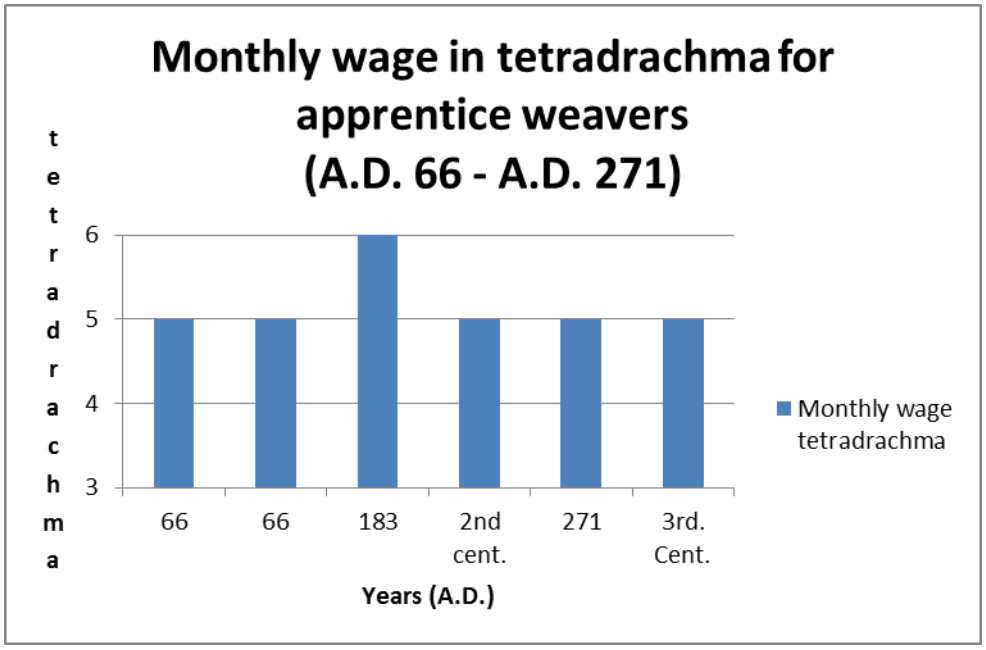


**Figure 10 Apprentice weaving wages in tetradrachms per month (A.D. 66 - 271). Data from Johnson (1936, p.390 – 391); Drexhage (1991, p.376)**

By contrast Figure 11 (p.96) includes a trendline showing the silver levels of the tetradrachm[468]; it is clear that wages have not responded to the changes to the silver content of the currency. In Figure 11 (p.96) only the datable examples are compared since it would not be possible to compare the generically dated 2nd and 3rd century contracts with specific silver contents of the tetradrachm (because the silver contents vary so dramatically in the middle of the 3rd century). The evidence, however, is instructive and demonstrates the stability of wage payments made to apprentices (both slave and free, male and female) between A.D. 66 and A.D. 271 regardless of the currency debasement.

[467] There were four drachmas to one tetradrachm. See Bagnall (2009, p.190; Corbier (2008a, p.338); Harl (1996a, p.120).
[468] Based on Cope's data Cope *et al.* (1997, p.12).

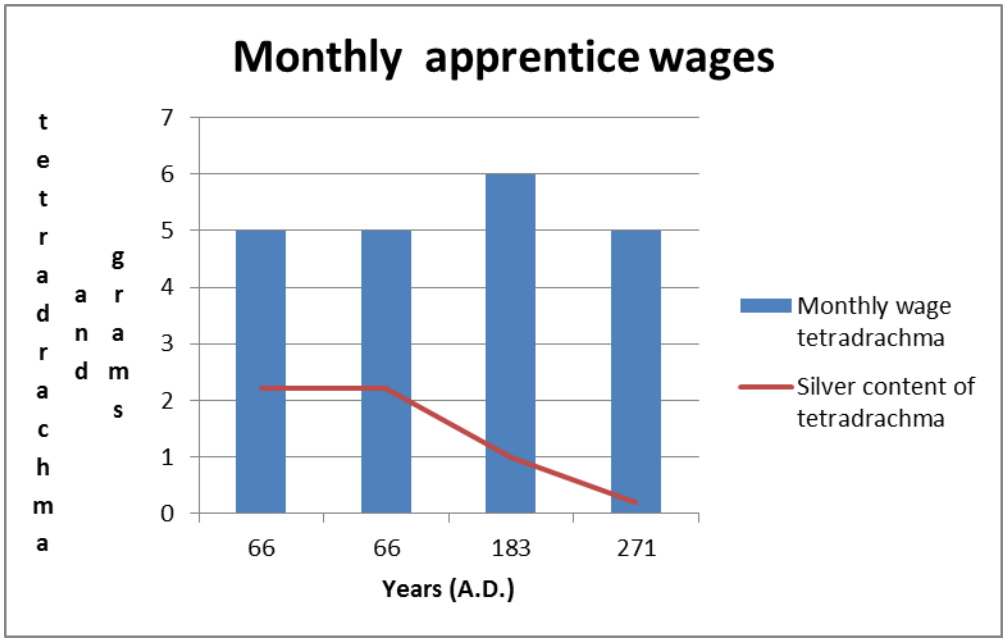


**Figure 11 Monthly wages for apprentice weavers and the silver content of the tetradrachm (A.D. 66 - 271) Data from Cope *et al.* (1997, p.12); Drexhage (1991, p.376); Johnson (1936, p.390 - 391)**

Figure 11 compares the monthly wages paid to apprentice linen weavers who are slaves or children, and in their final year of an apprenticeship. The figure compares these wages to the silver content of the circulating tetradrachms since the monthly payments are to be paid in "silver" and not bronze drachmas. The vertical axis lists the number of tetradrachms but also gives a reading in grams for the silver content of the tetradrachm[469].

Figure 11 shows that the monthly wage in A.D. 271 (contract SB 18 13305[470]) for a weaver (either child or slave) was exactly the same as the contracts P. Oxy 275[471] and P. Oxy XLI 2971 from A.D. 66[472]. Since the silver content of the Egyptian tetradrachm currency in A.D. 271 was c.0.2 grams of silver per coin as opposed to 2.21 grams of silver per coin in A.D. 66[473] we would have expected the wages to reflect this debasement. Since the wage remains stable between A.D. 66 and A.D. 271 it would appear that there is no change in the wage over 200 years in response to currency debasement.

### Section 6.5. Maintenance

Although the wages remain stable despite the currency debasement in the mid 3rd century it is possible to ask whether maintenance payments increased as the silver content of

[469] The data for the currency is taken from Cope's analysis of the silver content of the tetradrachm see Cope *et al.* (1997, p.12).
[470] See footnote 464, p.94 for its other title as BASP 22.
[471] Grenfell and Hunt (1899, p.262 – 4).
[472] Johnson (1936, p.390).
[473] Cope *et al.* (1997, p.12).

the currency decreased. In most cases the master weaver feeds and clothes the apprentice, and usually pays the taxes. Unfortunately the allowance for food is not specified. In contracts P. Oxy. II 275 and P. Oxy. XLI 2971 (both dating to A.D. 66), maintenance in terms of a tunic worth 12 drachmas is provided by the master weaver. A similar allowance is paid to the boy in A.D. 183 (P. Oxy 725) who in addition to his wages, is given each year an allowance for a tunic to the value of 16 drachmas (year one), 20 drachmas (year two), 24 drachmas (year three), 28 drachmas (year four) and 32 drachmas (year five)[474]. In the contract dating (probably) to A.D. 264 (papyrus P. Oxy LXVII) a certain Polyduces contracts his underage daughter to train as a weaver for 4 years. The contract states that she will be fed and clothed in place of wages but the allowance does not survive.

### Section 6.6. Apprentices: Fines

In the contracts analyzed above there are fines (in tetradrachms) specified for breach of contract by either party. The stability of these fines provides further evidence for the stability of wages, and the currency in the 3rd century. If the silver content of the currency governed the wages and fines paid one might expect the fines to increase as the currency was debased because a fine that reflected the silver content of the currency would be in the interest of both parties. The evidence does indeed suggest that there was an increase in fines during the 3rd century but it is hardly dramatic: simply a doubling of the A.D. 66, rate as can be seen below (Table 12, p97):

**Table 12 Apprentice weavers A.D. 66 - 271: fines**

| Date A.D. | Apprentice | Fine | Collection |
|---|---|---|---|
| 66 | Boy: 1 year | 100 drachmas in silver | P. Oxy II 275[475] |
| 66 | Child: 2 ½ years | 100 drachmas[476] | P. Oxy XLI 2971[477] |
| 183 | Boy: 5 years | ? | P. Oxy 725[478] |
| 2nd cent. | Slave: 4 years | ? | P. Oxy 1647[479] |
| 271 | Slave: weaver | 200 silver drachmas[480] | SB 18 13305[481] |

[474] In this case the father of the boy continues to feed and provide a room for his son.
[475] Grenfell and Hunt (1899, p.262 – 4).
[476] We can assume that this is in silver since silver is mentioned as the means of payment in P. Oxy. II: 275 which mirrors the terms and conditions of P. Oxy. XLI: 2971.
[477] Browne *et al.* (1972, p.57 – 59).
[478] Johnson (1936, p.390).
[479] Johnson (1936, p.390).
[480] 200 drachmas is 50 tetradrachms.
[481] See footnote 464, p.94 for its other title as BASP 22.

These rates can be converted into silver tetradrachms. This is important since the original Greek states that these are to be paid in silver coin[482] and by comparing the amount of the fine with the silver content of the currency, as analysed by Cope[483] we are able to determine if the fine reflects the amount of silver in the currency, or the accepted face-value of the silver coins irrespective of their silver content.

**Table 13 Apprentice weavers A.D. 66 - 271: fines and advances in tetradrachms**

| Date A.D. | Apprentice | Fine | Collection |
|---|---|---|---|
| 66 | Boy: 1 year | 25 tetradrachms | P. Oxy II 275[484] |
| 66 | Child: 2 ½ years | 25 tetradrachms | P. Oxy XLI 2971[485] |
| 183 | Boy: 5 years | ? | P. Oxy 725[486] |
| 2nd cent. | Slave: 4 years | ? | P. Oxy 1647[487] |
| 271 | Slave: weaver | 50 tetradrachms | SB 18 13305[488] |

Between A.D 66 and A.D. 271 the silver content of the Egyptian tetradrachm dropped from 2.21 grams of silver in A.D. 66 to a silver content per coin of c.0.2 grams of silver per coin by A.D. 271[489]. For the fines to reflect the silver content of the coins in circulation they must reflect a perceived halving of the silver content in A.D. 266-7 from 0.99 grams (A.D. 180), to 82 grams of silver (A.D. 238), to 0.26 grams (A.D. 266-7) and finally c.0.2 grams of silver per coin (A.D. 269-70)[490]. If it were to reflect the difference in the silver coins of A.D. 269 – 70 onwards and the far superior coins of, for example, Commodus at 0.99 grams then we might calculate that the fine should increase five-fold, from 25 tetradrachms to a fine of c.125 tetradrachms[491]. This is clearly not the case because the fine of 25 tetradrachms in A.D. 66 has only doubled (in A.D. 271 it is 50 tetradrachms). This suggests that either that

[482] The phrase is generally: ἀργυρίου δραχμὰς (of/in silver drachmas…) There were four drachmas to one tetradrachm. See Bagnall (2009, p.190); Corbier (2008a, p.338); Harl (1996a, p.120).
[483] Cope *et al.* (1997, p.12).
[484] Grenfell and Hunt (1899, p.262 – 4).
[485] Browne *et al.* (1972, p.57 – 59).
[486] Johnson (1936, p.390).
[487] Johnson (1936, p.390).
[488] See footnote 464, p.94 for its other title as BASP 22.
[489] Cope *et al.* (1997, p.12).
[490] Cope *et al.* (1997, p.12).
[491] If a coin of Commodus is used as a standard, the number of tetradrachms are around124 tetradrachms. This is calculated by taking the figure of 0.99 (the silver content of a Commodus tetradrachm) and dividing it by 0.26 (the silver content of early tetradrachms issued by Aurelian). The result is multiplied by 25 (the original number of coins). This equals 123.75 coins.

employers were able to dictate wages-levels (and ensure that they remained at traditional levels), or that the wage-rates were subject to monitoring by means of wage restrictions from guilds; or even that there was no significant inflation. Further contracts would be needed, however, to prove this hypothesis.

## Section 6.7. Conclusion

It is the conclusion of Chapter 6 that low-status wages were stable until the A.D. 260s. The wages of potters remained the same between A.D. 243 and A.D. 260 while the wages paid to ass- and ox-drivers, and apprentices remained stable until A.D. 269 and 271 respectively – despite the debasement of the currency. Other wages in the post-debasement period (when the silver content of the tetradrachm dropped from c.0.8 grams to c.0.4 grams and even 0.20 grams within five years) continue to reflect the traditional daily wage for skilled labour of four drachmas per day[492]. This stability is glimpsed also in the payments to sailors working on state liturgies whose wages were 160 drachmas per month, paid in silver tetradrachms[493]. Since 160 drachmas is paid to sailors on liturgical duty in A.D. 266 it meant that the sailors in A.D.266 received less than half the silver that they would have prior to A.D. 260, even though they are simply paid c.5 ⅓ drachmas per day.

This stability can also be seen in the monthly pensions paid to the victorious athletes of Hermopolis. In A.D. 267, Aurelius Leucadius, a citizen of Hermopolis states that he is owed two stipends for his victories. The first totals one talent, 2,640 drachmas for 48 months. The second is for 1 talent, 450 drachmas for 35 months and 25 days. Both are at the rate of

[492] Papyrus B.G. U. 3. 952 has been excluded from this consideration. Although Sperber dates this papyrus to A.D. 270 and gives a wage of 3 – 12 denarii per day for "pieceworkers". There are problems assigning this papyrus to this date because the fragment does not contain any date information. There is no evidence to date this papyrus to A.D. 270 and the database hosting the papyrus (http://www.papyri.info/hgv/28112 [last accessed 11/10/15]) simply dates B.G. U. 3. 952 to the 2nd – 3rd century A.D. If Sperber were correct in his dating it might suggest that wages in A.D. 270 have perhaps increased from 4 drachmas per day to 30 drachmas. This is because the wages paid to the burner of gypsum and the plasterer might be at the rate of 30 drachmas. It is not clear, however, if the 30 drachmas includes the plasterer, nor is the length of hire.

Elements of the papyrus are not clear but a translation of the text might read: "Similarly for the others things for casting / similarly for the other [?] [?plaster dust?] / Similarly for the others 2, in the [?temple/estate?] of Chronos / [?for the rubble?] chalk and other things at drachmas 12 being drachmas 24 / Similarly for the others things 2, together with the stoker of [a furnace] / For the children 10, together with the mason / [?I will provide??]… / For the burner of gypsum in the kiln / Together with the / plaster with gypsum, at drachmas 30 / [10] The cost of hard dry marble / 3 jars, at drachmas" (Author's translation) "ὁμ[οίως] ἄλλοις χωνεύουσι ποδ[ -ca.?- ] / ὁμ[οίως] ἄλλῳ σήθοντι κονίαν [ -ca.?- ] / ὁμοίως ἄλλοις β ἐν τῷ Κρονείου [ -ca.?- ] / ξουσι τὴν γύψον καὶ ἄλλα ἐκ (δραχμῶν) ιβ [(γίνονται) (δραχμαὶ) κδ] / ὁμοίως ἄλλοις β σὺν τῷ καύστῃ το[ῦ -ca.?- ] / παιδαρίοις ι σὺν τοῖ[ς] σκληρουργοῖς [ -ca.?- ] / δομῳ.. / καμινοκαύστῃ γύψου καμίνων [ -ca.?- ] / σὺν γυψισμοῖς ἐκ (δραχμῶν) λ [ -ca.?- ] / 10[τι]μῆς μαρμάρου ξηροῦ σκλ[ηροῦ -ca.?- κε] / [ραμ]ίων ἐκ (δραχμῶν) [ -ca.?- ]

[493] See Elmaghrabi (1982, p.162 – 180) for two papyri for sailors performing a mandatory one month liturgy in A.D. 266. These unpublished papyri give 160 drachmas as the monthly wage, see Elmaghrabi (1982, p.162 – 180). These are similar to papyrus P. Oxy. LVII, 3912, also of A.D. 266 in which another sailor is "contracted" for 160 drachmas per month, see Haslam *et al.* (1990, p.132 – 137).

180 drachmas per month[494], or six drachmas per day. Six drachmas are therefore considered a "pension" from A.D. 264 and A.D. 265 with the original date of his victories around the first significant debasement of the tetradrachm in A.D. 263/4. This is stability is mirrored by a second papyrus from Hermopolis cited only by Johnson[495] (papyrus C.P.H. 70 dating to A.D. 267). It contains a request for a pension based on the petitioner's sporting victory in the "recent Gaza contest". The request states that the payment due is 2,000 drachmas at a rate of 200 drachmas per month, and this equates to about 6 ⅔ drachmas per day. The significance of this value of 6 ⅔ drachmas per day lies in the fact that the daily wage for heavy or skilled labour was four drachmas per day. Despite the declining silver content of the tetradrachm the petitioner in A.D. 267 is requesting payment of wage that is comparable with the normal daily wage prior to debasement of the currency.

The reasons for this stability are unclear. Perhaps social factors like a tradition that four drachmas (one tetradrachm) was a standard day's wage meant that significant increases to day-rates occurred very slowly. It is also possible that previous fluctuations in the silver content (like those that occurred under Marcus Aurelius in A.D. 168 – 169)[496] meant that the public had faith that the silver content would increase once more in the near future, or they felt that there were still sufficient numbers of good silver coins in circulation for the debased tetradrachms to be absorbed into the currency or used in daily transactions. Regardless of the public response it is clear that there is evidence for contracts being agreed at traditional day-rates, and without any reference to inflation; indeed it is not until the reforms of Aurelian in A.D. 274 before we see a substantive change in the nature of wages and prices (see Section 7.1 The A.D. 274/5 Reform of Aurelian, p.102).

[494] See Hunt and Edgar (1934, p.324-325), and Johnson (1936, p.697). Leucadius was the victor at the sacred eiselastic universal Olympics (these are games that followed the same rules as the Olympics) in A.D. 264 (48 months earlier). He also stated that he was owned for his first victory at the "sacred triumphal contest for boys on equal rank with the contest Olympic games".
[495] Johnson (1936, p.701).
[496] In this issue the silver content of the tetradrachm temporarily dropped to 0.6 grams, see Howgego *et al.* (2013, p.11).

## Chapter 7. Currency Reforms A.D. 275 - 299

The idea that there was serious inflation in the latter part of the 3rd century is restated in all scholarship on the 3rd century A.D.[497] Part of the reason for this belief is that the year of A.D. 275 sees a sudden increase in the notational prices visible in Egyptian papyri and scholars have linked this increase to Aurelian's reform of the currency. Rathbone's[498] study of wage and cost "averages" indicates a roughly 10-fold increase in wages and prices around A.D. 275 but the extent of this jump is not agreed amongst all scholars. This is because the evidence for market costs between A.D. 274/5 and A.D. 300 is extremely patchy. Harl[499], for example, considers the increase in Egypt in A.D. 274/5 to be only a 4-fold increase while Duncan-Jones[500] suggests a 5-fold increase in A.D. 274/5.

The purpose of this section is to determine the extent of wage stability between A.D. 275 and 299. To determine the degree of stability this chapter will firstly outline the currency changes between A.D. 275 and A.D. 299 (under the emperors Aurelian, Probus and Diocletian), then consider the papyrological evidence for wages between these dates. The reason for using the papyrological evidence is that the preservation of viticulture labour contracts from the late 3rd century will allow us to "test" the extent to which they responded to the currency changes. Moreover since the value of the Egyptian tetradrachm after A.D. 274/5 is not clear this section will apply the number of drachmas to each post A.D. 274/5 reformed tetradrachm as suggested by two leading scholars in this field: Sylviane Estiot[501] (who argues that there were eight drachmas to the new Egyptian tetradrachm coins of Aurelian minted in A.D. 274/5), and Kenneth Harl[502] (who argues that there were 20 drachmas to the new Egyptian tetradrachm coins of Aurelian minted in A.D. 274/5). The

[497] For some idea of the range of arguments with regard to inflation in the later Roman empire in Egypt see Bagnall (1985 p.289 – 308; 1989 p.69 – 76; 1992a p.128 – 149); Corbier (2008a, p.327 – 392) provides the seminal account in the Cambridge Ancient History but for other accounts see amongst many others see also Drinkwater (2008, p.62) who questions inflation in agricultural societies; Hekster *et al.* (2007 p.3 – 10) on the extent of the 3rd century "crisis", including money; Jones (1953a, p.293-318) for the traditional arguments of a 3rd century crisis. See also footnotes 5 and 6, p16.
[498] Rathbone (1996, p.335; 1997, p.191 – 192).
[499] Harl (1996a, p.147).
[500] Duncan-Jones (1976a, p.251).
[501] Estiot (2012, p.549 – 551).
[502] Harl (1996, p.151).

theories of both scholars converge in c. A.D. 294 as Estiot[503] suggests that there are 16 drachmas to each post A.D. 274/5 reformed tetradrachm, and Harl[504] continues to argue that there are 20 drachmas to each post A.D. 274/5 reformed tetradrachm. In the following sections these theories will be applied to the wages in the viticulture and labour contracts dating to between A.D. 275 – 299 to determine how far the wages reflect those of the viticulture labourers prior to the reforms of A.D. 274/5, and whether there is any evidence for the reforms of c.A.D. 280, or evidence for inflation. Finally the reforms of A.D. 297 will be used to consider viticulture and labour contracts post-dating A.D. 297-298, and the degree to which the wages reflect those that pre-date A.D. 274/5.

### Section 7.1. The A.D. 274/5 Reform of Aurelian

The reason for commencing this section with the currency changes is that the wage evidence discussed in the following sections can only be fully understood with knowledge of the reforms of all three emperors. This is because until A.D. 274/5 the main denominations in circulation were still the obols, bronze drachmas, and the increasingly debased silver tetradrachms (see Section 5.1, p.60). In A.D. 275, however, the coinage was reformed by Aurelian[505]. The only literary reference to this coinage is in the works of Zosimus (a late 5th or early 6th century Byzantine historian) whose works include the *Historia Nova*, a history of Rome that draws heavily on "lost" third-century historians[506]. On the subject of Aurelian's monetary reform he states:

> "Then [Aurelian] publically distributed a new silver coin, having had the public exchange the coins of poor alloy; by this means he avoided any confusion in financial dealings" (Zosimus, *Historia Nova*, I. LXI.3)[507]

[503] Estiot (2012, p.552).
[504] Harl (1996a, p.151).
[505] See Ferri (2012, p.19 – 20) on the reforms of Aurelian, and Howgego (1995, p.126 – 127) on the significance of Aurelian's reforms.
[506] A good edition and translation of the *Historia Nova* is by Paschoud (2000, p.52) from whom the following section has been translated. See also Drinkwater (2008, p.54 – 64) and both Hekster and Zair (2008, p.7 – 8) on the lost historians of the 3rd century A.D.
[507] Ἤδη δὲ καὶ ἀργύριον νέον δημοσίᾳ διέδωκων, τὸ κίβδηλον ἀποδόσθαι τοὺς ἀπό τοῦ δήμου παρασκ ευάσας, τούτωι τε τὰ συμβόλαια συγχύσεως ἀμαλλάξας ἐμὶ τού (Zosmios, *Historia Nova*, I. LXI.3). "C'est dès lors aussi qu'il distribua publiquement de nouvelles pièces d'argent monnayé, non sans avoir prévu que la plèbe restitue en échange les pièces de mauvais aloi; par ce moyen, il écarta toute confusion des transactions commerciales", Paschoud (2000, p.52). See also Corbier (2008a, p.341); Harl (1996a, p.147); Estiot (2012, p.538 – 560).

Unfortunately the passage does not explain why there was "confusion in financial dealings", and so modern scholars have taken this to mean that the debasement of the currency meant that coins were exchanged at their perceived value rather than their face-value. This means that a coin of Gallienus (for example) that was perceived or known to have less silver than a coin of Nero did not have the same buying power, despite the same face-value[508]. The passage also states that Aurelian "distributed new silver coin" and the implication of Zosimus' statement is that Aurelian minted some sort of new currency. The evidence for this reform is the appearance of new billon silver coins[509] throughout the empire, minted to a uniform silver content of 5% silver (or about 0.2 grams of silver per coin), and in some areas marked with XX:I or K:A[510]. These coins replaced the older antoniniani coins in circulation; while their fixed silver content of c.02 grams of silver per coin (and improved appearance) seems to have been designed to create confidence in the currency, and (since there was a uniform silver content) to facilitate financial transactions by replacing coins that had different silver contents in daily circulation[511].

In Egypt there was a new "dumpier" tetradrachm that was minted after A.D. 274/5[512] and this coin mirrored the silver content of the reformed coins in the main empire having c.0.2 grams of silver per coin like those minted outside Egypt. This suggests that after A.D. 274/5 there seems to have been a one-to-one relationship between the coins of the wider empire and the tetradrachm of Egypt. This is demonstrated by the following table (Table 14, p.104) that uses the data from Cope's[513] analysis of the Alexandrian tetradrachm and compares it with his analysis of the empire-wide coinage[514].

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[508] See footnote 6, p.16 for the process of debasement.
[509] A billon coin is the term for silver coins in which the "silver" has been adulterated with a significant amount of copper; they are largely copper coins with a very small percentage of silver, perhaps 5 – 10% or even lower, see Corbier (2008a, p.342).
[510] Harl (1996a, p.147).
[511] Harl (1996a, p.146).
[512] Harl (1996a, p.147); Carson (1990, p.237 – 238).
[513] See Cope *et al.* (1997, p.12).
[514] Cope's analysis of the Aurelian's issues (post A.D. 274) demonstrates the parity of silver content from the different mints: From the Rome mint (average of issues one – five): 0.12 grams of silver; (average of issues seven - eight): 0.1 grams of silver; (average of issue 11): 0.21 grams of silver, see Cope *et al.* (1997, p.29, 150). From the Milan mint (average of issues one – six): 0.1 grams of silver; (average of the issues one – three in the Oxford Collection): 0.1 grams of silver, for both see Cope *et al.* (1997, p.149). From the Cyzicus mint (average of issues one – six): 0.05 grams of silver; issue 10: 1.7 grams of silver, see Cope *et al.* (1997, p.149). From the Lugdunum mint (average of issue 1): 0.16 grams of silver, see Cope *et al.* (1997, p.149). From the Siscia mint (average of issues one – five in the Oxford Collection): 0.1 grams of silver, see Cope *et al.* (1997, p.150); (average of issues five – six): 0.09 grams of silver, issue 8: 0.18 grams of silver, see Cope *et al.* (1997, p.29). These analyses show an improvement in the silver content per coin from around 0.1 grams of silver per coin to c.0.2g of silver per coin. Exactly when this occurs seems to vary: from the Rome mint, this occurs after issue

**Table 14 Approximate difference in silver between silver coins of the Empire and Egyptian tetradrachms. Data from Cope *et al.* (1997, p.12 - 150).**

| Emperor | Empire-wide silver coin | Egyptian silver coin |
|---|---|---|
| Aurelian (post-274) | c.0.2g | c.0.2g |
| Probus A.D. 276 - 278[515] | 0.2 – 0.1g[516] | c.0.21 -0.15g |
| Probus A.D. 279 - 281[517] | 0.2 – 0.1g | 0.07 – 0.05g |
| Probus A.D. 281 - 282[518] | 0.2 – 0.1g | 0.01g |
| Carus A.D. 282 - 283[519] | 0.17g | 0.02g |
| Carinus A.D. 282 - 284[520] | 0.05- 0.07g | 0.01 – 0.02g |
| Numerian A.D. 283 – 284[521] | 0.14g | 0.01 – 0.02g |
| Diocletian (until A.D. 294)[522] | 0.01 – 0.15g[523] | 0.01 – 0.02g |
| Diocletian (after 294 - 6) | 0.43g | 0.43g |

Table 14 shows that Aurelian's post A.D. 274-5 issues in both the empire and Egypt seem to have a standard silver content per coin of c.0.2g until around A.D. 280. As a result it is perhaps possible that the preferential relationship between the antoninianus of the wider empire and the tetradrachm of Egypt was abolished. This is because a preferential rate of exchange in Alexandria between the two currencies with the same silver standard would mean that the monniers in Alexandria would have had no incentive to exchange the silver coins of the empire more favorably with those of Egypt. As a result the data in Table 14 (p.104) implies a one-to-one exchange rate between Egypt and the rest of the empire.

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eight and from the Sisca mint it occurs with issue eight. This is discussed in detail by Callu and Barringdon (2010a, p.297 – 332); Callu (2010, p.187 – 198); Estiot (2012, p.550); Harl (1996a, p.142); Carson (1990, p.236 – 238); Corbier (2008a, p.335 – 336).

[515] Cope *et al.* (1997, p.12) give regnal years one – three.

[516] See footnote 581, p.114 for an analysis of Probus' coin issues.

[517] Cope gives regnal years five – six. See Cope *et al.* (1997, p.12).

[518] Cope gives regnal year seven. See Cope *et al.* (1997, p.12).

[519] Carus for example issues a coin of: 0.17 grams of silver from the Rome mint but the analysis is of only of one coin, see Cope *et al.* (1997, p.30).

[520] Two examples are known of Carinus minted at Rome that show silver contents dropping to: 0.7 grams of silver and 0.05 grams of silver, though analysis of one issue from Antioch seems to show a coin of 0.17 grams of silver, see Cope *et al*. (1997, p.30).

[521] An issue of Numerian from Ticinum shows a silver content of 0.14g, see Cope *et al.* (1997, p.30).

[522] For an analysis of Diocletian's early coin issues see footnote 594 p.115.

[523] Two examples known of 0.05 grams of silver. See Cope *et al.* (1997, p.12).

**Figure 12 Tetradrachms of Aurelian A.D. 275/6**

**Hosted at: http://www.wildwinds.com/coins/ric/aurelian/t.html [accessed 06/05/2014]**

The actual value of the new coins of Aurelian (both inside and outside Egypt) is not clear. The reformed coins of Aurelian that carry the value marks: "XXI" or "KA" that are minted in Egypt do not bear these marks, despite the fact that that they share a similar silver content (see, Table 14, p.104). Numismatists have suggested that the marks, "XXI" or "KA", are notations that express the fraction of silver in the coin[524]. An alternative explanation is that they are value marks indicating the value of the coin relative to the sestercii. This would perhaps explain their absence from the Alexandria issues because Egypt accounted for costs in drachmas and not sestercii. Again there is no consensus as to the actual value and scholars have postulated values for these reformed coins of Aurelian from 1 ¼ denarii (5 sestercii), 1 ½ denarii (6 sestercii), and 4 denarii (20 sestercii)[525]. Given, however, that there was parity between the sestercius and the drachmas of Egypt it is still be surprising that there is no value mark on the Alexandrian issues[526]. This suggests perhaps that the value or silver content of

[524]The numismatic argument states that the new reformed coins of Egypt and the Empire are all 5% fine with a silver content of c.0.2 grams of silver so 20 coins would make 100% of pound of silver. There are several problems with this argument. One of the main problems with this explanation is the Roman pound of silver is not exactly known, see Duncan-Jones (1994b, p.213-215). Even if the value of 322.5 (modern) grams is followed it is not clear how the coins are 1/20$^{th}$ of this value. An alternative numismatic explanation is that 20 of the coins (at c.0.2g of silver per coin) would equal the silver content of one pure silver coin, see Estiot (2012, p.547). The denarius of Principate, however, never contained c.4 grams of silver: the Augustan denarius was c.99.5% pure silver and was only c.3.80 grams of silver. Thereafter it was slowly debased. There is no evidence that the Romans regarded the value of four grams of silver as an ideal silver coin value.

[525] Estiot (2012, p.546-548) argues that the XXI/KA marks mean that the new coins were worth two denarii, or eight sestercii. Harl (1996a, p.147) argues that the marks are 20 sestercii to one new coin, see also Carson (1965, p.225 – 235). The debate is summarized by Corbier (2008a, p.340 – 341). Such disagreements are not restricted to Aurelian's reform. There is not agreement on the value of Caracalla's reform, see Corbier (2008a, p.341).

[526] On the parity between the denarius and the tetradrachm see Bagnall (2009, p.190); Corbier (2008a, p.347); Christiansen (2004b, p.43 – 44); Howgego (1985, p.52); Geissen (2012, p.563); Rathbone (1996, p.325 – 326); Van Minnen (2008, p.226).

Aurelian's new coins was already known in Egypt and that the value marks were not necessary.

One reason that they might not have been necessary is that the silver content of the Egyptian tetradrachm had already declined to c.0.2 grams prior to A.D. 275. Indeed an examination of Cope's coin analysis tables indicates that the Alexandrian tetradrachms were being minted at c.0.2 grams from A.D. 268, some six years prior to the currency reform. In Table 15 (p.106) the data for the silver content of the antoninianus is from Harl[527] and from Cope[528]; and that of the Egyptian tetradrachm is taken from the analysis of tetradrachms also undertaken by Cope[529].

**Table 15 Silver contents of the antoninianus and the Egyptian tetradrachm. Data from Harl (1996a, p.130); Cope *et al.* (1997, p.12)**

| Emperor | antoninianus | tetradrachms |
|---|---|---|
| A.D. 264 – 265 Gallienus | 0.54 | 0.43 |
| A.D. 265 – 6 Gallienus | 0.46 | 0.32 |
| A.D. 265 – 6 Gallienus[530] | 0.36 | 0.41 |
| A.D. 266 – 267 Gallienus | 0.16 | 0.26[531] |
| A.D. 268 Claudius II | 0.09 | 0.2 |
| A.D. 269 Claudius II | 0.04 | 0.21 |
| A.D. 270 Claudius II | 0.10 | 0.2 |
| A.D. 274 Aurelian[532] | 0.19 | 0.17 |

It is therefore possible that the KA or XXI marks were not necessary because a pre-existing minting standard was being continued by the Alexandrian mint. Moreover the evidence of the above table (Table 15, p.106) shows that the tetradrachm coinage of Alexandria did not fluctuate below c.0.2 grams per coin. The stability of the silver content of the tetradrachm at c.0.2 grams per coin suggests, perhaps, the use of "KA" and "XXI" value marks to indicate silver content were not necessary in Egypt.

[527] Harl (1996a, p.130).
[528] Cope *et al.* (1997, p.12 – 150).
[529] Cope *et al.* (1997, p.12).
[530] The silver content dropped rapidly during this period but the chronology of minting is confused.
[531] The silver content of some Gallienus tetradrachms in A.D. 267- 268 was 0.3g of silver per coin, and for a coin of his wife, Salonina, of the same date 0.39 grams. See Cope *et al.* (1997, p.12).
[532] This was for a coin of his wife, Severina, in A.D. 274. See Cope *et al.* (1997, p.12).

## Section 7.2. Analysis of hoard evidence for the A.D. 274/5 currency reforms

Coin evidence not just in Egypt but also the wider empire demonstrates that mint activity had increased under the final years of Gallienus, the reign of Claudius, and early years of Aurelian's reign. The evidence of Milne[533] has been borne out by Christiansen[534] who demonstrates that debased billon tetradrachms began to replace bronze drachmas as the commonest coin from the reign of Gordian III[535]. By the reign of Aurelian the debased billon tetradrachms have completely replaced the bronze drachmas as the commonest coin. This increase in mint activity has also been shown by Estiot in a series of histograms that show production levels from the Rome mint which supports the earlier assertion of Tyler[536] that the late A.D. 260s saw a surge in mint activity[537].

The reform of coinage instigated by Aurelian in c. A.D. 274-5 meant that there was a huge increase in mint activity in Egypt at the same time. From A.D. 274/5 the mint of Alexandria was exclusively issuing new "reformed" tetradrachms to the same weight and silver content as the rest of the empire in huge numbers. Thereafter the "improved" billon tetradrachm was the principal coin in use both in Egypt, and in the rest of the Empire[538]. The introduction in Egypt of the new coins of Aurelian seems to coincide with a recall of older coins[539]. Whilst older coins do not totally disappear from the hoards post-dating A.D. 274/5, their numbers in these hoards are significantly lower than hoards that pre-date the A.D. 274/5 reforms. This difference can be seen in the numbers of older coins in the five hoards belonging to the sole reign of Gallienus, that date between the recapture of Egypt from the rebel Quietus (in A.D. 261) and Gallienus' death in A.D. 268 for in those hoards that post date A.D. 265 (when the heavily debased tetradrachms with a silver content of c.0.3 grams of

[533] As early as 1922 the increase was noted by Milne (1922, p.1-6) who records that the majority of billon stray-finds from Oxyrhynchus dated to the reigns of Aurelian, Probus, and Diocletian and colleagues: 55 (Aurelian); 69 (Probus); 32 (Carus and sons); 143 (Diocletian and colleagues). The only other large finds were Nero (eight coins); Severus Alexander (six coins); Philip (eight coins); Gallienus (eight coins); and Claudius II (nine coins). The remaining reigns from Augustus onwards exhibited fewer than five coins but in contrast show (until Marcus Aurelius) exhibit large numbers of stray finds of bronze drachmas (generally over 20). As finds of bronze drachmas decline finds of debased billon tetradrachms increase.

[534] Christiansen (2004, p.112).

[535] Bland suggests (with reference to gold coins but equally applicable to silver coins) that the proportion of stray finds is in direct proportion to the extent of minting so more coins mean more finds (Bland, 1997 p.29-55).

[536] Tyler (1972, p.249 – 260).

[537] See Estiot (2012, p.544, and fig. 29) who notes that output from the Rome mint in A.D. 263/266 was roughly 2,000 coins per year (roughly the same as in A.D. 238/244); in A.D. 266/268 the output of the Rome mint was 7,000 coins per year; and in A.D. 268/270 the output of the Rome mint was 11,000 coins per year.

[538] Harl (1996a, p.148 – 150). Aurelian's reform seems to have resulted in the end of the bronze drachmas which became a unit of account only.

[539] Christiansen (2004, p.112).

silver per coin[540] were introduced to Egypt) do not contain significant numbers (or even large numbers) of his issues. Instead older, better, coins predominate indicating there was a preference to spend or circulate contemporary coin issues and hoard older coins.

This evidence comes from Christiansen's[541] analysis of five hoards between the reconquest of Egypt (in A.D. 261) and the death of Gallienus (A.D. 268). The hoard known as Karanis 14[542] (dating to c. A.D. 263/6) had 74 coins but only four contemporary issues or 5.4% of the hoard[543]. The hoard known as Karanis 15[544] (dating to A.D. 264/5) consisted of 13 coins and 24 illegible coins, of which one coin was a coin of Gallienus which represented 7.68% of the hoard[545]. The hoard known as Karanis 32[546] (dating to A.D. 262/3) consisted of 472 coins and 271 illegible coins. Issues of Gallienus made up 1.68% of the hoard (eight coins)[547]. The hoard "Alexandria 1916"[548] (dating to A.D. 261/2) had 1184 coins with 116 illegible coins but coins of Gallienus made up only 0.08% of the hoard (one coin)[549]. Finally the Dattari hoard A'06[550] (dating to A.D. 265/66) containing 950 coins had only 74 coins of Gallienus, making just 7.78% of the total[551]. These all show that the contemporary coins issued by Gallienus are not being hoarded and this would suggest that they are either not circulating, or are more likely being spent.

This pattern of preferential hoarding in which older coins are preferred to contemporary issues can also been seen in the five hoards that date between the emperor Claudius II (A.D. 268 – 269) and Aurelian (prior to his A.D. 274/5 reform of the currency). Coin hoard, Karanis I, with an end date in the reign of Claudius II (A.D. 268/269) had 860 coins but there

[540] The silver content of some Gallienus tetradrachms in A.D. 267- 268 was 0.3g of silver per coin, and for a coin of his wife, Salonina, of the same date 0.39g. See Cope *et al.* (1997, p.12).
[541] Christiansen (2004, p.170, 170-171, 175, 178, 184).
[542] Christiansen (2004, p.170).
[543] 12.15 % of his coins dated to Nero, 13.5% dating to Hadrian, 22.95% dating to Antoninus Pius, and 5.4% dating to Valerian. Other issues were in percentages below 6%.
[544] Christiansen (2004, p.170 – 171).
[545] The largest groups were coins of Hadrian (at 15% of the hoard), Philip (at 38.45% of the hoard), and Valerian at 15.18% (at of the hoard) while the rest consisted of individual coins.
[546] Christiansen (2004, p.175).
[547] The largest were groupings were issues of Severus Alexander at 8.61%, Gordian III at 11.55%, Philip at 23% and Valerian at 27.3%.
[548] Christiansen (2004, p.178).
[549] The largest groupings were issues of Marcus Aurelius made 12.16%, Commodus made 20.48%, Elagabalus made up 9.52% and Severus Alexander made up 27.28% of the hoard.
[550] Christiansen (2004, p.184).
[551] The largest groupings were issues of Philip at 24.73% and issues of Valerian at 45.15%.

was only one contemporary coin of Claudius II[552]. Coin hoards Dattari B'07 and C'07 both ended in A.D. 271/2. From a total of 1066 coins in Dattari B'07 and 1,803 coins in hoard Dattari C'07 there are few contemporary coins relative to older coins; Dattari B'07 had only two contemporary coins but 43.33% of the hoard dated to the sole reign of Gallienus, and Dattari C'07 (A.D. 271/272) had 1803 coins of which there only 49 coins of Aurelian (2.71%)[553]. The hoard known as Karanis 5 (dating to A.D. 272/73) consisting of 17 coins had three contemporary coins but 12 from the reign of Claudius II, one from the reign of Valerian, and one from the joint reign of Aurelian and Vaballath[554]. The hoard known as Karanis 7 (dating to A.D. 274/5) consisting of 22 coins contained 14 coins dating to the joint reign of Aurelian and Vaballath, and only eight coins of the post A.D. 274/5 reform issue[555]. Karanis 28 (dating to A.D. 269/70) is the only exception. It had 23 coins of which 22 were contemporary – it might well represent a circulation hoard for daily expenditure[556]. This evidence would suggest that coins minted by the emperor Claudius II (A.D. 268 – 269) and Aurelian (prior to his A.D. 274/5 reform of the currency) were therefore being spent and older coins are saved.

When Aurelian introduced his new stable weight and silver standard to the currency in c. A.D. 274 the numbers of pre-Gallienus coins in hoards seem to have dropped dramatically in hoards from this point onwards[557]. The loss of many older coins from circulation and hoarding is indicates that older better coins were "called-in" for reminting and explains the huge output of the new reformed coins since Aurelian needed to replace the existing number of coins in circulation[558]. Despite the introduction of a new coin however, and calling in of older coins, it would seem that the habit of preferential hoarding continues irrespective of his introduction of a better silver coin. This is seen in hoards A'07 and B'09 ending in A.D. 276/277 and A.D. 278/279 respectively. A'07 had 2,167 coins and B'09 had 1,956 coins but in both cases they have few contemporary coins. Coin hoard A'07 (ending in A.D. 276/277)

[552] There were 10 coins from the sole-reign of Gallienus (1.16%), and 31.68% from Valerian's reign, see Christiansen (2004a, p.118, 169).
[553] There were 111 coins from the reign of Valerian (6.51%), 504 coins from the reign of Gallienus (27.95%) and 978 coins of Claudius II (54.24%), see Christiansen (2004a, p.186).
[554] Christiansen (2004a, p.169).
[555] Christiansen (2004a, p.170).
[556] Christiansen (2004, p.174-175).
[557] Christiansen (2004a, p.120).
[558] Gresham's law means that Aurelian had no choice except to "call-in" all poor silver coins in circulation as Gresham's Law states that "bad silver" drives out "good silver". In other words people spend poor quality coins and store good quality coins. To counter this pressure he could have ordained a higher face-value for his new coins but the only means of ensuring that his coins were used in preference to older coins was to order the recall of older coins for reminting.

contained just four coins of Probus (0.18%) and three coins of Tacitus (0.13%). This contrasts with 20 coins of Aurelian's post-reform issue (0.92%); 61 coins of Gallienus (2.81%); 413 coins of Severus Alexander (19.05%) and 707 coins of Nero (32.62%)[559]. Coin hoard B'09 (ending in A.D. 278/279) had only one coin of Probus (0.05%) and four coin post dating Aurelian's reform (0.2%). This contrasts with 165 coins of Gordian III (8.43%), 288 coins of Philip (14.72%), 463 coins of Valerian (23.67) and 451 coins of Gallienus (23.05%)[560] Again the numbers of contemporary coins indicate that new issues are being spent and not saved, while older coins are being hoarded.

### Section 7.3. Price increases in the papyri

Concurrent with Aurelian's reforms in A.D. 274/5 is an apparent increase in the prices and wages visible in Egyptian papyri. The extent of the increase itself has been debated by scholars[561] but the evidence for an increase in prices is primarily deduced from the price of wheat, the price of which (expressed in drachmas) increased after A.D. 274. Prior to A.D. 274/5 the cost per *artaba* of wheat was 12 – 16 drachmas in private transactions (in the A.D. 250s and 260s), possibly rising to 24 drachmas in A.D. 270. For state prices prior to A.D. 274/5 we have a cost of 24 drachmas per *artaba* in A.D. 246. In A.D. 276 the cost per *artaba* on an "official" receipt was 200 drachmas[562]. This is supplemented by official costs from A.D. 293 and A.D. 294 of 300 drachmas per *artaba*, and 216 – 232 drachmas per *artaba* (see Chapter 8, p.119 for a full analysis.

With regard to other costs and wages the evidence for increase is less clear. Of the data gathered by Duncan-Jones[563] and Rathbone[564] the only dated evidence for price increases between the monetary reform of Aurelian in A.D. 274/5 and A.D. 280 is a single cost for the

[559] Christiansen (2004, p.169, 170, 173, 185, 186).
[560] Christiansen (2004, p.169, 170, 173, 185, 186).
[561] Harl (1996a, p.147) considers the increase in Egypt in A.D. 274/5 to be a four-fold increase Duncan-Jones (1976a, p.251) suggests a five-fold increase in A.D. 274/5. Rathbone (1997, p.191 – 192) and Christiansen (2004, p.112) suggests a 10-fold increase. Rathbone's analysis is based primarily on the cost of wheat. His data for foodstuffs and other commodities tends to "break down" from A.D. 275 as the data sequences become extremely fragmented.
[562] This date has been challenged by Bagnall on the evidence of a forthcoming publication by Worp and Leisker who state it should be attributed to A.D. 281, see Bagnall (1992b, p.138, n.6). No trace of this publication was found and it is noted that in 1999 Bagnall restated that O. Mich. 1.157 dated to A.D. 276, see Bagnall (1999, p.330) and in 2002 Duncan-Jones (2002, p.152) also restated that O.Mich.1.157 dates to A.D. 276. This ostracon is extremely important to our understanding of wheat prices and a copy of the ostracon and short discussion is included in Appendix 4: Ostracon O.Mich. 1.157, p.241.
[563] The *aderatio* was the commutation of a tax-in-kind, like a wheat liability, into a cash payment.
[564] See Rathbone (1996, p.330 – 332) for a survey of Egyptian prices. See also Rathbone (1997 p.217 -220) for a detailed tabular summary of the evidence.

wheat, three costs for asses, and a land rent that either dates to the period of Aurelian's reforms or to the reign of Probus[565].

**Table 16 Evidence for price increases A.D. 274/5 – 293. Data from Rathbone (1996, p.330 – 332)**

| Date | Item | Cost |
|---|---|---|
| A.D. 276?[566] | State Wheat Price | 200 drachmas |
| A.D. 274/5 or 280/1 | Land rent per aroura | 200 – 600 drachmas |
| A.D. 277 | Asses | 3,800, 6,000, 4,600 drachmas |
| A.D. 280 | Houses, Annual Rent | 1,000 drachmas |
| A.D. 281 | Private House Sales | 90,000 drachmas |
| A.D. 293 | State Wheat Prices | 216 – 228 drachmas |
| Late 3rd cent. | Wine | 160 drachmas |

There are several problems using the data in Table 16 to demonstrate price increases. The evidence for inflation in A.D. 275 in Table 16 (p.111) is based only on a single state price for wheat that can be dated to A.D. 276, and that date has been disputed[567]; the prices for asses vary depending on sex, age, and health[568]; while the evidence for a land-rent is not firmly dated to A.D. 274/5. The annual rent for a house in A.D. 280, and the cost of a private house sold in A.D. 281 (and given by Rathbone in the table above Table 16, p.111) seem to suggest that some sort of general increase in prices had occurred, but these costs are subjective costs because the value of a house (either for rent or purchase) is determined by perception of location, status, beauty. These extraneous factors will affect the expression of any costs and therefore make direct comparison tricky.

The other problem in using the price-increases given in the above table to demonstrate inflation (Table 16, p.111) is that it is not obvious as to why Egyptian prices should have increased in response to the reforms of Aurelian A.D. 274/5. The reasoning for this is as

[565] For a surveys of Egyptian prices see Duncan-Jones (1976a, p.241 -262; 2002 p.151 – 155).
[566] See the debate on O.Mich 1.157 in footnote 562, p.110.
[567] See footnote 562, p.110.
[568] See Drexhage for the cost of a horse in A.D.77 that cost 2,800 drachmas, which is more than a horse in c.A.D. 280 Drexhage (1991, p.300).

follows: if there the increase in wages and prices occurred in response to the debasement of the tetradrachms, then we might have expected to see some variation in wages and prices due to the changes in the silver content of the Egyptian currency. Cope's analysis of the Egyptian tetradrachm of A.D. 266 suggests that the silver content of the Egyptian tetradrachm was not substantially debased between A.D. 268 and A.D. 279[569] and this suggests that any increases prior to A.D. 279 might be the result of revaluation and not currency decline.

**Table 17 Silver contents of the Egyptian tetradrachm**

| Emperor | Silver content | Reference |
|---|---|---|
| A.D. 264 – 265 Gallienus | 0.43 | Cope et al. (1997, p.12) |
| A.D. 265 – 6 Gallienus | 0.32 | Cope *et al.* (1997, p.12) |
| A.D. 265 – 6 Gallienus[570] | 0.41 | Cope *et al.* (1997, p.12) |
| A.D. 266 – 267 Gallienus | 0.26[571] | Cope *et al.* (1997, p.12) |
| A.D. 268 Claudius II | 0.2 | Cope *et al.* (1997, p.12) |
| A.D. 269 Claudius II | 0.21 | Cope *et al.* (1997, p.12) |
| A.D. 270 Claudius II | 0.2 | Cope *et al.* (1997, p.12) |
| A.D. 274 Aurelian[572] | 0.17 | Cope *et al.* (1997, p.12) |
| Post-274 Aurelian | c.0.2g | Cope *et al.* (1997, p.12) |
| A.D. 276 – 278 Probus | c.0.21 -0.15g | Cope *et al.* (1997, p.12) |
| A.D. 279 - 281 Probus | 0.07 – 0.05g | Cope *et al.* (1997, p.12) |
| A.D. 281 - 282 Probus | 0.01g | Cope *et al.* (1997, p.12) |

The implication of these results is that if the silver content of the tetradrachm remained at c.0.2 grams of silver per coin between A.D. 268 and c. A.D. 279, then the increases suggested by Rathbone[573] must surely be a response to the revaluation of the currency in Egypt and not due to the debasement of the currency. To determine the impact of the A.D. 274/5 currency reform (and those of the later 3rd century) this section will consider the effect of currency changes on the wages paid to viticulture labourers, and general labourers during this period. The purpose of this analysis will be to determine if the wages changed when the currency was

[569] Cope *et al.* (1997, p.12).
[570] The silver content dropped rapidly during this period but the chronology of minting is confused.
[571] The silver content of some Gallienus tetradrachms in A.D. 267- 268 was 0.3g of silver per coin, and for a coin of his wife, Salonina, of the same date 0.39g. See Cope *et al.* (1997, p.12).
[572] This was for a coin of his wife, Severina, in A.D. 274. See Cope *et al.* (1997, p.12).
[573] See Rathbone (1996, p.330 – 332; 1997, p.1997 217 - 220).

reformed, the extent of those changes, and whether the changes can be ascribed to the revaluation of the currency, or the silver content of the tetradrachm. Moreover it will allow us to test the ratios suggested by both Estiot[574] and Harl[575] to determine if there is an increase in wages paid that reflect their theories[576]. To do so however, it is necessary to outline the currency reforms between A.D. 275 and 299.

## Section 7.4. The Reform of A.D. 279 – 80

During the reign of the emperor Probus (A.D. 276 – 282) there seems to have been an attempt to reform the currency of Egypt once again. The Egyptian coins minted in the early part of his reign (A.D 276/77 – 278/9) seem to have been generally minted to the same standard as the post-A.D. 274/5 reformed coins of Aurelian[577]. His gold coins, for example, were minted at a fineness of 96% and weighed c.6.55g[578], while his new post A.D. 274/5 reformed tetradrachm had a fineness of 4-5% and weighed around 3.5g[579].

**Figure 13 Tetradrachm of Probus, Alexandria Mint, A.D. 278/279**

**Hosted at: http://www.forumancientcoins.com/gallery/displayimage.php?album=5206&pos=25 [accessed 05/06/2014]**

[574] Estiot (2012, p.549 – 550).
[575] Harl (1996a, p.151, 155).
[576] Estiot (2012, p.549 – 550), for example, argues that that the new reformed tetradrachm of Aurelian was worth eight drachmas while Harl (1996a, p.151, 155) argues that the new reformed tetradrachm of Aurelian were worth 20 drachmas respectively.
[577] With his reform in A.D. 274 Aurelian's gold coins were c.6.54 grams and minted at 50 to the pound (an improvement on the varied weights and 60 to the pound at the start of his reign); while his post A.D. 274/5 reformed tetradrachm (aureliani) had a 4.5 - 5% fineness and weighed on average 3.84 grams, see Carson (1990, p.236); Estiot (2012, p.549 - 550).
[578]The efforts of emperors from Aurelian onwards to maintain the purity of the gold coin attests to its symbolic importance, and presumably maintained faith in the currency system – whilst weights of silver coins fluctuated the purity and weight remained broadly stable, and although the weight standard varied between Aurelian and Diocletian it did not vary as nearly as dramatically as the weight did under Gallienus. Diocletian's gold coins were, for example 5.3 grams (and minted at 50 coins to the pound) compared to Probus' at 6.55 grams.
[579]See Carson (1990, p.125-7).

In c. A.D. 279, however, the silver content of the Egyptian tetradrachm began to steeply decline[580]. The evidence for the nature of his reform is not clear but it seems from Cope's analysis of tetradrachms that the silver content of the Egyptian tetradrachm dropped dramatically c. A.D. 280 (See Table 18, below)[581].

**Table 18 Approximate difference in silver between silver coins of the Empire and Egyptian tetradrachms**

| Emperor | Egyptian silver coin | Reference |
|---|---|---|
| Aurelian (post-274) | c.0.2g | Cope *et al.* (1997, p.12) |
| Probus A.D. 276 - 278[582] | c.0.21 -0.15g | Cope *et al.* (1997, p.12) |
| Probus A.D. 279 - 281[583] | 0.07 – 0.05g | Cope *et al.* (1997, p.12) |
| Probus A.D. 281 - 282[584] | 0.01g | Cope *et al.* (1997, p.12) |

The evidence of coins themselves suggests a significant drop in the silver content of tetradrachms around A.D. 280 because the tetradrachm falls from 0.21 grams of silver in A.D. 276, to 0.15 grams of silver in A.D. 276 – 7, and 0.15 grams of silver in A.D. 277 – 8. Thereafter it drops to 0.07 – 0.05 grams of silver per coin[585]. The success of Aurelian's reform and reasons for Probus' reforms are hard to determine[586]. The silver relationship between coins of Probus in the wider empire, and his coins in Egypt seems to change in c. A.D. 280 but this is hard to interpret as Cope[587] did not in 1974 give the regnal years for the coins of Probus that he analysed. While there is some evidence that these new coins supplanted older coins[588] the evidence is too little to make an informed judgment on his reform or why he felt the need to replace the Aurelianic currency, and too little is known of this reform for it to be clearly understood.

[580] Perhaps for military expenditure, or to replace the older coin for short-term profit.
[581] Analysis of Cope's data shows a consistently low amount of silver per coin from all mints in Probus' reign: an issue four from the Lugdunum mint is 0.15 grams of silver; from the Rome mint: 0.14 grams of silver (issue unknown); 0.08 grams, 0.08 grams, 0.19 grams, and 0.17 grams of silver from four coins of Ticinum (issues unknown); 0.14 grams and 0.16 grams of silver from two coins of Siscia (issues unknown); 0.09 grams, 0.15 grams and 0.12 grams of silver from three coins of Antioch (issues unknown), see Cope *et al.* (1997, p.28 - 30).
[582] Cope gives regnal years one – three. See Cope *et al.* (1997, p.12).
[583] Cope gives regnal years five – six. See Cope *et al.* (1997, p.12).
[584] Cope gives regnal year seven. See Cope *et al.* (1997, p.12).
[585] Cope *et al.* (1997, p.12).
[586] As Callu suggests it was the policy of the emperors until the reforms of Diocletian, "di mantenere quasi dappertutto a piú del 3% la proporzinone di metallo bianco" (to maintain almost everywhere more than 3% proportion of silver to metal), see Callu and Barringdon (2010a, p.289, and n.11 – 13).
[587] See Cope (1974, p.183).
[588] Christiansen (2004a, p.128; 2005b p.281).

## Section 7.5. The Reforms of A.D. 294 – 96

For the first 10 years of his reign, Diocletian (A.D. 284 - 305) was content to mint Egyptian coins to the standards of his predecessors[589].

**Table 19 Silver content of the Egyptian tetradrachm from A.D. 280 – 294/6**

| Emperor | Egyptian silver coin | Reference |
|---|---|---|
| Probus A.D. 281 - 282[590] | 0.01g | Cope et al. (1997, p.12). |
| Carus A.D. 282 - 283[591] | 0.02g | Cope *et al.* (1997, p.12) |
| Carinus A.D. 282 - 284[592] | 0.01 – 0.02g | Cope *et al.* (1997, p.12) |
| Numerian A.D. 283 – 284[593] | 0.01 – 0.02g | Cope *et al.* (1997, p.12) |
| Diocletian (until A.D. 294)[594] | 0.01 – 0.02g | Cope *et al.* (1997, p.12) |
| Diocletian (after 294 - 6) | 0.43g | Cope *et al.* (1997, p.12) |

By contrast to the middle years of the 3rd century with its dramatic debasements of the Egyptian tetradrachm the period from A.D. 280 – 294 could be argued to be a period of relative currency stability for Egypt. Substantive debasement of the tetradrachm had at least ceased[595] and the tetradrachm was being was minted with a silver content of 0.01 – 0.05 grams of silver per coin, until A.D. 296 when Diocletian decided to reform the currency once more.

[589] Cope's analysis of his Egyptian tetradrachms demonstrate that his early issues of "reformed" tetradrachms in Egypt continue to have the same bare silver content of Probus. See Cope *et al.* (1997, p.12).
[590] Cope gives regnal year 7. See Cope *et al.* (1997, p.12).
[591] Carus for example issues a coin of: 0.17 grams from the Rome mint but the analysis is of only of one coin, see Cope *et al.* (1997, p.30).
[592] Two examples are known of Carinus minted at Rome that show silver contents dropping to: 0.7 grams and 0.05 grams, though analysis of one issue from Antioch seems to show a coin of 0.17 grams, see Cope *et al.* (1997, p.30).
[593] An issue of Numerian from Ticinum shows a silver content of 0.14 grams, see Cope *et al.* (1997, p.30).
[594] Analysis of two coins of Diocletian's issues two and five from Lugdunum show a silver content of 0.13 grams and 1.19 grams per coin respectively; analysis of three coins Maximianus' issues two, eight and 12 from Lugdunum show a silver of content of 012 grams, 0.12 grams and 0.17 grams respectively. Undated (but pre-A.D.294) analysis of one Diocletian and three Maximianus coins from Rome shows a silver content of 0.05 grams, 0.04 grams and 0.1 grams respectively; similarly analysis of 5 pre-A.D. 294 coins from Antioch (four of Diocletian) and one of Maximianus show silver contents per coin of 0.9 grams, 0.1 grams, 0.09 grams, 0.14 grams, 0.1 grams of silver per coin, see Cope *et al.* (1997, p.30). The evidence would suggest that for the main empire the silver content per coin remained a roughly between 0.15 grams and 0.1 grams of silver per coin – stability, at least for the currency (though individual examples do fall beyond this range).
[595] It is difficult to determine what contemporaries thought of the currency in circulation. The Girga Hoard of 1947 dates to the reign of Carinus (A.D 282/3) and consist of 1058 tetradrachms. It is dominated by 886 tetradrachms of Probus (83.74%) and contains no coin older than Claudius II; see also the Karanis 20 hoard which dates to Carus (A.D. 282/3) and contained 55 identifiable coins, in which the 31 coins of Probus are 56.42% of the hoard; and Karanis 31 of 379 identifiable coins with 104 coins of Probus make 27.04% of the hoard , see Christiansen (2004, p.172, 175, 192) but this is not supported by the Dattari hoards of A'07 and B'09 in which there were negligible numbers of contemporary coins.

**Figure 14 Tetradrachm of Diocletian, Alexandrian mint A.D. 285/6**

**Hosted at http://www.numisology.com/Diocletian.htm [Accessed 06/05/2014]**

The monetary reforms of Diocletian in A.D. 294 - 296 are sufficiently well understood for us to be clear that he replaced the older billon silver currencies of the empire with one currency, the nummus[596]. This was a return to the Neronian system of coins: gold aureii were issued at 60 coins to the pound; a pure silver coin (the argentarius) was issued with a fineness of 90% between 3 – 3.30g per coin[597], and a silver-washed coin (the nummus) at 4% fine and weighing c.10g was issued in massive quantities[598]. The nummus was intended to be the coin of transaction[599]. Fractional pieces were also issued: a "neo-antoninianus" which looked like Aurelian's post-A.D 274/5 coin weighing 3g; and (in the West) a copper "laureate" coin weighing c.1.3g that was perhaps the remains of the denarius[600].

[596] Callu and Barringdon (2010a, p.289) state that Diocletian, "intendeva restituire la fiducia nella moneta e rallentare l'ascesa dei prezzi"; "[he] intended to restore confidence in the currency and slow the increase of prices" (author's translation).

[597] The role of gold provides an interesting and illustrative indication of the limits of our knowledge: gold is often seen as a rare "high" status and prestige coin yet in archive of Paniskos and Ploutogenia from Philadelphia in A.D. 297-298 we have reference to a gold solidus. In A.D. 297/8 Paniskos who was in Koptos wrote to his wife and sent three gold solidi to be turned into anklets for his daughter, Heliodora. See Rowlandson and Bagnall (1998, p.150). The gold coins are not regarded as something particularly special and it is noticeable that the coins are for his daughter's anklets - not his wife's! Though the use of gold coins as decoration is consistent with other examples from the 3rd century, which tend to be punched and worn as decoration, see Bland (1997, p.34-35).

[598] See Carson (1990, p.237 - 238) for these weights.

[599]Examples from the Siscia and Alexandrian mints are marked XXI, Harl (1996a, p.150); Corbier (2008a, p.335).

[600] See Carson (1990, p.238); Corbier (2008a, p.335). Analysis of Diocletian's fractional pieces show a negligible amount of silver per coin: three examples from A.D. 297 – 8 from Rome (two of Maximianus and one of Diocletian) show silver percentages of 1.1%, 0.13% and 0% equating to 0.03 grams, 0.003 grams and 0.000 grams, the fractional pieces of the Cyzicus mint mirror these examples: two coins of date A.D. 295 – 9 (one Diocletian and one Constantius) have silver contents of 0.002 grams and 0.007 grams, this is further confirmed by three analyses from the Alexandrian mint dating to A.D. 296-7 (two of Maximianus and one of Diocletian):

**Figure 15 Nummus of Diocletian, Alexandrian mint, A.D. 297-298**

**Hosted at http://www.numisology.com/Diocletian.htm [accessed 06/05/2014]**

The date of the new coins in Egypt is not entirely clear but it is only after A.D. 298 that we can say the reforms were fully implemented in Egypt and the older tetradrachms were replaced by the nummus[601]. This is because the rebellion by Domitianus occurred either prior to, or in response to, the currency reform. Variously dated A.D. 294-5, or A.D. 296 – 297 this rebellion is now dated by papyrus evidence to A.D. 297-298[602] and it is possible that the A.D. 294 – 96 reform and introduction of the nummus, or the tax reforms, triggered the rebellion – particularly since Domitianus rejects the currency of Diocletian and mints his own, Greek-style tetradrachms[603].

(0.27%) equating to 0.007 grams of silver per coin; (0.16%) equating to 0.004g rams of silver per coin, and (0.15%) equating to 0.004 grams of silver per coin, see Cope *et al.* (1997, p.150).

[601] Concurrent with the introduction of the nummus are changes to the tax system. Evidence to date the changes that Diocletian was making also comes from the evidence of the *gymnasia* payments. This payment for entry into this social class was apparently 12 drachmas in A.D. 254 and was still 12 drachmas in A.D. 297 (P. Oxy. LXV, 4489). Thereafter the surviving evidence for applications seems to cease. See footnote 231, p.56 for a discussion of this payment. It is noticeable that the final date for the 12-drachma tax class coincides with a new tax at Oxyrhynchus in A.D. 297/8. This tax was the ἐπικεφαλίων. See See footnote 231, p.56 for a full discussion of this tax. Clearly there was some significant restructuring of the tax arrangements in the year A.D. 297/8 that might have replaced the traditional payments and rates, perhaps based around the new nummus currency that was being introduced in Egypt around A.D. 298, see Geissen (2012, p.557).

[602] Geissen (2012, p.557).

[603] Geissen (2012, p.557).

**Figure 16 Tetradrachm of Domitius Domitianus, Alexandria Mint A.D. 297-298**

**Hosted: http://www.numisology.com/Domitianus.htm [Accessed 06/05/2014]**

To determine how these changes affected wages between A.D. 274/5 and 299 is explored in the following chapters. In Chapter 8, viticulture labour wages will be examined to determine how private labour agreements reflected these currency changes; and if there is any evidence for inflation or wage stability.

## Chapter 8. Evidence for Wage Stability A.D. 275 - 299

The purpose of this section is to determine if the currency reforms of Aurelian, Probus and Diocletian affected wages between A.D. 275 and A.D. 299. The section will consider papyrus evidence to determine if wages increased between A.D. 275 and A.D. 299; if any increase occurred in response to the currency reforms; and the extent of any inflation at the end of the 3rd century A.D.

Existing theories of wages and prices regard the period after the reform of Aurelian (A.D. 274/5) as one characterized by inflation[604]. Prices for land and house rents, house prices (in private sales), sheep, wheat (in state prices), the price of asses, and the price of wine all appear to increase (in terms of drachmas) after A.D. 275. The increases suggested by Rathbone can be demonstrated by the following tables that use his data to compare mid-3rd century prices and rents the post A.D. 275 increases:

**Table 20 Private wheat prices in the mid 3rd century. Data from Rathbone (1996, p.331 - 332)**

| Item | Date A.D. | Price |
|---|---|---|
| Private wheat prices | A.D. 191 – 270 | 12-24 drachmas |

**Table 21 State wheat prices in the 3rd century A.D. Data from Rathbone (1996, p.331 - 332)**

| Item | Date A.D. | Price |
|---|---|---|
| State wheat prices | 246 | 24 drachmas |
| State wheat prices | 274? | 40 drachmas |
| State wheat prices | 276?[605] | 200 drachmas |
| State wheat prices | 293 | 300 drachmas |
| State wheat prices | 294 | 216 - 228 drachmas |

**Table 22 Wine prices in the 3rd century A.D. Data from Rathbone (1996, p.331 - 332)**

| Item | Date A.D. | Price |
|---|---|---|

[604] On the subject of inflation see footnote 5, p.16 and footnote 497, p.101.
[605] See the debate on O. Mich. 1.15 in footnote 562, p.110; and see Appendix 4: Ostracon O.Mich. 1.157, p.241.

| | | |
|---|---|---|
| Wine | A.D. 191 – 270 | 8 - 21 drachmas |
| Wine | late 3rd century | 160 drachmas |

**Table 23 Ass prices in the 3rd century A.D. Data from Rathbone (1996, p.332 - 333)**

| Item | Date A.D. | Price |
|---|---|---|
| Asses | 197 – 267 | 300 – 800 drachmas |
| Asses | 277 | 3,800, 4,600, 6,000 drachmas |

**Table 24 Private house sales in the 3rd century A.D. Data from Rathbone (1996, p.332 - 333)**

| Item | Date A.D. | Price |
|---|---|---|
| Private house sales | until A.D. 271 | 500 – 7,400 drachmas |
| Private house sales | 281 | 90,000 drachmas |

**Table 25 Land rents per *aroura* in the 3rd century A.D. Data from Rathbone (1996, p.332 - 333)**

| Item | Date A.D. | Price |
|---|---|---|
| Land rents | 190 – 268 | 20 – 60 drachmas per aroura |
| Land rents | 274/5 or 280/1 | 200 – 600 drachmas per *aroura* |

Despite the range of data Rathbone does not however compare changes in wages during the 3rd century A.D. He simply notes a mid 3rd century doubling of "rural laboring day-wages and he argues that a proper comparison of wages is very complicated given the socio- and economic conditions of each contract[606]. Despite this range of evidence there is no agreement on the scale of this apparent increase. Rathbone's[607] study of wage and costs "averages" indicate a roughly 10-fold increase in wages and prices around A.D. 275; Harl's[608] study of wages and prices suggests that the increase in Egypt in A.D. 274/5 is a 4-fold increase while Duncan-Jones[609] suggests a 5-fold increase in A.D. 274/5. It must however be recognized that the theory for inflationary prices and wages after the reforms of Aurelian in A.D. 274/5 is based on very limited evidence: primarily the cost of wheat, and on

[606] Rathbone (1996, p.332).
[607] Rathbone (1996, p.335; 1997, p.191 – 192).
[608] Harl (1996a, p.147, 151, 155). Since the denarius equated to the silver tetradrachm in Egypt, this implies that the new radiates of Aurelian called the aurelianus had to have been worth four Egyptian tetradrachms, and therefore 20 bronze drachmas, Harl (1996a, p.147); Callu and Barringdon (2010a, p.289, n.14).
[609] Duncan-Jones (1976a, p.251).

a single cost dating to A.D. 276 (the reading of which is not certain[610]). With regard to the link between debasement and prices Cope's analyses of the silver content of the Alexandrian tetradrachms show that the reforms of Aurelian saw no change in the silver content of the tetradrachm[611] which had a silver content of c.0.2 grams of silver in A.D. 267 and continued to be c.0.2 grams of silver per coin up to, and after the reforms of Aurelian[612].

To determine how wages respond to the reforms of Aurelian in A.D. 274/5 this research will consider the cost of labour in viticulture labour and private labour contracts between A.D. 269/77 and A.D. 299 to determine how wages are changing during this period[613]. In order to analyse how wages are changing the following list of viticulture-labour, and general labour, papyri were identified. These are the only papyri from which meaningful analysis can be made[614]. Full bibliographic details and translations of all documents are given in Appendix 6: Viticulture and labour papyri analysed in text (p.261 - 317)

[610] See footnote 562 p.110 for the complexities concerning the dating of O.Mich . 1.157.
[611] See Cope *et al.* (1997, p.12) on the silver content; and Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.
[612] See Cope *et al.* (1997, p.12) on the silver content; and see Ferri (2012, p.19 – 20) on the reforms of Aurelian, and Howgego (1995, p.126 – 127) on the significance of Aurelian's reforms.
[613] For a detailed analysis of the viticulture-labour leases see Rowlandson (1996, p.228 - 235) who notes that the viticulture-labour agreements of Oxyrhynchus are not strictly tenancy agreements but are actually work agreements; and Rowlandson (1996, p.229 - 230) who states that instead of rent paid to landlords, wages were paid to lessees in installments as work progressed.
[614] There are unfortunately few vineyard leases for which a payment per aroura is specified. The only examples are as follows: Vineyard lease S.B. XX.15006 whose provenance is unknown, dating to the end of the 2nd or start of the 3rd century; Vineyard lease P.Oxy. XLVII 3354 dating to A.D. 257 (and described previously) where a "wage" payment of 180 drachmas per man, per aroura, is specified; Vineyard lease Papyrus P.Laur. 4.166 dating to A.D. 289-90 (and described previously) where a payment of 4,000 drachmas per aroura is specified; and Vineyard lease P.S.I.XIII.1338 dating to A.D. 299 (and described above) where a payment of 1,200 drachmas per aroura is specified.

**Table 26 Papyrological evidence analyzed in the following section**

| Date | Item | Source |
|---|---|---|
| A.D. 269/277 | Vineyard contract[615] | P. Col. 10, 280[616] |
| A.D. 280 | Vineyard contract | P. Oxy. XIV, 1631[617] |
| A.D. 285 | Letter to Manager | B.G.U. 2.624[618] |
| A.D.286 | Farm account | P.Wash.Univ.1.18[619] |
| A.D. 289-290 | Vineyard contract | P.Laur. 4 166[620] |
| A.D. 297 | Wage agreement | P.Cair.Isid. 81[621] |
| A.D. 299 | Wage agreement | P.Sakaon. 58[622] |
| A.D. 299 | Vineyard contract | P.S.I. 13. 1338[623] |

The significance of these labour contracts is that they are private agreements, and as such they potentially reflect the changes to the currency between A.D. 275 and 299. The next section therefore, seeks to study wages as expressed in the Egyptian papyri from A.D. 274/5 – A.D. 299 in order to determine if wages increased in response to wheat prices and whether any increase was linked to the currency reforms.

To determine if there were any increases in wages between A.D. 274/5 and A.D. 299 within the viticulture labour contracts it is necessary to make a comparison with an earlier viticulture labour contract dating to A.D. 257. This contract is papyrus P. Oxy. XLVII, 3354[624]. The importance of this comparison is that it pre-dates the inflation and monetary reforms of the 3rd century and records the viticulture wage payments for different months in A.D. 257, prior to the debasement and reforms of the Egyptian tetradrachm. This contract is

[615] For vineyards the most thorough study of the conflicts and pressures has been treated by Kloppenborg (2006) who has compared ancient viticulture in Egypt and Jewish Palestine. His study includes a detailed appendix of all viticulture contracts beyond those published by the Egypt exploration Society, see Kloppenborg (2006, p.355 – 549).
[616] http://papyri.info/ddbdp/p.col;10;280 last accessed 04/05/2014
[617]Grenfell and Hunt (1920, p.15–25); Kloppenborg (2006, p.539-541); http://papyri.info/ddbdp/p.oxy;14;1631, last accessed 04/12/2013.
[618] http://www.papyri.info/hgv/9271 last accessed 04/12/2013.
[619]http://www.papyri.info/ddbdp/p.wash.univ;1;18; translation hosted on http://library.wustl.edu/units/spec/manuscripts/papyri/wtu.inventory.136.html last accessed 04/05/2014.
[620] http://papyri.info/ddbdp/p.laur;4;166 last accessed 04/05/2014.
[621] http://www.papyri.info/ddbdp/p.cair.isid;;81 last accessed 04/05/2014.
[622] http://papyri.info/ddbdp/psi;8;873 last accessed 04/05/2014.
[623] http://www.papyri.info/hgv/17254 last accessed 05/05/2014.
[624] http://papyri.info/ddbdp/p.col;10;280 last accessed 04/05/2014.

therefore outlined below and will be used as a baseline against which the contracts that post-date the reforms of A.D. 274/5 can be compared.

### Section 8.1. P. Oxy. XLVII, 3354: a viticulture labour contract from A.D. 257

The full text and translation of Papyrus, P. Oxy. XLVII, 3354 is given in the appendices, see P.Oxy. XLVII, 3354 (p270). The importance of papyrus, P. Oxy. XLVII, 3354 is that it is a viticulture labour contract that dates to A.D. 257 during the joint reign of Valerian and Gallienus, and prior to the substantive debasement of the currency[625]. The contract is a two-year lease to work on a vineyard of six *arourae*[626], and the nearby reed-plantation. The contract is signed by two labourers from the Oxyrhynchus district and the contract specifies that their wages for labour will be 360 drachmas per *aroura* (totaling 2,160 drachmas). A close translation of the Greek reads:

> "[of] the wage, of all the tasks, [for] vinelabour, for each aroura, of silver, of drachmas 360"[627] (author's translation).

The Greek seems clear. The wage is reckoned in drachmas but paid in silver "billon"[628] tetradrachms. This means that the payment for each *aroura* is 360 drachmas paid in silver tetradrachms. The lease also specifies the monthly rate of payment and includes a schedule of tasks and payments that totals 2,160 drachmas. This is as follows:

**Table 27 Monthly payments for viticulture tasks: A.D. 257 from contract P. Oxy. XLVII, 3354**

| Month | Payment For Two Men | Task |
|---|---|---|
| Hathyr | 200 drachmas | reed pulling |
| Choiak | 200 drachmas | reed pulling |
| Tybi | 400 drachmas | Pruning |
| Mecheir | 400 drachmas | reed work |

[625] Further evidence of stability in wages despite the debasement of the currency has already been discussed in Chapter 6 p.82 - 101 with regard to the wages for potter, ass-drivers, and apprentices. For the evidence of wages paid to sailors and the monthly pensions paid to the victorious athletes of Hermopolis see Section 6.7 p.99 - 101, and also footnote 494, p.100.

[626] An aroura was the traditional unit of land-measurement, about 100 cubits in area Bagnall (2009, p.185 – 186).

[627] μισθοῦ τῶν ἔργων πάντων τῆς ἀμπέλου κατ' ἄρουραν ἀργυρίου δραχμῶν τριακοσίων [ἑξ-] ήκοντα

[628] A billon coin is the term for the 3rd century coins of the Roman Empire in which the "silver" coin is a majority of copper and a smaller percentage of silver, see Corbier (2008a, p.342).

| | | |
|---|---|---|
| Phamenoth | 180 drachmas | reed work |
| Pharmouthi | 240 drachmas | reed work |
| Pachon | 100 drachmas | reed work |
| Pauni | 240 drachmas | thinning foliage |
| Epeiph | 100 drachmas (paid in Thoth the following year | thinning foliage |
| Mesore | 100 drachmas (paid in Thoth the following year) | thinning foliage |

The total wage for both parties in P. Oxy. XLVII, 3354 is 2,160 drachmas. Since contract P. Oxy. XLVII, 3354 (dating to A.D. 257) is for two men the total wage can be halved in order to determine the probable wage paid to each man. If this were divided equally, this would be 1,080 drachmas per man. The same method can be used to calculate the possible monthly payments per man. If the monthly payments specified in the contract, and given in the above table (Table 27, p.123) are divided evenly between both parties, then the monthly wage per person can be calculated. In "Table 28", (p.124) the monthly payments specified in contract P. Oxy. XLVII, 3354 are divided equally in half to give an equal share to both parties.

**Table 28 Monthly payments for viticulture tasks per man: A.D. 257 (from contract P. Oxy. XLVII, 3354)**

| Month | Payment Per Man | Task |
|---|---|---|
| Hathyr | 100 drachmas | reed pulling |
| Choiak | 100 drachmas | reed pulling |
| Tybi | 200 drachmas | Pruning |
| Mecheir | 200 drachmas | reed work |
| Phamenoth | 90 drachmas | reed work |
| Pharmouthi | 120 drachmas | reed work |
| Pachon | 50 drachmas | reed work |
| Pauni | 120 drachmas | thinning foliage |
| Epeiph | 50 drachmas (paid in Thoth the following year) | thinning foliage |
| Mesore | 50 drachmas (paid in Thoth the following year) | thinning foliage |

Since the men are to be paid in silver tetradrachms their total monthly wage can be calculated in tetradrachms. This is because there were four bronze drachmas to the one silver

tetradrachm in the 3rd century[629], and because the contract specifies that their wages are to be paid in silver (see Section 8.1, above). The data in the following table (Table 28, p.124) takes the monthly wages in drachmas for both men specified in contract P. Oxy. XLVII, 3354 (see Table 27, p.123) and divides this figure by four (the number of bronze drachmas to one silver tetradrachm). The table (Table 28, p.124) also gives the same figure per man. This is simply half the wage for two men:

**Table 29 Wages in silver coins for viticulture tasks: A.D. 257 (contract P. Oxy. XLVII, 3354)**

| Month | Total Payment (two men) | Payment Per Man |
|---|---|---|
| Hathyr | 50 tetradrachms | 25 tetradrachms |
| Choiak | 50 tetradrachms | 25 tetradrachms |
| Tybi | 100 tetradrachms | 50 tetradrachms |
| Mecheir | 100 tetradrachms | 50 tetradrachms |
| Phamenoth | 45 tetradrachms | 22 ½ tetradrachms |
| Pharmouthi | 60 tetradrachms | 30 tetradrachms |
| Pachon | 25 tetradrachms | 12 ½ tetradrachms |
| Pauni | 60 tetradrachms | 30 tetradrachms |
| Epeiph | 25 tetradrachms[630]. | 12 ½ tetradrachms |
| Mesore | 25 tetradrachms[631]. | 12 ½ tetradrachms |

Interestingly these monthly wages of between 12 ½ – 50 silver tetradrachms per man (depending on the task) would equate to between 50 – 200 drachmas per month. A wage of between 50 - 200 drachmas in A.D. 257 per month moreover is comparable to the monthly wage of 180 drachmas paid to sailors on state duties in A.D. 266, and the pension to athletes in A.D. 267 that was also 180 drachmas[632]. The monthly wages between 50 – 200 drachmas per month per man means, moreover, that the daily rate would vary from one drachma and four obols, to six drachmas and four obols per day, depending on the task[633]. Such figures are also typical of the rates paid to labourers in the mid 3rd century in which the rate for unskilled

[629] See Bagnall (2009, p.190); Corbier (2008a, p.338); Harl (1996a, p.120).
[630] To be paid in Thoth the following year.
[631] To be paid in Thoth the following year.
[632] For the evidence of wages paid to sailors and the monthly pensions paid to the victorious athletes of Hermopolis see Section 6.7 p.99, and also footnote 494, p.100.
[633] The monthly rates can be divided by 30 days.

labour is two drachmas, two obols per day, and the rate for heavy or skilled labour is four drachmas per day[634].

Furthermore the two lessees were additionally paid the following payments in kind which were divided between the lessees.

- Two *ceramia* of "new" wine (at the time of "vintage")
- Three *artaba* of wheat (at harvest time – for thinning and irrigating the foliage)
- One *ceramia* of sour wine (at pruning time)

The importance of this papyrus (contract P. Oxy. XLVII, 3354) lies in the detailed schedule of tasks, and rates of payment. These can be compared with the wages and rates preserved in the papyri and papyri fragments that post-date A.D 275 to determine how far the reforms of Aurelian and his successors affected private wage agreements.

### Section 8.2. P. Col. 10, 280: a viticulture labour from A.D. 269/277

Contract P. Col. 10, 280 dates to either A.D. 269 or A.D. 277 and is significant since it is a viticulture labour contract that either pre-dates or post-dates the currency reform of Aurelian in A.D. 274/5. It is a significant papyrus because it can potentially be used to determine if wages remained stable prior to A.D. 269, or if it dates to A.D. 277, how wages were affected by the A.D. 274/5 reforms of the currency. A full copy of papyrus P.Col. 10, 280, both the text and a translation, is appended (see P.Col. 10 280, p275).

Papyrus P.Col. 10, 280 is the second contract and dates either to the second year of Claudius II (c.269)[635] or the second year of Probus' reign (A.D. 277)[636]. Unfortunately the title of the emperor is damaged and it only refers to the 2nd year of an emperor titled "Caesar Marcus Aurelius… Pius Felix Augustus". Regardless of the actual date any significant increase in wages within in the papyrus might demonstrate how contracts were responding either to the complete debasement of the currency under Claudius II; or the A.D. 274/5 reforms of Aurelian that the emperor Probus inherited in A.D. 277.

[634] Drexhage (1991, p.342); Kehoe (2012, p.120); Rathbone (1996, p.331, 332).
[635]There were in Egypt two systems of dating the reign of Claudius II. The first assumed the start of his reign occurred in the 15th year Gallienus and assigned him three years. The second cancelled the final year of Gallienus' reign and assigned that to Claudius II. It is not clear as to which would be appropriate here. See Grenfell and Hunt (1916, p.229 – 231; 1920, p.77).
[636]The titles of the emperor could apply to both since the crucial middle names are missing.

The contract is very fragmentary and the number of lessees is not clear. The Greek uses a plural ending to indicate that there is more than one lessee. The lease moreover appears to be for two years since the lessees are required to make payments of 600 drachmas for the produce of the present year, and a further 600 drachmas for the produce of the following year[637]. The papyrus lists a number of payments as follows: The steward who countersigns the lease states that 4,000 drachmas have been passed to the lessees. The papyrus also states that the lessees have received an advance loan for the irrigation of the site; they have to pay a total of 1,200 drachmas as some sort of rent (600 in the first year and 600 for the following year); a payment is mentioned of 1,200 drachmas that the lessees have had "on account", and they will also receive 100 drachmas in Thoth and 200 drachmas in Mecheir and Phamenoth[638].

> "…and the lessees agree they have from the lessor one thousand two hundred drachmas on account and the rest of which they will receive one hundred drachmas in Thoth, two hundred drachmas in Mecheir and Phamenoth and from Pharmouthi until Mesore including Mesore (?) drachmas per month; . . . from the advance loan for (our) service of the irrigating of the farm and for the valuation of the pairs of oxen they shall deliver from the produce of the present year six hundred drachmas, from the produce of the coming year six hundred drachmas"[639]

From the translation it seems that the "payment on account" is part of a wage payment since it is linked directly to the monthly installments of one hundred drachmas in the month of Thoth, and two hundred drachmas in the months of Mecheir and Phamenoth. The "advance loan" seems different and is associated with the irrigation and works to the site. This makes it possible to suggest the following reconstruction of the payments: the steward paid the lessees

[637] ἀπὸ μὲν γεν]ήματος τοῦ ἐνεστῶτος ἔτους δ[ρ]αχμὰς ἑξακοσίας, ἀπὸ δὲ γενήματος τοῦ ἰσιόντος ἔτο[υς δραχμὰς ἑ]ξα-[κοσίας -ca.?- ], translation: from the produce of the present year six hundred drachmas, from the produce of the coming year six hundred drachmas.
http://wwwapp.cc.columbia.edu/ldpd/apis/item?mode=item&key=columbia.apis.p313 [last accessed 08/12/2013].

[638] οἱ μεμισθω]μένοι ὁμολογοῦσι ἔχειν παρὰ [το]ῦ μεμισθωκότος ἐπὶ λόγῳ δραχμὰς χιλίας διακοσίας [καὶ τὰς] λοιπὰς [δώσειν αὐτοῖς κατὰ μῆνα Θὼθ δραχμὰ]ς ἑκατόν, Μεχ[εὶ]ρ Φαμενὼθ [κατὰ] μῆνα δραχμὰς διακοσίας, ⳨καὶ ἀπὸ Φαρμοῦθι ἕως Μεσ̣ορὴ ⳨καὶ αὐτοῦ [Μεσορὴ κατὰ μῆνα δραχμὰς (?)..... ] ἀπὸ τῆς προχρείας πρὸς ὑπηρ[εσία]ν τῶν τοῦ κτήματος ποτ[ισμῶ]ν, τὴν δὲ τῶν βοικῷ[ν] ζευγῶν [τὴν συντίμησιν ἀποδότωσαν ἀπὸ μὲν γεν]ήματος τοῦ ἐνεστῶτος ἔτους δ[ρ]αχμὰς ἑξακοσίας, ἀπὸ δὲ γενήματος τοῦ ἰσιόντος ἔτο[υς δραχμὰς ἑ]ξα-10[κοσίας -ca.?- ].

[639] Translation hosted on: http://wwwapp.cc.columbia.edu/ldpd/apis/item?mode=item&key=columbia.apis.p313 [accessed: 20/04/14].

an advance loan of 4,000 drachmas. A sum was allocated for irrigation, and a payment agreed over two years for the value of the oxen provided that totals 1,200 drachmas (600 drachmas on the produce of the current year, and a payment of 600 drachmas, to be paid from the produce of the following year). This leaves a total of 2,800 drachmas. From this 1,200 drachmas has been "advanced" (probably as a wage payment) leaving 1,600 drachmas. The rest of the wage is to be paid as follows: 100 drachmas in Thoth, 200 drachmas in Mecheir, and 200 drachmas in Phamenoth. These deductions allow a reconstruction of the wages in contract P. Col. 10,280 to be suggested:

**Table 30 Reconstruction of payments for P. Col. 10.280 dating to A.D. 269/277**

| Item | Amount | Remainder of Loan |
|---|---|---|
| Advance loan | 4,000 drachmas | 4,000 drachmas |
| Less payments from 2-years worth of "produce"[640] | 1,200 drachmas | 2,800 drachmas |
| Less payment on account (for wages?) | 1,200 drachmas | 1,600 drachmas |
| Less payments for Thoth – Phamenoth | 500 drachmas | 1,100 drachmas |
| Less payments for Pharmouthi - Mesore | 1,100 drachmas | None |

The remaining 1,100 drachmas to be divided over the remaining five months at a rate of 220 drachmas per month although the actual amount is likely to vary depending on the tasks required[641]. Since papyrus preserves the rates for Thoth, Mecheir, and Phamenoth it is therefore possible to use the reconstruction above to suggest the average payments for Pharmouthi to Mesore with the caveat that the exact payments for the month will vary. The following table, Table 31 (p.128) takes the monthly rates for work preserved in papyrus P. Col. 10.280 and includes the suggested average payment in drachmas between Pharmouthi to Mesore. Given that the contract is for more than one person the table also suggests a monthly wage for one man based on a half-share of the full monthly wage.

**Table 31 Monthly payments for viticulture tasks: A.D. 269/277 in P. Col. 10.280**

| Month | Total Payment | Total Payment Per Man? |
|---|---|---|

[640] This covers provision of oxen.
[641] The different monthly rates can be seen in the monthly payments made to the lessees in contract P. Oxy. XLVII, 3354, dating to A.D. 257. These are tabulated in Table 27 (p.123) and it shows that the amounts paid per month vary depending on the viticulture tasks for that month.

| | | |
|---|---|---|
| Thoth[642] | 100 drachmas | 50 drachmas |
| Mecheir[643] | 200 drachmas | 100 drachmas |
| Phamenoth | 200 drachmas | 100 drachmas |
| Pharmouthi | 220 drachmas | 110 drachmas |
| Pachon | 220 drachmas | 110 drachmas |
| Pauni | 220 drachmas | 110 drachmas |
| Epeiph | 220 drachmas | 110 drachmas |
| Mesore | 220 drachmas | 110 drachmas |

These payments are significant because the contract either dates from A.D. 269 when the silver content of the tetradrachm had reached its lowest level in A.D. 269, or it dates to A.D. 277 which is two years after the currency reform of Aurelian. If traditional views with regard to the effect of either currency debasement or currency replacement are correct[644] then we would expect to see a substantive increase in wages from those in papyrus P. Oxy. XLVII, 3354, which predates the debasements of the currency in Egypt between A.D. 264 and A.D. 268; and also the currency reforms of Aurelian in A.D. 274/5.

An initial comparison between the monthly payments for viticulture work in A.D. 257 and 269/77 might suggest a doubling of monthly wages but even this evidence is not entirely clear, since some months in A.D. 257 are better paid than those in A.D. 269/77, and the monthly wage in contract P. Col. 10, 280 between Pharmouthi to Mesore is based only on an average.

**Table 32 Total monthly wages: A.D. 257 (papyrus P. Oxy. XLVII, 3354) and A.D. 269/277 (papyrus P. Col. 10.280)**

| Month | Total Payment (A.D. 257) | Total Payment (A.D. 269/77) |
|---|---|---|
| Thoth[645] | n/a | 100 drachmas |
| Mecheir | 400 drachmas | 200 drachmas |
| Phamenoth | 180 drachmas | 200 drachmas |
| Pharmouthi | 240 drachmas | 220 drachmas |

[642] Month one of the Egyptian year: 29th of August.
[643] Month six of the Egyptian year.
[644] See Rathbone (1997, p.190) and Lo Cascio (2008, p.887) for a 10-fold increase. See Duncan-Jones (1976a, p.251) for a 5-fold increase and Harl (1996a, p.147) for a 4-fold increase.
[645] Payments for Epeiph and Mesore are agreed to be paid in Thoth of the following year.

| | | |
|---|---|---|
| Pachon | 100 drachmas | 220 drachmas |
| Pauni | 240 drachmas | 220 drachmas |
| Epeiph | 100 drachmas | 220 drachmas |
| Mesore | 100 drachmas | 220 drachmas |

If the contract P. Col. 10.280 dates to A.D. 269, and the silver content of the tetradrachm was a material consideration in wage agreements, we might expect to see a four-fold increase in a wages between A.D 257 (papyrus P. Oxy. XLVII, 3354) and A.D. 269. This is because the silver content of the tetradrachm in A.D. 257 had c.0.8 grams, and the silver content of the tetradrachm in A.D. 269 had c.0.2 grams[646]. This four-fold increase however is not visible in the contracts above (Table 32, p129).

It is equally possible that this contract P. Col. 10.280 dates from A.D. 277. Since the silver content of the tetradrachm seems to have remained at c.0.2 grams of silver per coin after the reforms of A.D. 274[647] this means that the silver content of the tetradrachm would not be a material consideration in the setting of the these wages were this contract to date from A.D. 277. Thus if P. Col. 10.280 does date to A.D. 277 the wages must be seen in terms of the currency revaluations because the silver tetradrachm of Egypt seems to have remained at c.0.2 grams of silver per coin despite the reforms of Aurelian in A.D. 274/5. The wages in papyrus P. Col. 10. 280 will therefore be considered against the two suggested values for the numbers of the drachmas to each post A.D. 274/5 tetradrachm as suggested by Estiot and Harl[648]

### Section 8.3. Papyrus P. Col. 10. 280: Analysis of Estiot

The following section will apply Estiot's[649] suggestion that there were eight drachmas to the new post-A.D. 274/5 tetradrachm between A.D. 274/5 and 294 to the wages in papyrus P. Col. 10, 280. This is important because if the wages in P. Col.10.280 post date the currency reforms of Aurelian in A.D. 274/5, and if Aurelian's reform resulted in the upward revaluation of his reformed tetradrachm, then we might expect to see this increase reflected in the wages paid to the labourers in papyrus P. Col. 10, 280.

[646]This is the difference between the silver content of the tetradrachm in A.D. 257 (which is around 0.8 grams of silver per coin) and the silver content of the tetradrachm in A.D 269, which is about 0.2 grams of silver per coin. See Cope *et al.* (1997, p.12); Lendon (1990, p.109).
[647] Cope *et al.* (1997, p.12).
[648] Estiot (2012, p.549 – 550; Harl (1996a, p.151, 155).
[649] Estiot (2012, p.549 – 550).

Table 33 shows a comparison between the total number of silver coins paid to both men in papyrus P. Oxy. XLVII, 3354 dating to A.D. 257 (where there are four drachmas to each tetradrachm); and papyrus P. Col. 10.280 dating to A.D. 277 (where there are eight-drachma per reformed coin of Aurelian).

**Table 33 Monthly payments in silver, P. Oxy. XLVII, 3354 (A.D. 257) and P. Col. 10.280 (A.D. 277) using Estiot's ratio of drachmas to tetradrachms for P.Col. 10.280. See Estiot (2012, p.549 – 550)**

| Month | Total Payment (A.D. 257) | Total Payment (A.D. 277) |
|---|---|---|
| Thoth[650] | n/a | 12 ½ reformed tetradrachms |
| Mecheir | 100 tetradrachms | 25 reformed tetradrachms |
| Phamenoth | 45 tetradrachms | 25 reformed tetradrachms |
| Pharmouthi | 60 tetradrachms | 27 ½ reformed tetradrachms |
| Pachon | 25 tetradrachms | 27 ½ reformed tetradrachms |
| Pauni | 60 tetradrachms | 27 ½ reformed tetradrachms |
| Epeiph | 25 tetradrachms | 27 ½ reformed tetradrachms |
| Mesore | 25 tetradrachms | 27 ½ reformed tetradrachms |

Table 33 shows a comparison between the total number of silver coins paid to both men in papyrus P. Oxy. XLVII, 3354 dating to A.D. 257 (where there are four drachmas to each tetradrachm); and papyrus P. Col. 10.280 dating to A.D. 277 (where there are eight-drachma per reformed coin of Aurelian)[651]. If Estiot's theory that there were eight drachmas to each reformed tetradrachm is applied to the wages in P.Col. 10.280 we see that the average wage between A.D. 257 and A.D. 277[652] seems largely unaffected by the A.D. 274/5 reforms of Aurelian. The data would suggest that the if there was an upward revaluation of the new A.D. 274/5 coins of Aurelian the wages paid to tenants in contract P. Col. 10.280 (A.D. 277) did not substantively decline or increase in terms of the numbers of new tetradrachms paid to the lessees. This is particularly noticeable given that payments of 27 ½ reformed tetradrachm suggested in P. Col. 10.280 (A.D. 277) from Pharmouthi to Mesore are an average rate only,

[650] Payments for Epeiph and Mesore are agreed to be paid in Thoth of the following year.
[651] This would be the total of the payments from Pharmouthi to Mesore which equals 640 drachmas P. Oxy. XLVII, 3354 (A.D. 257). This total can be divided by the five months of Pharmouthi to Mesore to give an average of 128 drachmas per month, and this 128 drachmas can be divided by the rate of four-drachma to the tetradrachm to give a monthly average in tetradrachms of 32 ½ tetradrachms per month.
[652] If P.Col. 10. 280 does indeed date to A.D. 277.

and a comparable average in P. Oxy. XLVII, 3354 (A.D. 257) from Pharmouthi to Mesore would be 32 ½ tetradrachms. Unfortunately the contract is too fragmentary to know if it does date to A.D. 277 nor whether there were any maintenance payments made.

### Section 8.4. Papyrus P. Col. 10, 280: Analysis of Harl

The fact that the currency reforms of Aurelian in A.D. 274/5 did not alter the silver content of the Egyptian tetradrachm[653] indicates that the increases in wages and prices suggested by the papyrological evidence from A.D. 274/5 might be the result of revaluation. The previous section considered the wages for viticulture labour in papyrus P.Col.10, 280 (perhaps dating to A.D. 277) in terms of Estiot's theory[654] that the currency reform of Aurelian in A.D. 274/5 introduced a coin worth eight drachmas; this section however, considers the same evidence with regard to Harl's theory that there were 20 drachmas to one post-A.D. 274/5 tetradrachm[655]. Harl argues that the new reformed coins of Aurelian's A.D. 274/5 reforms were introduced at a rate of five pre-A.D. 274/5 tetradrachms to one new post A.D. 274/5 reformed tetradrachm. This means that there would be 20 drachmas to the new coins of Aurelian. If, therefore, Aurelian specified a new ratio of drachmas to the new reformed tetradrachm of A.D. 275 at 20 drachmas to one new reformed tetradrachm, and if contract P. Col. 10, 280 dates to A.D. 277, then we might expect to see the wage increase in terms of drachmas in response to the new ratio.

When Harl's ratio of 20 drachmas to the new tetradrachm is applied to the wage in P. Col. 10, 280 we see a substantive decline in the number of silver coins paid to the lessees (based on the comparison with papyrus P. Oxy. XLVII. 3354) and it would suggest that either the lessees were indeed being exploited or that there is a problem with the ratio of 20 drachmas to each new post A.D. 274/5 tetradrachm. This is because the monthly wage payments have not increased in line with the proposed revaluation of the currency. This is clearly demonstrated by Table 34 (p.133) which uses Harl's rate of 20 drachmas to one reformed A.D. 274/5 coin of Aurelian to show the number of silver coins payable to the lessees in P. Col. 10, 280 (A.D. 277) in comparison to the total number of silver coins paid per month in papyri P. Oxy. XLVII, 3354 (A.D. 257).

[653] Cope *et al.* (p.1997, p.12); see also Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.
[654] Estiot (2012, p.550 and 559).
[655] Harl (1996a, p.151, 155).

**Table 34 Monthly payments in silver P. Oxy. XLVII, 3354 (A.D. 257) and P. Col. 10, 280 (A.D. 277)**

| Month | Total Payment (A.D. 257) | Total Payment (A.D. 269/77) |
|---|---|---|
| Thoth[656] | n/a | 5 reformed tetradrachms |
| Mecheir | 100 tetradrachms | 10 reformed tetradrachms |
| Phamenoth | 45 tetradrachms | 10 reformed tetradrachms |
| Pharmouthi | 25 tetradrachms | 11 reformed tetradrachms |
| Pachon | 25 tetradrachms | 11 reformed tetradrachms |
| Pauni | 60 tetradrachms | 11 reformed tetradrachms |
| Epeiph | 25 tetradrachms | 11 reformed tetradrachms |
| Mesore | 25 tetradrachms | 11 reformed tetradrachms |

If the new tetradrachm was worth 20 drachmas, and if P. Col. 10, 280 does date to A.D. 277 then lessees are earning less per month than they did in A.D. 257 and they have, in effect, seen a reduction in the number of silver coins that they receive.

### Section 8.5. Papyrus P. Col. 10, 280: Conclusion

To determine if the purchase power of the new currency remains the same it is theoretically possible to compare the purchase power of the monthly wage with the price wheat. Unfortunately the evidence of state wheat-prices in the 3rd century prior to A.D. 274/5 consists of only a single price of 24 drachmas[657] and whilst the evidence for private wheat prices until A.D. 260 is relatively abundant there are no private wheat prices preserved after A.D. 274/5 (see Section 11.5, p.204 for an attempt to consider the purchase power of the post A.D. 274/5 currency). This evidence is not conclusive because the different monthly wages for the different monthly viticulture wages are not known, and wages in P. Oxy. XLVII 3354 (A.D. 257) varied between 50 – 200 drachmas, or 12 ½ tetradrachms – 50 tetradrachms, the lowest wage of which was double the single state price for wheat in A.D. 246. Unfortunately papyrus P. Col. 10, 280 is too fragmented and it does not mention maintenance payments. It is not clear whether these have increased. Given the difficulties over the date of P. Col. 10, 280 further analyses are not possible.

For these reasons the next section will consider papyrus P. Oxy. XIV, 1631. This is a very detailed and largely complete contract that dates to A.D. 280, during the reign of Probus.

[656] Payments for Epeiph and Mesore are agreed to be paid in Thoth of the following year.
[657] Rathbone (1996, p.331, 2).

Since its date is certain, the wages contained in P. Oxy. XIV, 1631 will be considered against the theories of Estiot[658] and Harl[659]. This is important because the period of around A.D. 280 is traditionally described as a period of inflation[660], and if the application of Estiot's theory to the wages paid the labourers in papyrus P. Oxy. XIV. 1631 (A.D. 280) results in a similar number of silver coins paid to the labourers in papyrus P. Col. 10.280 (A.D. 269/277) and papyrus P. Oxy. XLVII, 3354 dating (A.D. 257) then this might be evidence to supporting the interpretation that Aurelian's currency reform introduced a "double"-value coin that was worth eight drachmas. If however the application of Harl's theory to the wages paid to the labourers in P. Oxy. XIV. 1631 (A.D. 280) results either a similar number, or a significant increase, in the number of silver coins paid to labourers in P. Col. 10.280 (A.D. 269/277) and papyrus P. Oxy. XLVII, 3354 (A.D. 257) this might be evidence for monetary instability after A.D. 277 because the application of his theory to P. Col. 10. 280 would see a substantive decrease in the number of silver coins paid to the lessees.

### Section 8.6. P. Oxy. XIV, 1631: a viticulture labour contract from A.D. 280

Papyrus P. Oxy. XIV, 1631 dates to the reign of Probus in A.D. 280[661]. The contract (papyri P. Oxy. XIV, 1631) dating to A.D. 280 is a contract for one-year's work in a vineyard and its adjacent reed plantation in the Oxyrhynchus district. It is signed by three lessees: a father called Ctestus and his son Ptolemaeus (the Aurelii) who are from Oxyrhynchus and who formed one party; and a third person called Peloïus (an Egyptian, possibly from Tanais) who forms the second party. The three payees received a total of "4,500 silver drachmas" for viticulture work: a half-share to the Aurelii and a half-share to Peloïus. The Greek expresses this as "4,500 drachmas of silver". This should be read as 4,500 drachmas paid in silver coins[662] since the Greek states that the wage has been reckoned in drachmas but will be paid

[658] Estiot (2012, p.549 – 550).
[659] Harl, (1996a, p.151, 155).
[660] On the subject of inflation see footnote 5, p.16 and footnote 497, p.101.
[661] Rathbone makes specific mention of this contract. He argues that the lessees are actually the same as *prostatai* (recipients of cash wages of 60 – 68 drachmas, and 4 obols on the Appianos estates in A.D. 252 – 3 Rathbone (1991, p.189 – 193). These are labourers who are contracted specifically to work on a particular vineyard, for a set period, for cash remuneration, and sometimes with accommodation. Although the contract of A.D. 280 does not use the term *prostatai*, Rathbone argues that the similarity in terms of contract between the *prostatai* of A.D. 252-3 on the Appianus estate and those in the contract of A.D. 280 indicate that they are the same, and that these are *paramone*-type contract Rathbone (1991, p.192 – 3). *Paramone* contracts are those in which a labourer contracts to work for a specific employer for a set period, usually years, with accommodation and maintenance. If he was paying off a debt there were would be no cash wage but in other cases cash wages would be paid Rathbone (1991, p.116 – 117).
[662] The payment is noted in bronze drachmas (360 drachmas per aroura) but the phrase is "μισθοῦ τῶν προκειμένων ἔργων πάντων ἀργυρίου δραχμῶν τετρακισχειλίων πεντακοσίων". This translates as "of a wage of all the set tasks [in] of silver of [bronze] drachmas four thousand five hundred".

in "silver" billon tetradrachms, as is seen in contract P. Oxy. XLVII, 3354 (A.D. 257)[663]. Unfortunately the actual monthly amounts are not specified, nor whether they related to a particular number of aroura, only that they are to be paid in installments; and it is clear from the contracts dating to A.D. 257 and A.D. 269/77 that the actual monthly wage could vary significantly from the "average" monthly wages, depending on the task.

In addition to a monthly wages the three lessees (who are described within the contract as two "parties") also received the following payments in kind:

**Table 35 Payments in kind P. Oxy. XIV, 1631 (A.D. 280)**

| Maintenance | Share per party? |
|---|---|
| four *ceramia* of "new" wine | two each |
| 10 *artaba* of wheat | five each |

How far that this should be seen as an additional wage, however, is not clear; though the division of this payment in wheat between two parties would mean that each "party" received five-month's worth of wheat[664] which is significant if the dating of Ostracon O. Mich 1.157 does date to A.D. 276, and is correctly interpreted as 200 drachma per *artaba*[665].

## Section 8.7. Analysis

Rathbone[666] suggests that the lessees are *prostatai*, similar to the *prostatai* on the Appianos estate. These are workers who are attached to vineyards though they might also do other work[667]. *Prostatai* are paid as casual labourers and this suggests to Rathbone that they had to work fulltime on the vineyards. They potentially had accommodation on the estates and were therefore specialist tenants who worked exclusively on vineyards for a fixed period, and in return for a cash wage[668]. This is consistent with Rowlandson's[669] interpretation of these contracts as "work" agreements rather than tenancies.

[663] The payment for viticulture labour in P. Oxy. XLVII, 3354 (A.D. 257) in bronze drachmas (360 drachmas per aroura) but the phrase is μισθοῦ τῶν ἔργων πάντων τῆς ἀμπέλου κατ' ἄρουραν ἀργυρίου δραχμῶν τριακοσίων [ἑξ-]ήκοντα. This translates as "[of] the wage, of all the tasks, [for] vinelabour, [for each] aroura, of silver, of drachmas 300 [and] 60"author's translation).
[664] The *artaba* as one-month's worth of wheat for a man, see Harl (1996a, p.271).
[665] For the debate on O. Mich. 1.157 see footnote 562, p.110; and Appendix 4: Ostracon O.Mich. 1.157, p.241
[666] Rathbone (1991, p.189 – 193).
[667] For example the lessees on the Titanianus Estates of A.D. 239/40 See Rathbone (1991, p.191).
[668] The term derives from the title for civic leaders in 5th century B.C., see Glotz (2013, p.12). This is noted by Rathbone (1991, p.192) who remarks that *prostatai* are usually translated as foremen of caretakers. More confusingly the term also denotes leader of a religious community, see Kasher (1985, p.111-112). See also

Since the papyrus P. Oxy. XIV, 1631 (dating to A.D. 280) does not specify wages for individual months it is necessary to use the average monthly payment in order to compare it with papyrus P. Oxy. XLVII, 3354 (dating to A.D. 257). The average monthly wage for both parties implied by papyrus P. Oxy. XIV, 1631 (dating to A.D. 280) is 375 drachmas per month[670]. This figure can be compared to the average monthly wage for both parties implied by P. Oxy. XLVII, 3354, which is 180 drachmas per month[671]. On the basis of averages it would therefore seem that the average monthly wage for two men has increased roughly two-fold between A.D. 257 and 280.

To understand the nature of this apparent increase in wages it is necessary to determine the number of bronze drachmas per silver tetradrachm in A.D. 280. Unfortunately the value-relationship in Egypt between the drachma and the post-A.D. 274 coins of Aurelian and his successors is not clearly understood by scholars (see footnote 525, p.105) but it has been suggested by Estiot[672] that there were eight drachmas to one new A.D. 274/5 reformed coin of Aurelian, and by Harl that there were 20 drachmas to the new tetradrachm[673]. These two theories can be applied to the wages in contract P. Oxy. XIV, 1631 (A.D. 280) to determine if the wage paid within this contract reflects any significant currency revaluation, and if the number of silver tetradrachms paid to the labourers (in silver tetradrachms) in differs significantly from the number of coins paid in contracts P. Oxy. XLVII, 3354 (A.D. 257), and P. Col. 10.280 (A.D. 269/277). If the application of Estiot's ratio of eight drachmas to each silver tetradrachm results in a similar number of coins paid to labourers as were paid in contracts P. Oxy. XLVII, 3354 (A.D. 257), and P. Col. 10.280 (A.D. 269/277) this would be evidence that Estiot's ratio is correct, and evidence for continued economic stability.

### Section 8.8. P. Oxy. XIV, 1631. The analysis of Estiot

Sylviane Estiot[674] argues that reforms of Aurelian in A.D. 274/5 saw the one-to-one replacement of the antoninianus with Aurelian's new reformed coins. Since there was a

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Kehoe (2007, p.81) for a different translation of *prostatai* though he notes that they are also individuals who represent the interests of agricultural communities in Egypt.

669 Rowlandson (1998, p.228 – 325).

670 This is simply the figure of 4,500 drachmas in P. Oxy. XIV, 1631 divided by 12 months.

671 This is the total wage in P. Oxy. XLVII, 3354 of 2,160 drachmas divided by 12 months.

672 Estiot (2012, p.550).

673 Harl (1996a, p.150, 151).

674 Estiot (2012, p.550 – 552).

nominal one-to-one relationship between the denarius and the pre-reform tetradrachm[675] Estiot's theory would imply that the new-reformed coins of Aurelian were worth two pre-reform tetradrachms and therefore worth eight drachmas. If we apply Estiot's theory that in Egypt there were eight drachmas to the post-A.D. 274 currency of Aurelian to the wage within contract P. Oxy. XIV, 1631 (A.D. 280), the number of silver coins paid within contract P. Oxy. XIV, 1631 (A.D. 280) can be calculated as follows (Table 36, p137):

**Table 36 Total wage in silver coin P. Oxy. XLVII, 3354 (A.D. 257) and P. Oxy. XIV, 1631 (A.D. 280)**

| Date | Total wage | Total wage in silver coins |
|---|---|---|
| A.D. 257 | 2,160 drachmas | 540 tetradrachms |
| A.D. 280 | 4,500 drachmas | 562 ½ reformed tetradrachms |

The application of her theory that there were eight drachmas to post A.D. 274/5 reformed tetradrachm results in a wage of 562 ½ post-A.D. 274/5 reformed tetradrachms which is consistent with the 540 pre-A.D. 274/5 tetradrachms paid in A.D. 257. This would appear to support Estiot's theory[676] that the reform of Aurelian's A.D. 274/5 currency reform saw a doubling in the number of drachmas to each new post-A.D. 274/5 reformed tetradrachm. To be certain that this interpretation is correct it is necessary to test the theory of Harl[677] that there were 20 drachmas to the new post-A.D. 274/5 tetradrachm.

## Section 8.9. P. Oxy. XIV, 1631. The analysis of Harl

If Kenneth Harl's theory[678] that there were 20 drachmas to each the post-A.D. 275 tetradrachm of Aurelian, is applied to the total wage given in P. Oxy. XIV, 1631 (A.D. 280), and this total is compared to the number of tetradrachms in P. Oxy. XLVII, 3354 (A.D. 257), we actually see a substantive reduction in the number of post-A.D. 274/5 tetradrachms paid to the lessees in P. Oxy. XIV, 1631 (A.D. 280), (see, Table 37, p.137).

**Table 37 Total wage in silver coin P. Oxy. XLVII, 3354 (A.D. 257) and P. Oxy. XIV, 1631 (A.D. 280)**

| Date | Total wage | Total wage in silver coins |
|---|---|---|
| A.D. 257 | 2,160 drachmas | 540 tetradrachms |

[675]There were four drachmas to one tetradrachm. See Bagnall (2009, p.190); Corbier (2008a, p.338); Harl (1996a, p.120).
[676] Estiot (2012, p.550).
[677] Harl (1996a, p.150, 151).
[678] Harl (1996a, p.150, 151).

| | | |
|---|---|---|
| A.D. 280 | 4,500 drachmas | 225 reformed tetradrachms |

Table 37 (p137) demonstrates that if Harl's theory that there are 20 drachmas to one post-A.D. 274/5 tetradrachm is applied to the total wages in P. Oxy. XIV, 1631 (A.D. 280) the lessees in A.D. 280 would have seen a significant drop with regard to the numbers of silver coins paid for viticulture work between papyrus P. Oxy. XLVII, 3354 (dating to A.D. 257) and papyrus P. Oxy. XIV, 1631 (A.D. 280). Unless the buying power of the reformed coin was significantly greater than the pre-reform tetradrachm a total wage of 225 tetradrachms this would represent a significant decline in wages between A.D. 257[679] and A.D. 280. This suggests that Estiot[680] is correct to argue that there are eight drachmas to each post-A.D. 274/5 tetradrachm because the application of Harl's[681] ratio of 20 drachmas to each post A.D. 274/5 tetradrachm would be evidence of significant deflation in the currency. Further evidence to support Estiot's argument that there are eight drachmas to each post A.D. 274/5 drachma comes also from an analysis of the amount of silver paid in papyri P. Oxy. XLVII, 3354 (A.D. 257) and P. Oxy. XIV, 1631 (A.D. 280)

**Section 8.10. Silver content: Analysis**

It is argued above that the two papyri P. Oxy. XLVII, 3354 (A.D. 257) and P. Oxy. XIV, 1631 (A.D. 280) provide evidence of Aurelian's currency reforms in A.D. 274/5. If the analyses given in those sections are correct it would appear that the application of Estiot's theory[682] that there were in A.D. 274/5 eight drachmas would explain the increase in the total wage from 2,160 drachmas in A.D. 257 (papyrus P. Oxy. XLVII, 3354) to 4,500 drachmas in A.D. 280 (papyrus P. Oxy. XIV, 1631) which is roughly double the amount in A.D. 257. The implication of this is that the increase in wages can be explained by currency revaluation and not necessarily the silver content of the new post-A.D. 274/5 tetradrachm currency.

The idea that the increase in wages between A.D. 257 (papyrus P. Oxy. XLVII, 3354) and A.D. 280 (papyrus P. Oxy. XIV, 1631) is the result of revaluation and not a response to debasement is supported by a comparison of the silver content of the currency in A.D. 257 and A.D. 280. From A.D. 268 the Egyptian tetradrachm seems to have had a stable silver

[679] In A.D. 257 there were only four drachmas to the tetradrachm. For the parity of the denarius to the Egyptian tetradrachm see Bagnall (2009, p.190); Corbier (2008a, p.347); Christiansen (2004b, p.43 – 44); Howgego (1985, p.52); Geissen (2012, p.563); Rathbone (1996, p.325 – 326); Van Minnen (2008, p.226).
[680] Estiot (2012, p.550).
[681] Harl (1996a, p.150, 151).
[682] Estiot (2012, p.550).

content of c.0.2 grams of silver per coin[683]. Since the silver content of the currency seems to have remained relatively stable until c. A.D. 278/279 at c.0.2 grams of silver per coin it is possible that the wage in A.D. 280 (papyrus P. Oxy. XIV, 1631) reflects this stability[684], since it is not until A.D. 279/280 that the silver content of the currency suddenly drops, and these new coins would presumably have needed time to enter general circulation in significant quantities[685]. If the silver content of the currency was a significant factor in the setting of wages in A.D. 280 we might have expected the lessees to have obtained an amount of silver similar to the lessees in A.D. 257 (papyrus P. Oxy. XLVII, 3354).

The application of Estiot's theory[686] (that there were eight drachmas to each post A.D. 274/5 reformed tetradrachm) to the wage in P. Oxy. XIV. 1631 results in a slight increase in the number of silver coins to the lessees, unlike the application Harl's theory[687] that there were 20 drachmas to each post A.D. 274/5 reformed tetradrachm which would see a significant drop in the number of silver coins paid to the lessees. Since Estiot theory would provide the lessees with a comparable number of silver coins for their work when compared with the lessees in papyrus P. Oxy. XLVII, 3354 (A.D. 257) it is interesting to note that they are actually receiving less silver for their work[688]. The figure of 562 ½ post A.D. 274/5 reformed tetradrachms generated by the application of Estiot's[689] ratio to the total wage of 4,500 drachmas results in a total amount of silver that is c. 112 ½ grams of silver[690]. This is around three to four times less silver than the lessees in A.D. 257 who received c. 457 grams of silver[691]. Clearly the amount of silver paid has not increased in proportion to the amount of

[683] See Cope *et al.* (1997, p.12) on the silver content of the currency.
[684]Aurelian had fixed the silver standard of the currency across the Empire at 5% fine (c.0.2g of silver per tetradrachm coin) but in Egypt the Alexandrian mint was had been minting coins at this standard from A.D. 266, see Cope *et al.* (1997, p.12) under Gallienus and Claudius II. Aurelian's standard of coins that were 5% fine was continued by Tacitus and the early coins of Probus, but by A.D. 276/7 Probus was minting coins that had begun to decline from the standard of 0.2 grams of silver per tetradrachm. A tetradrachm of Probus from year two of his reign (A.D. 276/77 ) had a silver content of 0.16 grams, a tetradrachm of year 3 (277/88) had a silver content of 0.16grams, and two tetradrachm of year five (A.D. 279/80) had silver contents of 0.07 – 0.05 grams respectively. See Cope *et al.* (1997, p.12).
[685] See footnote 122, p.35 on the time it takes coin to circulate from Castile.
[686] Estiot (2012, p.550).
[687] Harl (1996a, p.151, 155).
[688] The theory of Harl (1996a, p.151, 155) that there were 20 drachmas to each tetradrachm is not followed because his 225 post A.D. 274/5 reformed tetradrachm would result in even less silver to the lessees that Estiot's theory.
[689] Estiot (2012, p.550).
[690] This is calculated by multiplying the 562 ½ post A.D. 274/5 reformed tetradrachms by 0.2 grams of silver which is the silver content as analysed by Cope *et al.* (1997, p.12).
[691] This is calculated by multiplying 540 tetradrachms of the c.0.88 grams of silver in a coin of Decius dating to A.D. 249/50, see Lendon (1990, p.109); see also Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.

debasement and so the silver content of the currency would not seem to a material factor for the agreement of the wage in P. Oxy. XIV. 1631[692]. The stability in the number of coins already noted in contract P. Col. 10. 280 (A.D. 269/77) is reflected in the wage of P. Oxy. XIV 1631, and it is argued that this is further evidence in support of Estiot's theory that the reforms of Aurelian simply saw a doubling in terms of the number of drachmas to the new post A.D. 274/5 tetradrachm[693]

## Section 8.11. Maintenance Payments P.Oxy. XIV. 1631

The preceding sections suggested that the increase in wages paid between A.D. 257 (papyrus P. Oxy. XLVII, 3354) and A.D. 280 (P.Oxy. XIV. 1631) is the result of currency revaluation. These papyri will be used to determine if there was a corresponding increase in maintenance payments between A.D. 257 and A.D. 280. In papyri P.Oxy. XLVII, 3354 dating to A.D. 257 the lessees will receive the following maintenance payments in kind.

**Table 38 Maintenance payments in kind: papyri P.Oxy. XLVII, 3354 (dating to A.D. 257)**

| Maintenance | Share per person? |
|---|---|
| 2 *ceramia* of "new" wine | 1 each |
| 3 *artaba* of wheat | 1 ½ each |
| 1 *ceramia* of sour wine | ½ each |

By contrast in A.D. 280 the three lessees (who are two "parties") received the following additional payments in kind (Table 35, below).

**Table 39 Maintenance payments in kind P.Oxy. XIV. 1631 (dating to A.D. 280)**

| Maintenance | Share per party? |
|---|---|
| 4 *ceramia* of "new" wine | 2 each |
| 10 *artaba* of wheat | 5 each |

[692] By A.D. 280 the silver tetradrachms coins that predated A.D. 274 were no longer issued by the government. They had been replaced by the "reformed" tetradrachms of Aurelian and his successors. Cope's analysis of the Egyptian tetradrachm demonstrates that the silver content of the Egyptian tetradrachm had remained at c.0.2 grams of silver per coin until A.D. 278, and it is only between A.D. 279 and A.D. 280 that the silver content of the Egyptian tetradrachm is reduced to c.0.07 – 0.05 grams of silver per coin, see Cope *et al.* (1997, p.12). Since silver content of the A.D. 279/80 tetradrachms was now c. 11-16 times less than it was in A.D. 257 we might expect the wages in A.D. 280 to increase proportionally, so that the lessees were not earning less silver than they did in 23-years earlier.

[693] Estiot (2012, p.550).

It would seem that there has been an increase in wheat paid to the lessees but this is not sufficient to provide a year's maintenance since the lease is between two half-shares rather than three individuals. Thus it is possible it suggest that the maintenance was split 50:50 between both parties. If so then the Egyptian Peloïus would have five month's worth of wheat and the party of the "Aurelii" would have five month's worth to split between themselves. This would represent c.3-fold increase in the "wheat" maintenance paid in A.D. 280, but how far this reflects a significant addition to the wage is not clear as the cost of wheat is not clear at this time[694].

The evidence above therefore suggests that Estiot was correct to argue that there were eight drachmas to each post-A.D. 274/5 reformed tetradrachm[695] and that this ratio continued to be applicable to wage agreements until A.D. 280. To determine if this ratio is still applicable a further papyrus, P. Laur.4.166 is considered below.

### Section 8.12. Papyrus P.Laur 4.166

Papyrus P.Laur. 4.166 dates to A.D. 289-90. A full transcription and translation is given in Appendix 6: Viticulture and labour papyri analysed in text, (p.284). Papyrus P. Laur.4.166 is a very significant papyrus since it dates to a period of the 3rd century when the silver content of Alexandrian tetradrachm was negligible[696]. The papyrus can potentially provide an insight as to how wages responded to the debasement of the currency under Probus in A.D. 279[697]. This is particularly important for our understanding of the wages in the late 3rd century, and the extent of inflation at this date because Harl[698] continues to suggest that there are 20 drachmas to the post-A.D. 274/5 tetradrachm and gives no suggestion of inflation at this time. By contrast, Estiot's theory that that there were originally eight drachmas to each post A.D. 274/5 reformed tetradrahm requires that some sort of inflationary process or revaluation occurs around this time. This is because she argues that by A.D. 294 the number of drachmas to each post A.D. 274/5 reformed tetradrachm has doubled, and there are now 16 drachmas to each post A.D. 274/5 reformed tetradrachm[699]. Neither scholar clearly explains their reasoning. In the case of Harl, he does not explain why

[694] For the debate on O. Mich. 1.157 see footnote 562, p.110; see Appendix 4: Ostracon O.Mich. 1.157, p.241.
[695] Estiot (2012, p.550).
[696] Cope's analysis of the silver content of the currency gives silver contents that range from 0.005 grams of silver to 0.01 grams of silver per coin: A.D. 285/6 at 0.02grams of silver per coin; A.D. 287/8 at 0.01 grams of silver per coin; A.D. 288/9 at no silver per coin and a second example at 0.005 grams of silver per coin; and A.D. 290 at 0.006 grams of silver per coin. See Cope *et al.* (1997, p.12).
[697] Cope *et al.* (1997, p.12).
[698] Harl (1985, p.263 – 270); Harl (1996a, p.271, 151, 155).
[699] Estiot (2012, p.552).

there is no response in the "official" ratio of drachmas to tetradrachms when the silver content of the currency is debased. In the case of Estiot, she does not explain why the inflation or revaluation occurs. The importance of the analysis of papyrus P. Laur. 4.166 is therefore because it preserves an actual wage agreement at this time of supposed inflation.

The papyrus itself preserves a very fragmentary one-year lease for viticulture labour in a vineyard (possibly from the Oxyrhynchus area) by one lessee. The principal importance of the contract lies in the preservation of a payment in drachmas to the lessee. The contract dates to the years just prior to the currency reform of Diocletian in A.D. 294 – 6, and records an agreement to pay 4,000 drachmas in silver for all work relating to viticulture.

The sentence stating the wage of 4,000 drachmas in papyrus P.Laur.4.166 is as follows:

"I will pay you all viticulture tasks of each *aroura* from a survey for 4,000 silver drachmas" (author's translation: P.Laur.4.166)[700]

Unfortunately the contract P.Laur.4.166 is very fragmentary and it is hard to understand the full terms and conditions of the contract.

[700] τελέσω σοι ὑπὲρ τῶν] ἀμπελουργικ[ῶν] ἔργων πάντων ἑ[κάστης ἀρούρης ἐκ γεομετρίας ἀργυρίου δραχμὰς] τετράκις χειλία[ς]. "I will pay you all viticulture tasks of each aroura from a survey 4,000 silver drachmas" (author's translation).

## Section 8.13. Papyrus P.Laur 4.166: Analysis

Papyrus P.Laur. 4.166 preserves a rate per *aroura* in A.D. 289/90 of 4,000 drachmas per aroura. This implies that the rate per *aroura* has increased from 360 drachmas in A.D. 257 (P.Oxy. XLVII.3354) to 4,000 drachmas per person in A.D. 289/90 (P.Laur.4.166). To determine if the increase in wage relates either to a change in the number of drachmas to the post-A.D. 274/5 reformed silver tetradrachm or a response to the debasement of the currency[701] it is necessary to determine the number of silver coins paid out per *aroura* in both A.D. 257 and A.D. 289/90[702], because the payment per *aroura* would therefore need to be paid in the debased billon coins being issued by the authorities.

The previous sections (Section 8.3 and Section 8.4, Section 8.8 and Section 8.9, p.130 - 132, and 136 - 138) applied the theories of both Sylviane Estiot[703] and Kenneth Harl[704] with regard to the number of drachmas to each post A.D. 274/5 reformed tetradrachm of Aurelian, to the wages given in papyri P. Col. 10, 280 (A.D. 269/277), and P. Oxy. XIV, 1631 (A.D. 280). By A.D. 294, however, the theories of Estiot and Harl converge with regard to the numbers of drachmas to each post A.D. 274/5 tetradrachm. Estiot argues that in A.D. 294 there 16 drachmas to one post A.D. 274/5 tetradrachm and Harl continues to argue that there 20 drachmas to one post A.D. 274 tetradrachm[705]. This is important because the suggested ratios of Estiot and Harl can be applied to the wage per *aroura* in contract P.Laur.4.166 (A.D. 289/90) and the results compared to the wage per *aroura* in P.Oxy. XLVII.3354 (A.D. 257).

**Table 40 Viticulture wages in A.D. 289/90 (P.laur.4.166) applying the theories of Estiot and Harl. See Estiot, (2012, p.549 – 55); Harl (1996, p.151, 155).**

| Wages per aroura | Wage using Harl's 20:1 | Wage using Estiot's 16:1 |
|---|---|---|
| 4,000 drachmas | 200 reformed tetradrachms | 250 reformed tetradrachms |

[701] From c.0.8 grams of silver per tetradrachm in A.D. 257, to c.0.005 grams and even less by A.D. 289/90. See Cope *et al.* (1997, p.12).
[702] It is necessary to remember that between A.D. 257 and A.D. 280-290 the currency had been reformed by Aurelian, and that drachmas were no longer being minted, see Harl (1996a, p.143).
[703] Estiot (2012, p.550).
[704] Harl (1996a, p.151, 155).
[705] Estiot (2012, p.552) argues that one post-A.D. 274/5 reformed coin of Aurelian was worth four denarii in A.D. 294, which is 16 drachmas. For evidence she cites the double-reformed coins issued by Tacitus (A.D. 275 – 276) outside Egypt that were marked KA and had double the silver content to the XXI and KA A.D. 274/5 issues of Aurelian, see Callu and Barringdon (2010a, p.297 – 332). Estiot's theory is consistent with the theory of Harl (1996a, p.271, 151, 155) that there were 20 drachmas to one tetradrachm at this time, see also Harl (1985, p.263 – 270).

A comparison between the numbers of silver coins paid in A.D. 257 and A.D. 289-290 shows that in A.D. 257 the rate per *aroura* of 360 drachmas converted into 90 billon-silver coins[706] while in A.D. 289-90 a rent of 4,000 drachmas would convert in 200[707] - 250[708] post-A.D. 274/5 reformed tetradrachms, depending whether Estiot's ratio of 16 drachmas to the post-A.D. 274/5 reformed tetradrachm is used in the calculation[709] or Harl's theory that there were 20 drachmas to the post-A.D. 274/5 reformed tetradrachm[710]. This is seen in Table 41 (p.144):

**Table 41 Total viticulture wages per *aroura* P.Oxy. XLVII.3354 (A.D. 257) and P.Laur.4.166 (A.D. 289/90)**

| Date | Wages per aroura | Wage in tetradrachms |
|---|---|---|
| A.D. 257 | 360 drachmas | 90 tetradrachms (two parties) |
| A.D. 289/90 | 4,000 drachmas | 200 – 250 reformed tetradrachms (one man) |

If the wage in papyrus P.Laur.4.166 is interpreted as a wage per *aroura* it would seem from the data in Table 41 (p.144) that between A.D. 257 and A.D. 289/90 the wage per *aroura* for viticulture labour in drachmas had increased about eleven times, but that if the theories of Estiot[711] and Harl[712] are applied to this rate then the number of silver coins paid per *aroura* has increased around 2 – 2 ½ times. This interpretation, however, can be challenged because these agreements are work contracts[713]. This means that the lessor pays a wage to the lessee to maintain the vineyard; and this wage is often recovered latterly from the profits. This suggests that the money advanced in these agreements must be seen as a "liveable" wage to enable the lessees to survive until their advances can be paid back from the profits. Papyrus P.Oxy. XLVII.3354 (dating to A.D. 257) gives a total wage of 2,160 drachmas[714] for two men but the wage per *aroura* in P.Laur.4.166 (dating to A.D. 289/90) is

[706] Since there were four drachmas to one pre-reform tetradrachm this means that there were 45 tetradrachms per aroura in A.D. 257 (P.Oxy. XLVII.3354). On the parity between the denarius and the tetradrachm see Bagnall (2009, p.190); Corbier (2008a, p.347); Christiansen (2004b, p.43 – 44); Howgego (1985, p.52); Geissen (2012, p.563); Rathbone (1996, p.325 – 326); Van Minnen (2008, p.226).
[707] 4,000 drachmas per aroura divided by 20 drachmas gives 250 post-A.D. 274/5 reformed tetradrachm.
[708] 4,000 drachmas per aroura divided by 16 drachmas gives 200 post-A.D. 274/5 reformed tetradrachm.
[709] Estiot (2012, p.550).
[710] Harl (1996a, p.151, 155).
[711] Estiot (2012, p.550).
[712] Harl (1996a, p.151, 155).
[713] Rowlandson (1996, p.229 - 230).
[714] This is the 360 drachmas per aroura multiplied by the six aroura in the agreement.

a wage for one man. For a comparison between the two contracts the wage of 360 drachmas per *aroura* in P.Oxy. XLVII.3354 (dating to A.D. 257) needs to be halved.

**Table 42 Viticulture wages per *aroura*, per man P.Oxy. XLVII.3354 (A.D. 257) and P.Laur.4.166 (A.D. 289/90)**

| Date | Wages per aroura | Wage in tetradrachms |
|---|---|---|
| A.D. 257 | 180 drachmas | 45 tetradrachms |
| A.D. 289/90 | 4,000 drachmas | 200 – 250 reformed tetradrachms |

If the rates per person in P.Oxy. XLVII.3354 (dating to A.D. 257) and P.Laur.4.11 (A.D. 289/90) are compared this would mean that the number of drachmas per *aroura* has increased roughly 22x between A.D. 257 and A.D. 289/90. If the number of drachmas in A.D. 289/90 to each post A.D. 274/5 reformed tetradrachm is 16 or 20 drachmas[715] then the number of silver coins paid per *aroura* to the lessee has been limited to a four or five-fold increase. This would indicate that it was necessary to revalue the number of drachmas to the tetradrachm to limit increases in the numbers of silver coins paid. Had the number drachmas to each post A.D. 274/5 reformed tetradrachm not increased from eight drachmas to either 16 or 20 then there would have been a roughly ten-fold increase in the number of coins paid to the lessee, to 500 debased tetradrachms per aroura. This suggests that by A.D. 289/90 there was pressure on the drachma – reformed tetradrachm relationship, and that this pressure necessitated a revaluation in the number of drachmas to the of the post-A.D. 274/5 reformed tetradrachm by A.D. 289/90. It is not clear whether this revaluation occurred in response to the debasement of the tetradrachm in A.D. 278/9, or because of some other factor of which we are unaware. It would seem unlikely however, for the currency in c.A.D. 289/90 to suddenly reflect a debasement that was made by a different emperor in A.D. 278/9. It therefore suggests that the change to the wages might reflect some other considerations – perhaps tying of the value of the currency to the new gold standard of Diocletian[716].

Unfortunately it is not possible to compare the papyrus in more detail to determine whether the wage reflects a total payment, or a payment per aroura, because the papyrus is too fragmented. This means that the schedule of payments (if there were any) cannot be

[715] 16 drachma is the application of Harl (1996a, p.151, 155); 20 drachma is the application of Estiot (2012, p.550).
[716] See also Pankiewicz (1985, p.171 – 182); Hollard (1995, p.1074 – 76); Corbier (2008a, p.343 – 344) for restatements of the role of gold.

reconstructed, and it is not possible to explain the high rate per *aroura* other than to say that there seems to be some sort of reform or change to the currency at this time – perhaps in response to the reforms of the gold aureus that was being introduced from A.D. 286[717]. As a result one final contract PSI XIII, 1338 (dating to A.D. 299) will be considered because it contains a wage per aroura. This will be considered against contracts P.Oxy. XLVII. 3354 and P.Laur.4.166 (A.D. 289/90) to determine the nature of any wage increases between A.D. 257 and A.D. 299.

### Section 8.14. PSI XIII, 1338: a vineyard contract from A.D. 299

Contract PSI XIII.1338 is an important papyrus for the analysis of the payments made for vineyard leases in the late 3rd century A.D. because it dates to A.D. 299. This was a period of supposed significant inflation. The papyrus has been transcribed, with a translation, in Appendix 4 (p.302). The papyrus is a very fragmentary contract for the lease of a new vineyard. The term of contract runs from the month of Hathyr (the third month of the Egyptian year) for one-year. The lease is for a single individual (an Oxyrhynchite) named Theon who is leasing the work from a woman, Aurelia Diogenis. The stated tasks include planting, irrigation and weeding of the vineyard, and the planting of vegetables (in the winter), and cucumber and gourds in the summer – probably inter-cultivated amongst the vines. The total payment for the viticulture-labour has not survived in the papyrus but the lease does record a payment for viticulture work of 1,200 drachmas in silver per *aroura* to the lessee[718]. Since the wording states that this amount is to paid to the lessee it should be seen as a wage, which is consistent with the views of Rowlandson[719]. This reading is confirmed latterly in P.S.I. XIII.1338 which states that Theon will return the rent "φώρος" in the month of Pauni (the 10th month of the year) – presumably when he can profit from his work by the selling of the vegetables (since this is a new vineyard it might be sometime before a crop can be produced[720]).

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[717] Corbier (2008a, p.335).

[718] "τελέσε μοι ὑπὲρ φώρου ἑκάστης ἀρούρης ἐκ γεωμετρία[ς] ἀργυρίου δραχμὰς χιλίαςδιακοσίας ποιοῦντός μου". This translates: "you will pay me on account of the rent of each aroura from a landsurvey, of silver, drachmas one-thousand two-hundred." (author's translation).

[719] See Rowlandson (1992, p.229 – 230). Since the remainder of the wording with regard to money in papyrus PSI XIII.1338 specifies that the payment is to the lessee and not the landowning lessor, it must be read as an advance payment for the lessee, Theon. In Greek, moreover, the payment is a *phorou* "φώρου". The standard meaning is rent or tax but it can mean any kind of payment[719].

[720] The reason that tenants need an advance is that a new vineyard, and new vines, will not initially produce a significant crop. Any lessee would therefore need an advance of a "rent", and that this rent would need to reflect the typical "wage" payments. If the advance was more than a typical wage, then the lessee would benefit in the short-term at the expense of the landowner but then potentially find himself indebted to that landowner if he was unable to repay the advance. If by contrast the wage is too little to be a "living" wage, the lessee would stand to substantively profit when the produce of the vineyard were sold, or as in this case the crops that are sown

## Section 8.15. PSI XIII, 1338: Analysis

The importance for this document is that it records a "rate" per *aroura* for a period of supposed "inflation", and to determine whether the payment per *aroura* in A.D. 299 (Contract PSI XII, 1338) represents a significant increase to the rate in A.D. 257 it is necessary to compare the rate per *aroura* in contract P. Oxy. XLVII, 3354 (A.D. 257). This is because it is possible to compare the figure of 1,200 drachmas per *aroura* in A.D. 299 with the rate 380 drachmas per *aroura* in A.D. 257 (contract P. Oxy. XLVII, 3354) and 4,000 drachmas per *aroura* in P. Laur. 4. 11 (A.D. 289/90).

In A.D. 257 (contract P. Oxy. XLVII, 3354) the payment per *aroura* was 360 drachmas per *aroura*. Since payment was to cover the monthly wage payments for two men it is possible that the payment per *aroura* was 180 drachmas, which is half the rate of 360 drachmas (see Section 8.1, p.123 - 126). This rate of 180 drachmas would equate to 45 tetradrachms per *aroura* in A.D. 257 (see Section 8.1, p.123 - 126)[721]. By A.D. 299, however, the currency of Egypt had been reformed. This occurred under Diocletian in A.D. 294-296, during which a new coin called the nummus[722], was introduced across the empire. Harl[723] suggests that it is introduced at a rate of 20 drachmas to one nummus in A.D. 294-6[724]. In the following table (Table 43 p.147) Harl's rate of 20 drachmas to one nummus is used to calculate the number of nummi implied by a rate of 1,200 drachmas per aroura[725].

**Table 43 Rate per aroura: P. Oxy. XLVII, 3354 (A.D. 257); PSI. XIII.1338 (A.D.299)**

| Date | Payment per aroura | Rate | Silver coins |
|---|---|---|---|
| 257 | 180 | 4 drachmas to 1 tetradrachm | 45 tetradrachms |

between the vines – otherwise Theon would be paying a rent to work in a vineyard that is not yet able to produce a crop.

[721] The figure of 180 drachmas per aroura can be divided by the rate of four drachmas to give 45 tetradrachms per aroura since there were four-drachma to one tetradrachm. See Bagnall (2009, p.190); Corbier (2008a, p.338); Harl (1996a, p.120).

[722] This was a silver coin that had a standard silver content of 0.43 grams of silver per coin, see Carson (1990, p.237 – 238); Estiot (2012, p.548).

[723] Harl (1996, p.151).

[724] Harl (1985, p.262 – 270) then argues that this ratio was increased prior to A.D. 301 to 50 drachmas per nummus, see also Harl (1996a, p.151). Other scholars are silent as to the value of the nummus at its introduction but accept that prior to A.D. 301 it was worth 50 drachmas, because the Currency Reforms of Diocletian in September A.D. 301 doubled the value of the nummus to 25 denarii communes, or 100 drachmas per nummus, see Estiot (2012, p.559); Abdy (2012, p.568); Harl (1996a, p.151). This doubling of the nummus to 25 denarii communes (or 100 drachmas) implies that the value prior to September 301 was 12 ½ denarii communes (or 50 drachmas). On the ratio of drachmas to tetradrachms, and nummi see Bagnall (2009, p.190; Corbier (2008a, p.338); Harl (1996a, p.120).

[725] Harl's rate of 20 drachmas to one tetradrachm, see Harl (1996a, p.151). See also Harl (1985, p.263 - 270).

| | | | |
|---|---|---|---|
| 299 | 1,200 drachmas | 20 drachmas to 1 nummus | 60 nummi |

It would seem, based on the evidence in Table 43 (p.147) that in A.D. 299 (contract PSI. XIII.1338) Theon was advanced a comparable number of silver coins to the lessees in A.D. 257 (papyrus P. Oxy. XLVII, 3354). This is particularly noticeable if the number of silver coins paid for labour in contracts P. Oxy. XLVII, 3354 (dating to A.D. 257), and PSI. XIII.1338 (dating to A.D. 299) are compared with contract P. Laur.4.166 (dating to A.D. 289/90).

If the number of silver coins in contracts P. Oxy. XLVII, 3354 (dating to A.D. 257), and PSI. XIII.1338 (dating to A.D. 299) are compared with the number exchanged in contract P. Laur.4.166 (dating to A.D. 289/90) it would appear that the number of silver coins paid per *aroura* had actually declined between A.D. 289/90 and A.D. 299[726]. In the following table (Table 43 p.147) Harl's rate of 20 drachmas to one nummus is used to calculate the number of nummi implied by a rate of 1,200 drachmas per aroura[727].

**Table 44 Rate per aroura: P. Oxy. XLVII, 3354 (A.D. 257); P.Laur. 4.166 (A.D. 289/90 ); PSI. XIII.1338 (A.D.299)**

| Date | Payment per aroura | tetradrachms or nummi |
|---|---|---|
| 257 | 180[728] | 45 tetradrachms |
| 289/90 | 4,000 drachmas | 200 – 250 tetradrachms |
| 299 | 1,200 drachmas | 60 nummi |

[726] Other evidence of a decline in rentals is hard to assess given the difference in land types, the difference in modern and ancient perception of land types, where land was location and it classification. The only other comparable sequence is "Grass" lands.

| Date A.D. | Rental per aroura of grassland | Source |
|---|---|---|
| 280/1? | 200 drachmas | Papyrus P.S.I. III.187 in Gagos *et al.* (1995, p.106-108) |
| 289 | 500 drachmas | P. Oxy. Ined.9 in Gagos, (1987, p.188) |
| 296 | 1,300 drachmas | PSI IX 1079 in Gagos *et al.* (1995, p.106-108) |
| 296 | 666.67 drachmas | P.Oxy.LV.3803 in Gagos *et al.* (1995, p.106-108). |

The evidence would suggest some increase in rental but it is difficult to assess the degree of that increase since the quality and exact location of these grasslands are not clear. The evidence of flax planting is also not clear. In A.D. 282 a rent is recorded of 1,600 drachmas per aroura in the Oxyrhynchus area (papyrus P.Mich. XI.610) in, Gagos *et al.* (1995, p.106-108); and a rent for the planting of Flax in A.D.291 had a rental of 833.33 drachmas P.Oxy. XIV 1691 in Gagos *et al.* (1995, p.106-108). Once again the quality and location of these plots are not clearly known. For the traditional land tax see footnote 250, p.58.

[727] Harl's rate of 20 drachmas to one tetradrachm, see Harl (1996a, p.151).

[728] This is the rate per man since contract P. Oxy. XLVII, 3354 gives 360 drachmas per aroura. Since there are six aroura in the contract the total wage of 2,160 drachmas is use to calculate the monthly wages for both men.

The results of Table 44 clearly suggest that between A.D. 289/90 and A.D. 299 the number of silver coins paid per *aroura* for viticulture labour dramatically declined. How can this be explained?

The decline is the number of silver coins paid to viticulture labouers between A.D. 289/90 and 299 coincides with the currency reforms of Diocletian which introduced the nummus into Egypt in A.D. 298-299[729]. This coin had substantially more silver per coin than the debased tetradrachms previously in circulation. The silver content of the nummus was 0.43 grams of silver[730]. Table 43 (p.147). This means that if Theon was paid 1,200 drachmas per aroura, or 60 nummi per aroura, he was in receipt of 25.8 grams of silver per aroura.

**Table 45 Silver paid per *aroura* P. Oxy. XLVII, 3354 (A.D. 257); P.Laur. 4.166 (A.D. 289/90); PSI. XIII.1338 (A.D.299)**

| Date | Total payment per aroura | Silver content | Silver per aroura |
|---|---|---|---|
| A.D. 257 | 45 tetradrachms | 0.8 grams per coin | c.36 grams |
| A.D. 289/90 | 200 – 250 tetradrachms | 0.01 grams per coin | c.2 – 2 ½ grams |
| A.D. 299 | 60 nummi | 0.43 grams per coin | c. 25.8 grams |

The implication of the data in the above table is that by A.D. 299, with the introduction of the nummus to Egypt, the silver content of the currency mattered. The reasoning is that if silver content did not matter then there is no reason for Theon's wage to reduce from the rate of 4,000 drachmas per *aroura* in A.D. 289/90 (contract P.Laur. 4.166). The introduction of a new coin with a significantly higher silver content[731] seems to have been associated with a deflationary effect, and a clear decline in the number of silver coins paid for traditional work. More significantly if Harl's theory[732] of 20 drachmas to each nummus is applicable, then Theon would receive 25.8 grams of silver per *aroura* in A.D. which is a significant increase on the amount paid in contract P. Laur 4.166 in A.D. 289/90, and that this is comparable to the c.36 grams of silver paid for labour per *aroura* to each man

[729] This was a silver coin that had a standard silver content of 0.43 grams of silver per coin Carson (1990, p.237 – 238); Estiot (2012, p.548). Harl suggests that it is introduced at a rate of 20 drachmas to one nummus in A.D. 294-6, see Harl (1996a, p.151). See also Estiot (2012, p.559); Abdy ( 2012, p.568).
[730] Cope *et al.* (1997, p.12); Carson (1990, p.237 – 238).
[731] Carson (1990, p.237 - 8).
[732] Harl (1996a, p.151, 155).

in A.D. 257. This would seem to be evidence that Diocletian was attempting to return wage rates to those of the mid. 3rd century A.D.

To determine if these conclusions are restricted solely to the viticulture labour contracts described in this section further searches of the database http://papyri.info [last accessed 05/05/2014] were undertaken to identify any other papyri containing costs and wages that could be used as a test for these conclusions. Only three labour contracts were identified and these are considered below. The results will then be compared with the results of the viticulture-labour contracts.

## Chapter 9. Other Labour Contracts: A.D. 275 – 299

To determine the extent of any inflation between A.D. 275 and A.D. 299 searches were undertaken of the papyrological database[733]. These searches identified four viticulture-labour contracts that could be used to determine any inflation at this time, and to determine how wages reacted to the currency reforms between A.D. 274/5 and A.D. 299[734]. The conclusions in Chapter 8 (above) suggest that the increase in wages between A.D. 257 and A.D. 280 could be the result of revaluation rather than currency debasement because the increase in wages per *aroura* seen between A.D. 257 and A.D. 299 was not based solely on the extent of debasement of the currency but revaluation of the currency. To further test these results additional searches of the database hosted at http://papyri.info [last accessed 05/05/2014] were undertaken to identify any other papyri that contained references to wages and labour costs for the purpose of comparison.

The papyri identified are papyrus P.Wash.Univ. 1.18 (dating to A.D. 286); papyrus P.Cair 81 (dating to A.D. 297) and papyrus P.Sakaon (dating to A.D. 299). The importance of these papyri is that they can be used to test the conclusions for the study of viticulture-labour between A.D. 257 and A.D. 299. No other papyri were identified that could be used to test the degree of debasement, or the extent to which wages were affected by currency reform between A.D. 274/5 and A.D. 299. These are papyri are considered individually below[735]. They are then discussed with reference to the viticulture results from Section 8.1 (p.123 - 151).

Papyrus P. Wash. Univ. 1.18 (dating to A.D. 286) will be considered first because it contains a clear reference to wages. A fragmentary letter B.G.U. 2.624 (dating to Dec. 285) will be discussed in conjunction with papyrus P. Wash. Univ. 1.18 (dating to A.D. 286) to further illustrate the conclusions of papyrus P. Wash. Univ. 1.18

[733] See Table 26, p.122.
[734] Cope *et al*. (1997, p.12).
[735] Papyri P.Wash.Univ. 1.18 dating to A.D. 286; P.Cair. 81 dating to A.D. 297; and P.Sakaon dating to A.D. 299.

**Section 9.1. Papyrus P.Wash.Univ.1.18**

Papyrus P.Wash.Univ.1.18 (dating to December 286) is a very fragmentary papyrus that lists a series of monthly payments to individuals on an estate. A full transcription and translation of the more complete section is included in Appendix 4 (p.289). It records a numbered series of payments for the month of Choiak, and though the entries for lines 1 – 30 are not clear we read of a reference to an ox-team "ṯαυρι[κ]ὴ " (line 9), and various contractors whose work or days they worked are a little unclear (lines 10 - 25). From line 26 there are series of entries that are clearer: payments for an "ἔργον" (task) but no details have survived as to how long or who completed unspecified task. Frustratingly line 30 records payment to an "αὐτουργία" (line 30) which translates a "self-employed man" but unfortunately the rate does not survive.

The best preserved section of the account are lines 30 – 45 which contain items 21 – 30, and also items 1 – 5 for the month of Choiak[736], see also Appendix 4, p290-293. These monthly payments are useful because the papyrus gives a wage in the month of Choiak in A.D 286 for Saras which is a described as: "μετὰ Σαρᾶ μισθωτοῦ μισ(θοῦ) (δραχμαὶ) ρκ". This translates as "with Saras the tenant the wage 120 drachmas".. It also gives the payment for the vinedresser, Onnophris, also 120 drachmas. The crucial element of these payments lies in their translation. The Greek is fragmentary but central to our understanding is:

21 – into the portion belonging to Horos, some of Ph . . .nis
22 – the same work
23 – personal work
24 – together with Saras, tenant, pay 120 drachmas[737]
(author's translation[738])

The Greek is clear: the wage is singular and can only refer to Saras[739]. Interestingly the gender of Sara is not clear.[740] The database contains 60 references to Sara as a name, and

[736] The text is hosted on the following database: http://www.papyri.info/ddbdp/p.wash.univ;1;18 [accessed 20/04/2014].
[737] ϰα εἰς μερίδα Ὥρου Φ. . . ῒ̣ϊ̣ος / κβ τὸ αὐτὸ ἔργον / κγ εἰς τὴν αὐτουργίαν / κδ μετὰ Σαρᾶ μισθωτοῦ μισ(θοῦ) (δραχμαὶ) ρκ
[738] text hosted at http://www.papyri.info/ddbdp/p.wash.univ;1;18 [accessed 20/04/2014].
[739] Σαρᾶ is the accusative of Σαρας.
[740] On the gender of Sara see the trismegistos database at http://www.trismegistos.org/ref/ [last accessed: 27/9/15]. It contains a prosopography of 492,887 of Egyptian personal names that are not royal from between B.C. 800 and A.D. 800. It draws on the Prosopographia Ptolemaica and expands these publications with the

records it both as a male and a female name[741], though Rathbone[742] notes that there is no known example of a woman employed either as a casual labourer or permanently on the Appianos estates of the mid 3rd century. Interestingly however, the record itself seems to imply that the named individuals are the elderly, and potentially young children since line 28 refers to Onnophris the "old man"; and line 29 refers to the heirs of Agathos – who might be children because they are titled "κληρονόμων" or heirs.

28 – with of Onnophris the old man
29 – with heirs of Agathus[743]
(author's translation[744])

The entries that Saras and several others were involved in work moving wood and tools around the farm[745], particularly since the Greek verb used in the text: ἔσυραν means "they dragged".

25 – they dragged wooden beams to the farm
26 – they dragged the implements from their place to the field
27 – they dragged wooden beams to the farm[746]

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integration of 494 archives from Egypt, and also the 3576 records of the Leven database of documentary collections which is an amalgam of major collections around the world.

[741] In the 3rd century A.D. the trismegistos database has is a reference to a "Sara" in P. Oxy. 64 4436 (dated A.D. 278 or 208) but it is not clear that Sara is the full name and it could be Sarapion as the text is fragmented "Sar () through Sar () named S" (author's translation). Σ̣αρ( ) δι(ὰ) Σαρ̣α( ) ὀ̣νόμ(ατι) Σ̣. [ -ca.?- ], see http://papyri.info/ddbdp/p.oxy;64;4436 [last accessed: 14/10/15].

Sara is recorded as a female name in Papyrus P.Wash.Univ.1.18. (dating to A.D. 286) and is described above. Papyrus SB: 14.11732 (dating simply to the 3rd century A.D.) records Sara as a male name: Σάρα Βάσ̣τα(ς) τε[ -ca.?- ], see http://papyri.info/ddbdp/sb;14;11732 [last accessed: 14/10/2015]. Papyrus P.Oxy. 14. 1649 (dating to A.D. 279-280) mentions a woman Sara in a fragmented line, but much of the text discusses Sarapia so this is probably a reference to her, see http://papyri.info/hgv/21957/ [last accessed 14/10/2015]. Papyrus SB 6 9006 (dating to A.D. 299-300) a reference to Σαρᾶς as a foreman.

A translation of the text is as follows: The (men) who have gone to the rest-house (mone) with wood: Foreman: Saras 1 load (gomarion); Horion, son of Leonides 1; Leonides, son of Papeeis 1; Ouales, son of Sarapion 1; Sotas, son of Apollonios 1; through Isidoros, pediophylax, see http://papyri.info/ddbdp/sb;6;9006 [last accessed 14/10/2015]. The Greek is οἱ ἀπελθόντες ὑπὸ ξύλου / εἰς τὴν μονήν·/ κεφ(αλαιωτὴς) Σαρᾶς γομάριον α / Ὡρίων Λεονίδου α / 5 Λεονίδης Παπέει α / Οὐάλες Σαραπίονος α / Σώτας Ἀπολλωνίου α / δι(ὰ) Ἰσιδώρου / [π]εδιοφύλακος http://papyri.info/ddbdp/sb;6;9006 [last accessed 14/10/2015].

[742] Rathbone (1991, p.164). He suggests either that there is a taboo on women as labourers or that there was sufficient male-labour.

[743] "κη μετὰ Ὀννώφριος πρεσβύτου / κθ μετὰ κληρονόμων Ἀγάθου"

[744] Text hosted at http://www.papyri.info/ddbdp/p.wash.univ;1;18 [accessed 20/04/2014].

[745] Indeed how far the wage was to be included with the fragmentary entries above her entry (those who are working on the portion of "Horos", and for ill-defined "same work" and "private" or "personal" work) is also not clear.

[746] κε ἔσυραν ξύλα ἐπὶ τὸ ἐποίκιον / κς τὰ σκεύη ἔσυραν ἐπὶ τὸν ἀγρὸν / ἀπὸ τοῦ χωρίου / κζ ἔσυραν ξύλα ἐπὶ τὸ ἐποίκιον

(author's translation[747])

This translation is confirmed by the next section of text with regard to the entry for the month of Choiak, day 1. The text notes that three different groups of labourers are specified, followed by the verb ἔσυραν meaning "they dragged":

28 – with of Onnophris the old man
29 – with heirs of Agathus
30 – with Onnophris, vinedresser, 120 drachmas
Choiak 1 – They dragged wooden beams from Permouthis'
2 – the same work until the 3rd[748]
(author's translation[749])

Although the Greek tells us that Onnophris the Old Man, the Heirs of Agathus, and Onnophris the Vinedresser all worked to drag wooden beams from "Permouthis" for three days only Onnophris the Vinedresser is recorded next to the wage of 120 drachmas. The interpretation of this is not clear. It perhaps tells us that at least four people (the unknown number of the heirs of Agathus) worked for four days. If the payment given to all three (via Onnophris) was 120 drachmas it could be deduced that the payment was 120 divided by, at most, four people giving 30 drachmas for (at most four people). Since the entry notes that they did the same work for three days, it would mean that the four workers would be earning 10 drachmas per day (this is the 30 drachmas divided by three-days) but this interpretation is not clear, partly because it is not clear that Onnophris the Vinedresser is a foreman.

Usually individuals who are to be paid are recorded individually, or a rate per person is specified[750]. Thus this could be read as a document that lists the tasks undertaken by tenants, and that records only those individuals that required payment. In support of this interpretation is the line with regard to Sara's wage:

[747] Text hosted at http://www.papyri.info/ddbdp/p.wash.univ;1;18 [accessed 20/04/2014].
[748] κη μετὰ Ὀννώφριος πρεσβύτου / κθ μετὰ κληρονόμων Ἀγάθου / λ μετὰ Ὀννώφριος ἀμπελουργοῦ (δραχμαὶ) ρκ / Χοιὰ(κ) α ἔσυραν ξύλα ἀπὸ τοῦ Ῥερμο(ύθιος) / β τὸ αὐτὸ ἔργον ἕως γ
[749] Text hosted at http://www.papyri.info/ddbdp/p.wash.univ;1;18 [accessed 20/04/2014].
[750] See the example in Rathbone (1991, p.426 – 462).

24 – together with Saras, tenant, pay the wage of 120 drachmas[751]

(author's translation[752])

The terms describing his wage and tenancy have the Greek genitive singular ending. This can only mean that the 120 drachma was paid to Saras as a wage, and since Saras is a tenant, the wage of 120 drachma is likely to have been the monthly wage[753]. Otherwise we have to account for an increase in the daily wage from four drachmas per day to 120 drachmas per day between A.D. 275 and A.D. 286 – a 30-fold increase in 10-years for which there is no evidence[754]. Moreover if the Greek word μετὰ used to describe the payment to Sara is taken to mean "together with" then it is just possible that the unnamed individuals in the lines above were also to be paid 120 drachmas but the payments are assumed, and have not been listed.

**Section 9.2. Papyrus P.Wash.Univ. 1.18 : Analysis**

Given that the average wage for tenants in the mid 3rd century Heroninos archive was about two drachmas per day (giving a monthly total of c.60 drachmas per month) we can suggest that the monthly wage of Sara in A.D. 286 indicates a doubling of tenant wages between the mid 3rd century and A.D. 285 from two drachmas per day[755], to four drachmas per day (this is 120 drachmas divided by 30 days). Moreover this doubling mirrors the evidence of the viticulture wages that similarly show a doubling from a total wage of 2,160 drachmas per man in A.D. 257 to a total wage of 4,500 drachmas per man in A.D. 280 (see Chapter 8, p.119 - 151) and that his wage has not necessarily been affected by inflation since this increase can be accounted for by a revaluation of the currency. This is consistent with Estiot's[756] theory that the reforms of Aurelian in A.D. 274/5 saw the doubling of the number of drachmas for one day's work from four drachmas to eight drachmas. If this is applied to

[751] κδ μετὰ Σαρᾶ μισθωτοῦ μισ(θοῦ) (δραχμαὶ) ρκ

[752] Text hosted at http://www.papyri.info/ddbdp/p.wash.univ;1;18 [accessed 20/04/2014].

[753] Moreover their work involves moving tools and wood rather than heavy labour. As a result it is possible that they are paid less than the daily. Estate workers moreover were less well paid than day-labourers. This is because the estate might pay taxes or provide accommodation for tenants but contractors might have to pay for such items themselves. Estate workers or tenants had the security of long-term wages; taxes paid, and in some cases were given accommodation. The *oiketai* who were the most poorly paid on an estate earned four drachmas per month prior to A.D. 260, and 12 drachmas per month thereafter. The *metrematiaioi* who had shorter terms of contract earned around eight drachmas, increasing by A.D. 260 to 20 drachmas per month. In both cases the addition of tax payments would suggest that a monthly wage was around 60 drachmas per month, or two drachmas per day Rathbone (1991, p.121 – 143). By contrast the mid 3rd century wage for a contractor was four drachmas per day.

[754] Harl (1996a, p.147) for example suggests that the post A.D. 274/5 increase is merely a four-fold increase.

[755] Rathbone (1991, p.121 – 143). Children were also employed as labourers, and they were paid one drachma and five obols, see Kehoe (2012, p.122 – 123).

[756] Estiot (2012, p.549 – 551).

the monthly wage then Sara is earning 15 reformed tetradrachms per month[757]. This can be directly compared with the wage of two drachmas per day paid to tenants in the mid 3rd century, which was also 15 tetradrachms per month[758].

In support of Estiot's theory is Cope's analysis of the Egyptian tetradrachm that indicates that the silver content of each post A.D. 274/5 was about c.0.2 grams of silver per coin[759]. This is because a wage of two drachmas per day in the A.D. 250s would mean that a tenant would earn 12 grams of silver per month[760]; by contrast the monthly wage implied by papyrus P.Wash.Uni 1.18 is 0.3 grams[761]. Once again the evidence suggests that the daily wage that did not reflect the silver content of the currency which now contained c.0.01 grams of silver per coin in A.D. 286[762]; that a wage relative to a fixed-face value was still being accepted in A.D. 286; and that wages in A.D. 286 did not reflect inflation since they appear to have simply been double the mid 3rd century. This is further evidence in support of Estiot's[763] suggestion that the reforms of Aurelian in A.D. 274/5 simply saw a doubling of the ratio of drachmas to each post A.D. 274/5 reformed tetradrachm.

### Section 9.3. Papyrus B.G.U. 2.262: Supporting Evidence

Further evidence that the daily wage in A.D. 286 is not 120 drachmas per day is found in a fragmentary papyrus (BGU 2.624) dating to Dec. 285. This is from the Arsinoite *nome* and it is a letter to an estate manager from a certain Apollonios[764]. Although it is hard to read the full text the papyrus is a private letter to the administrator that includes a list of payments and instructions to be made. Although the papyrus is damaged the following section is sufficiently clear to be relevant for the consideration of wages in A.D. 285. For the

[757] 120 drachmas per month divided by eight.
[758] A day rate of two drachmas per day would give 60 drachmas per month, see Kehoe (2012, p.119-121); Rathbone (1991, p.102). This figure of 60 drachmas can be divided by four (the rate of drachmas to the tetradrachm in A.D. 257) to give 15 tetradrachms, see Bagnall (2009, p.190); Corbier (2008a, p.338); Harl (1996a, p.120); Rathbone (1991, p.121 – 143).
[759] Cope *et al.* (1997, p.12); and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.
[760] This is because the total monthly wage of 60 drachmas would be 15 tetradrachms (60 drachmas divided by four, which is the exchange rate between drachmas and tetradrachms). Since the tetradrachm from A.D. 237/8, A.D. 250 and A.D. 263/4 had 0.82, 0.88, and 0.67 grams of silver (respectively), before dropping to 0.43 grams of silver in A.D. 263/4 and A.D. 264/5, see Cope *et al.* (1997, p.12). As a result the monthly silver paid before A.D.264 might be 12 grams (15 tetradrachms times 0.8 grams).
[761] This is because if the wage of 120 drachmas per month is to be divided by a new post-A.D. 275 exchange rate of eight drachmas to one reformed tetradrachm there would only be 15 silver tetradrachms paid to the tenant Saras per month. Given the reformed tetradrachms minted in A.D. 284/5 and A.D. 285/6 had a silver content of 0.02 grams of silver per coin, the total amount of silver per month is 0.3 grams (15 tetradrachms times 0.02 grams).
[762] Cope *et al.* (1997, p.12) and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.
[763] Estiot (2012, p.549 – 551).
[764] Rathbone (1991, p.52) suggests that Apollonios is perhaps the Apollonios who was the administrator on the Didora and Philoxenos estates prior to their confiscation in A.D. 289.

transcription and translation see Appendix 4, p.287 but a translation is given below to assist the discussion:

> Give the donkey-driver another (helping of) lentils.
> For he asked me many (questions), saying that I
> would work (in a manner) worthy of our cultivation of
> Antenor's estate. Take care,
> if you find a serviceable paid farmworker,
> for the field [(??ieras) is obscure] Don't be forgetful of the debt
> of corn: 6 [?] and drachmas 44 (3 obols), demand of Kapito 20 drachmas, [?]You will present to him, on account of transport a demand of 10 drachmas,
> From the teammaster of the Ox demand 16 drachmas
> From the son of Tkhanasios 6 drachmas, demand from the inhabitants
> of the accommodation…[765]
> (author's translation)

The letter gives instructions to collect various payments (or debts) on the estate. The status of these individuals is not clear. It seems from the context that these might be either *oiketai* or *metrematiaioi* – permanent and semi-permanent employees (or dependents) of the estate[766]. Most usefully the papyrus also records a payment for transportation; a payment from the ox-team driver; and a payment from the son of Thkanasios. Since the papyrus dates to A.D. 285 (after the currency reforms of A.D. 274/5 and c. A.D. 280) and contains a demand for payment for transportation, this is very useful evidence because the traditional

[765] δὸς τῷ ὀνηλάτῃ ἄλλην φακ[ῆν,(?)]
πολλὰ γάρ με ἠρώτησε, λέγων, ὅτι δου-
λεύσω ἀξίως ἡμῶν τῆς γεωργίας
τοῦ κλήρου Ἀντήνορος· μὴ ἀμέλει,
ἐὰν εὕρῃς χρήσιμον γεωργὸν μισθ[ω]τ(ήν),
τοῦ γεωργοῦ ἴερας μὴ ἀμέλει ὀφειλῆς
20(πυροῦ) ς καὶ (δραχμὰς) μδ (τριώβολον) π[αρὰ Κ]απίτω(νος) αἴτησον
(δραχμὰς) κ, παρέσει ἐπ' αὐτό(ν), ὑπὲρ ναύλ(ου) αἴτησο(ν) (δραχμὰς) ι,
παρὰ ζευγηλάτο(υ) ταυρικ(οῦ) αἴτη(σον) (δραχμὰς) ις,
παρὰ υἱοῦ Τχανάσιος (δραχμὰς) ς, τὰ ἐνοίκια
τῶν οἰκοδομ(ημάτων(?) ἀπαίτησον·

[766]*metrematiaioi* are more senior figures and are paid significantly more than the "*oiketai*". Both are permanent salaried staff attached to an estate with some degree of dependence (they are not day-contractors). In the mid 3rd century the difference between the two classes are as follows: *oiketai* are paid 4 – 12 drachmas, and one *artaba* of wheat per month; *metrematiaoi* are paid 4 – 60 drachmas per month, and one *artaba* of wheat. For further analysis see, Kehoe (2012, p.119-121); Rathbone (1991, p.102).

daily wage for an ass- or ox-driver prior to the currency reforms of A.D. 275 was simply one silver tetradrachm (worth four drachmas) per day.

If Estiot's theory[767] that the reform of Aurelian in A.D. 274/5 saw the doubling of the number of drachmas to the new post-A.D. 274/5 reformed tetradrachm (so that there were eight drachmas to each post-A.D. 274/5 reformed tetradrachm) is correct, then the cost of 10 drachmas for transportation reflects 1 ½ day's transport; and if one-day's work was still worth one silver coin (previously four drachmas to one tetradrachm[768]) this would mean that one day's work for an ass-driver was now worth eight drachmas. Unfortunately the papyrus gives no further details of the distance for transportation[769] - nevertheless the low value of the amounts requested, and the payment for transport of 10 drachmas would be meaningless were the daily wage to 120 drachmas per day which suggests we are correct to consider the wage of 120 drachmas to Sara in P. Wash. Univ. 1.18 to be a monthly wage in A.D. 286.

### Section 9.4. Papyrus P.Cair.Isid.81

The results of the analysis of Papyrus P. Wash. Univ. 1.18, dating to A.D. 286, (see Section 9.1, p.152 above) suggest that there has been no substantive increases in day rates beyond a doubling of wages between the mid 3rd century and A.D. 286. This is in spite of the debasement of the currency to c. 0.01 grams of silver per coin[770], and the currency reforms of Aurelian in A.D. 274/5. As a result this section will consider papyrus P. Cair. Isid. 81 dating to A.D. 297 to determine if there is evidence for further increases at a time when Diocletian was reforming the currency[771].

Papyrus P. Cair. Isid. 81 is part of the archive relating to Isidorus, a landowner at the end of the 3rd and start of the 4th centuries. The Isidorus archive provides a number of useful documents relating to a prosperous local landowner in Karanis, the Fayum at the end of the 3rd century and start of the 4th century[772]. The archive relates to a number of landholdings in

[767] Estiot (2012, p.549 – 551).
[768] There were four drachmas to one tetradrachm. See Bagnall (2009, p.190; Corbier (2008a, p.338); Harl (1996a, p.120).
[769] Ox- or ass-teams were often centrally housed on large estates and used to transport materials and produce between the various parts of the estates Rathbone (1991, p.266 – 277).
[770] Cope *et al.* (1997, p.12); and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.
[771] Carson (1990, p.237 - 8).
[772] The most detailed account in Boak and Youtie (1960, p.313 - 317). On the difference between his tax demand and the actual payment see Kehoe who notes Isidorus claimed to pay tax on 80 or 140 *arouras* of land but only cultivated 8 – 10 *arouras*; and that he was not made to pay the discrepancy See Kehoe (2013b, p.33 - 54). For analysis of the use of this archive see Kehoe (2013a, p.12). That Isidorus did not know his own age see Clark (2007, p.176) and see also Duncan-Jones (1990, p.79-80) on Isidorus and tax. Harl discusses Isidorus with

the Karanis area and also contains correspondence, receipts and payments between himself and members of his family[773]. In papyrus P.Cair.Isid.81 (dating to April A.D. 297) Isidorus intercedes on behalf of his brother, Peras, to organize a replacement for him to undertake the mandatory work to Trajan's Canal, which provided a link between the port of Babylon (south of Cairo) and the Red Sea ports for the Eastern Trade (see Figure 3, p54)[774]. The canal required regular work to keep it clear and to keep it navigable. This was clearly a state organized liturgy and in A.D. 297 Peras was required to undertake his liturgy in that location. The nature of Peras' liturgy is not described in the papyrus but the agreement in the document is that an individual named Polion will replace Peras and undertake the liturgy for the necessary two months (60-days worth of work)

A wage of two talents (one talent per month) at a rate of 200 drachmas per day is agreed between Polion and the two brothers. These rates are particularly useful evidence since the contract also clearly states that the total of two talents is in remuneration for the work; and that the daily wage is the 200 drachmas per day, plus rations, and inducement. Thus the 200 drachmas is the daily wage. Moreover the Greek states that this is the standard compensation for workers sent to Trajan's Canal from Arsinoe. This is because the payment is

"in conformity with all men who are sent from the nome"[775].

It provides clear evidence that in some cases, by A.D. 297, a daily wage could be in excess of 100 drachmas per day.

### Section 9.5. Papyrus P.Cair.Isid.81: Analysis

How can we interpret this sudden increase in wages? This papyrus demonstrates that by A.D. 299 there has been a significant increase in the daily wage (as expressed in drachmas) from the daily wage prior to A.D. 274/5, (two - four drachmas per day), to 200 drachmas per day in A.D. 297. Moreover by A.D. 297 the old currency of Egypt had been

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regard to the *aderatio* for tax, see Harl (1996a, p.249). For further references see Kehoe (2010, p.309 – 326), and on the villages generally see Davoli (2010, p.350 – 369) and also Carrie' (2008, p.284) on the 3rd century developments in local and provincial administration with regard to taxation. See also Banaji (2007, p.194) on how such individuals survived the financial pressures of the 3rd century.

[773] See an introduction by Geens (2005, p.1-12) and a full account see Boak and Youtie (1960). Bagnall (1978, p.9 – 16) is also useful; and for compulsory service see Naphtali (1963, p, 1 – 39; 1982 p.65 – 109).

[774] Boak and Youtie (1960, p.315).

[775] Boak and Youtie (1960, p.316).

replaced by the nummus of Diocletian (introduced c. A.D. 296), and that this was probably exchanged at a rate of 20 drachmas to the nummus. When considered, therefore, in terms of the silver coins paid to Polion we see that his daily wage in A.D. 297 seems to be 10 silver coins and this represents a 10x increase from the mid. 3rd century in the daily wage for a skilled labourer who would receive one silver coin, or four drachmas, for heavy work.

One series of documents that might be comparable are the records of liturgical duty by sailors in c. A.D. 266[776]. These sailors do not belong to the higher social classes (since they are untitled in the documents) and they are, moreover, required to work away from their hometowns – much like Polion who is leaving Arsinoite to work on Trajan's Canal[777]. The sailors are paid 160 drachmas per month for their work. This equates to 5 ⅓ drachmas per day. By contrast Polion is earning 200 drachmas per day and this would seem to be a 37 ½-fold increase since A.D. 266. There is no indication in the papyrus P. Cair. Isid. 81 that this work was of a particularly specialized nature, indeed Youtie states that the contract is for the levee of labour that is split between several *nomes* (districts)[778], and that it was classed as a *munus sordidum.* This is public-labour repairing dikes and canals in Egypt for which all adult males were assessed (though in this case the richer classes were able to find substitutes[779]). This suggests that this is therefore low-status labour and we would not expect the daily wage to be substantially higher than the wage for working as a sailor.

The wage also does not reflect debasement of currency between A.D. 266 and A.D. 299. This is because even though the silver content per tetradrachm declined from around c.0.4 grams of silver per coin in A.D 266, to around 0.01 grams of silver coin by A.D. 281/2, from which it did not increase[780], the wages do not show a forty-fold increase. Since the wage would need to be paid in silver coin the rates are as follows:

**Table 46 Silver paid for liturgical duties per day in A.D. 266 and A.D. 297. Data from Elmaghrabi (1982, p.162 – 180); Haslam *et al.*(1990, p.132 – 137) and papyrus P. Cair. Isid. 81**

| Date (A.D.) | drachma | silver coins | Silver content /coin | Silver |
|---|---|---|---|---|

[776] Elmaghrabi (1982, p.162 – 180); Haslam *et al.* (1990, p.132 – 137) and see Section 6.7, p.99.
[777] See Sijpesteijn (1963, p.70-83) and also on dike labour in Roman Egypt see Westermann (1925, p.121-129).
[778] Boak and Youtie (1960, p.314).
[779] For an outline of the distinctions in society see Llewelyn (1994, p.95) who notes that duties were differentiated by the status of those undertaking the work. Villagers and non-boule individuals were required to undertake *munera sordida*.
[780] Cope *et al.* (1997, p.12); and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.

| | | | | |
|---|---|---|---|---|
| 266 | 5 ⅓ / day | c. 1[781] tetradrachm | 0.3 – 0.4 grams | 0.3 – 0.4 grams |
| 297 | 200 / day | 10[782] nummi | 0.43 grams | 4.3 grams |

Table 46 suggests that if Harl's[783] theory that there are 20 drachmas to the nummus is correct then Table 46 shows the daily wage for liturgical work has increased ten-fold (in terms of silver coins) and that the amount of silver paid could be read as roughly ten-times the amount in A.D. 266. This would represent a dramatic increase in the amount of silver paid.

This solution would be acceptable if we were not aware that the silver content of post-A.D. 274/5 tetradrachms had been dramatically reduced in the A.D. 280s to around 0.01 grams of silver per coin[784]. To explain why the wage in A.D. 297 is 200 drachmas we must also account for the debasement of the currency prior to A.D. 294, and its subsequent reform. If the amount of silver paid for the daily wage of A.D. 297 were calculated on the basis of the very debased coins with silver contents of c.0.01 – 0.005 grams circulating between A.D. 280 and A.D 294[785] we get a figure that accurately reflects the amount of silver paid in A.D. 266, and not the amount of silver paid using nummi. This is shown in Table 47 in which the amount of silver paid per day for liturgical duty in A.D. 266 can be shown to broadly equate with the amount of silver paid per day in A.D. 297 (using Harl's theory that there were 20 drachmas to one post-A.D. 274/5 reformed tetradrachm[786]).

**Table 47 Silver paid for liturgical duties per day in A.D. 266 and A.D. 297 on the basis of debased tetradrachms rather than nummi. Data from Elmaghrabi (1982, p.162 – 180); Haslam *et al.* (1990, p.132 – 137) and papyrus P. Cair. Isid. 81**

| Date | drachma | tetradrachms | Silver content /coin | Silver |
|---|---|---|---|---|

[781] Four drachmas equal one tetradrachm See Bagnall (2009, p.190); Corbier (2008a, p.338); Harl (1996a, p.120).
[782] The figure of 10 nummi is based on Harl (1985, p.262 – 270) who argues that there are 20 drachmas are one nummus in A.D. See also Harl (1996a, p.151, 155).
[783] Harl (1996a, p.151, 155).
[784] Cope *et al.*(1997 p.12); and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.
[785] Coins with a silver content of less than 0.01 grams are not included in the calculation since the trace levels of silver can easy be misinterpretated. Very low levels of silver can be affected by corrosion and the sampling technique indeed an error margin of 10% can be expected, see Cope *et al.* (1997, p.70 – 72).
[786] This calculation uses Harl's theory that there were 20 drachmas to the post-A.D. 275 reformed tetradrachm in A.D.297, see Harl (1996a, p.151, 155). Estiot similarly believed (though for different reasons) that there were 16 drachmas to the post-A.D. 274/5 reformed tetradrachm by A.D. 294, see Estiot (2012, p.552).

| | | | | |
|---|---|---|---|---|
| 266 | 5 ⅓ / day | c 1[787] tetradrachm | 0.3 – 0.4 grams | 0.3 – 0.4 grams |
| 297 | 200 / day | 10[788] reformed tetradrachms | c. 0.01 grams | 0.1 grams |

The data in Table 47 therefore suggests that the wage of 200 drachmas paid per day in A.D. 297 does not reflect the introduction of the nummus but the daily wage paid prior to A.D. 296. This is because a chaff-collector in A.D. 294 earned 133 drachmas per day on liturgical duty (or 4,000 drachmas per month)[789]. Given that Estiot[790] considers that there are 16 drachmas to the post-AD. 274/5 tetradrachm by A.D. 294 this would mean that the chaff-collector is earning c.8 post-AD. 274/5 tetradrachms per day and a wage of about 0.08 grams of silver per day[791]. Similarly if Harl's figure of 20 drachmas to each post-AD. 274/5 tetradrachm is applied to the A.D. 294 wage of the chaff collector, then the chaff-collector is earning c.6 ⅔ post-AD. 274/5 tetradrachms per day and this would mean that the chaff-collector is earning 0.06 grams of silver per day[792]. This figures are very close both to the numbers of post- A.D. 274/5 tetradrachms exchanged, and the amount of silver exchanged in papyrus P. Cair. Isid. 81 (dating to A.D. 297) using debased coins rather than the nummi.

Were the wage of 200 drachmas paid per day in A.D. 297 to reflect the number of drachmas to the nummus we would need to explain why the Roman government in Egypt tolerated a 10 – 14-fold increase in the amount of silver paid to labourers on liturgical duties, and why they tolerated a daily wage that was 10-times larger in A.D. 297 than it was in A.D. 266, given that there is very little differentiation of wage for labouring work during the 3rd century[793]. Table 47 shows that if the nummus had not been introduced the amount of silver exchanged per day was 43-times less than if the nummi of Diocletian had been used, and is typical of the silver exchanged in the 3rd century.

[787] Four drachmas equalled one tetradrachm. See Bagnall (2009, p.190; Corbier (2008a, p.338); Harl (1996a, p.120).
[788] 20 drachmas are equal to one nummus.
[789] See P. Oxy. 4597 in Coles *et al.* (2001b p.186 – 189).
[790] Estiot (2012, p.552).
[791] This because the silver content of each coin is around 0.01 grams of silver. This can be multiplied by 8 coins to give 0.08 grams of silver per day. See Cope *et al.* (1997, p.12); and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235 for silver contents.
[792] For the 20 drachmas to the post-A.D. 274/5 tetradrachm, see Harl (1996a, p.151, 155). To calculate the silver the 6 ⅔ post-AD. 274/5 tetradrachms coins are multiplied by a silver content of 0.01 grams per coin. See Cope *et al.* (1997, p.12); and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235 for silver contents.
[793] See Groen-Vallinga and Tacoma (2013, p.2 – 6, 10, 22) who note that education is the factor that differentiates wages.

The key to the interpretation lies in the rebellion of Domitianus which occurred in Egypt between A.D. 297 and A.D. 298[794]. It is possible that this rebellion occurred in response to the tax reforms declared in A.D. 296, or the introduction of the nummus, and it lasted until A.D. 298[795]. It is known that during the rebellion there was an unwillingness to use the new nummus. During the rebellion the usurper rejected the new currency[796] and Domitianus issued his own coins that reflected the Greek-style tetradrachm currency prior to the nummus[797]. It is therefore argued that this papyrus (P.Cair.Isid.81), dating to A.D. 297 (during the rebellion) gives a daily wage that reflects the daily rate of pay prior to the reforms of Diocletian in A.D. 294-6, particularly since the papyrus P.Cair.Isid.81 notes that the wage of 200 drachmas per day conforms with the wages of those sent by the villages to labour on the canal[798]. Further evidence that a wage of 200 drachmas per day was not unusual is seen in papyrus P.Sakaon. 58.

### Section 9.6. Papyrus P.Sakaon.58 dating to July A.D.299

Papyrus P. Sakaon is a lease recording the hiring of one Aurelios Venaphris who will work for one month in Babylon for the village of Theadelphia. For a full translation of P.Sakaon 58 see Appendix 4, p.299[799]. The importance of this contract is that once again it is a contract for low-status liturgical work, and that it dates to A.D. 299 which is two years after P.Cair.Isid.81 (A.D. 297) and two years prior to the A.D. 301 Price Edict of Diocletian and A.D. 301 Currency Reform. In contract P.Sakaon.58 (dating to A.D. 299) two brothers, Paesis and Melas, who were *Komarchs* for the village of Theadelphia in July 299[800] hired a certain individual known as Venaphris for one month's work in Babylon as a liturgist for the village of Theadelphia.

The contract P.Sakaon.58 (A.D. 299) specifies that the daily wage will be 240 drachmas, and the total for one month is one-talent and 1,000 drachmas. Contract P.Sakaon.58 states that after one month another worker will replace Venaphris. Since the contract specifies that the workman is to be paid 240 drachmas per day. Multiplying this by 30 days this gives a monthly total 7,200 drachmas, which is 200 drachmas more than the

[794] Geissen (2012, p.557).
[795] Abdy (2012, p.589).
[796] Sutherland (1961, p.94 – 97).
[797] On the rebellion and its currency see Geissen (2012, p.557), and Sutherland (1961, p.94 – 97).
[798] Boak and Youtie (1960, p.316).
[799] See also Parássoglou (1978, p.140) for the original analysis.
[800] Paesis and Melas were *Komarchs* for the village that year, see Geens (2008, p.2). The *Komarch* was a senior village officer, see Rowlandson and Bagnall (1998 pXVIII). The Sakaon archive has been fully translated by Parássoglou (1978, p.1 – 261). See also Bagnall (1982, p.35 – 57).

payment one-talent and 1,000 drachmas specified in the contract. Since the daily wage per person is 240 drachmas, Kenneth Harl's theory that there were 20 drachmas to each nummus in A.D. 299 can be applied to this daily wage[801]. By dividing the 240 drachmas by 20 a daily wage 12 silver nummi is paid to Venaphris.

**Table 48 Daily wages in silver coin per day in P.Sakaon.58 (A.D. 299)**

| Daily Wage | Rate | nummi (per day) |
|---|---|---|
| 240 drachmas | 20 | 12 |

If Harl's theory that there were still 20 drachmas to the nummus in A.D. 299 is correct[802], the data in the above table (Table 48) means that Venaphris' daily wage in A.D. 299 is 12 nummi, as opposed to the daily wage of 10 nummi paid in A.D. 297 (contract P.Cair.Isid.81). Given that the nummus had a fixed silver content of 0.43 grams per coin[803], the multiplication of 0.43 grams of silver by 12 nummi would mean that the daily wage paid to Venaphris was worth 5.16 grams of silver. This is substantially more than would have been paid to a labourer per day in the 3rd century, since the cash wage for a day labourer in Egypt prior to A.D. 274/5 was one silver tetradrachm, and from A.D. 268 this meant that one day's work in Egypt was worth c.0.2 grams of silver (since this was the silver content of the post-A.D. 274/5 tetradrachm[804]). This means that Venaphris was earning c.25 -times more silver per day than a labourer in A.D. 266. It seems hard to understand why the Roman government would tolerate wages that had substantively increased, and increased the amount of silver paid.

[801] Harl (1996a, p.151, 155).
[802] Evidence that Harl's rate of 20 drachmas to the nummus is correct can be inferred from the Aphrodisias currency inscription implies that the face-value of the nummus was doubled in September A.D. 301, see Harl, (1985, p.263 – 270; 1996a, p.151, 155). Since the value given in the inscription is 25 denarii communes. This means that the inscription implies the number of denarii to each nummus prior to the currency inscription was 12 ½ denarii communes. Since each denarius communis was the same as the pre-A.D. 274/5 tetradrachm, and that there were four drachmas to each pre-A.D. 274/5 tetradrachm, this means that there were 50 drachmas to each denarius communis. If there were 50 drachmas to each nummus in A.D. 299, the daily wage of 240 drachmas would be worth an awkward 4.8 nummi. The strange result of 4 ½ nummi would therefore suggest that in A.D. 299 there were still 20 drachmas to the nummus since this divides easily into the daily rate of 240 drachmas in contract P.Sakaon. 58 and gives equates to 12 nummi per day. On the parity between the denarius and the tetradrachm see Bagnall (2009, p.190); Corbier (2008a, p.347); Christiansen (2004b, p.43 – 44); Howgego (1985, p.52); Geissen (2012, p.563); Rathbone (1996, p.325 – 326); Van Minnen (2008, p.226).
[803] Carson (1990, p.237 - 8).
[804] Cope *et al.* (1997, p.12); and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.

Like papyrus P. Cair. Isid. 81 dating to A.D. 297, papyrus P.Sakaon. 58 dating to A.D. 299 can be explained with reference to the events of A.D 297 – 298, and seems to indicate that that the wage in A.D. 299 reflects the currency per-dating Diocletian's nummus. If the wages in the A.D. 299 were still calculated on the basis of the very debased coins circulating with silver contents of c.0.01 – 0.005 grams[805] that pre-dated the nummus we get a comparable amount of silver to the amount of silver paid per day in A.D. 275 for one-silver coin[806].

**Table 49 Comparison of silver paid per day in A.D. 297 and 299 if papyri P.Cair.Isid.81 and P. Sakaon. 58 are reckoned in debased tetradrachms and not nummi. Data from Cope *et al.* (1997, p.70 – 72).**

| Date (A.D.) | drachma | silver coin | silver content / coin | silver |
|---|---|---|---|---|
| 275 | Uncertain[807] | c.1 tetradrachm | 0.2 grams | 0.2 grams |
| 297 | 200 / day | 10 debased tetradrachms [808] | c. 0.01 grams | 0.1 grams |
| 299 | 240 / day | 12 debased tetradrachms [809] | c. 0.01 grams | 0.12 grams |

Since the cash wage for a day labourer in Egypt prior to A.D. 274/5 was one silver tetradrachm Section 6.3 (p.87). This meant that from A.D. 268 one day's work in Egypt was worth c.0.2 grams of silver, because this was the silver content of the tetradrachm from A.D. 268, and continued to be the silver content of the tetradrachm under the reforms of Aurelian in A.D. 275. It is therefore suggested that wage of A.D. 299 does not reflect the introduction of the nummus but the daily wage paid under Aurelian, and either the continued uncertainly in the aftermath of rebellion of Domitian Domitianus (that only ended in A.D. 298), or the time it takes to introduce the nummi in sufficient quantities for circulation immediately after the rebellion, meant that rates of pay were still being agreed at traditional rates.

## Section 9.7. Wages A.D. 275 – A.D. 299: Conclusions

Academic scholarship regards the final quarter of the 3rd century as a period of inflation[810]. This is deduced from the increased cost per *artaba* of wheat which jumps from

[805] Coins with a silver content of less than 0.01 grams are not included in the calculation since the trace levels of silver can easy be misinterpretated. Very low levels of silver can be affected by corrosion and the sampling technique indeed an error margin of 10% can be expected, see Cope *et al.* (1997, p.70 – 72).
[806] Cope *et al.* (1997, p.70 – 72).
[807] This would either be eight drachmas, see Estiot (2012, p.550) or 20 drachmas, see Harl (1996a, p.151, 155).
[808] At a rate of 20 drachmas to one debased tetradrachm instead of 20 drachmas to one nummus, see Harl (1996a, p.150, 151).
[809] At a rate of 20 drachmas to one debased tetradrachm instead of 20 drachmas to one nummus, see Harl (1996a, p.150, 151).
[810] See footnote 5, p.16.

the mid. 3rd century for "state sales of wheat" of around 24 per *artaba* (and an undated 40 drachmas per *artaba* rate), to a payment of 200 drachmas in A.D. 276[811]; further payments (tax-related) in A.D. of 293 are at a rate of 216 – 228 drachmas per *artaba*[812]. Finally in the Price Edict of Diocletian the rate per *artaba* might be as high as c.300 drachmas per *artaba*[813]. The purpose of Chapter 9 was therefore to determine if wages increase in response to debasement and revaluations of the coinage.

In the 3rd century A.D. labourers and workers on an estate fell into two general categories: those with some ties of dependence to the estate (whether as tenants or lessees), and day-labourers who were hired on an *ad-hoc* basis[814]. Of the two categories the most sensitive to changes in the currency might be the day-labourers since such workers were paid in cash and it might be expected that their wages would reflect the changes to the currency that occurred between A.D. 274/5 and A.D. Tenants and vineyard lessees, by contrast, might be less sensitive to changes in the currency published by Cope[815] because there was the possibility of maintenance payments which would off-set increases in the cost of wheat per *artaba*; vineyard lessees, moreover, were able to interplant the vines with vegetables or might have access to vegetable gardens that could be sold in the markets or to the estates to supplement their cash wage. Thus we might expect to see wages for tenants and lessees move more slowly in response to currency changes.

The daily wage in Egypt in the mid-3rd century A.D. seems to have been two to four drachmas per day[816]. After the currency reforms of Aurelian in A.D. 274/5 there has been no

[811] See footnote 562, p.110 for the debate on the date of O.Mich.1.157.
[812] Rathbone (1996, p.331, 2).
[813] The sequence for "private" sales per *artaba* in private wheat between A.D. 292 and A.D. 270 gives a price between 12 to 24 drachmas, see Rathbone (1996, p.331, 2). The value in A.D.301 of one *modius castrensis* of wheat (priced at 100 denarii communes). The relationship between the *modius castrenis* and the *artaba* is a point of debate, see Callu and Barringdon (2010a, p.292, n.24) for a discussion on the variation for one pound of silver relative to its value in grain. See also Duncan-Jones (1976b, p.53-62; 1976c, p.43-52).
[814] Kehoe (2012, p.119-121); Rathbone (1991, p.102).
[815] Cope *et al.* (1997, p.12); and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235
[816] Kehoe (2012, p.119-121) notes that that the day rate for unskilled work in the mid 3rd century is two drachmas. The rate for heavy work, skilled staff like ass- or ox Drivers (or carpenters and stonemasons, for example) was four drachmas per day, see also Rathbone (1991, p.102). Drexhage (1991, p.342) adds: "In dieser Zeit wird der Tageslohn vies dr. Betragen haben; und da alle Summen glatt durch vier teilbar sind, halte ich Summen fűr Löhne mehrerer Tage."

"In this time the daily wage amounted to 4 drachmas; and since all the totals are smoothly divided easily by four, I think that these are the wages for several days" (author's translation). Much of the evidence for day-wages relies on the evidence of the mid 3rd century "Heronoios" archive, and associated documents Rathbone (1991, p.1 – 463). The papyri record ceases around A.D.260 but the analysis of wages paid to ass-

systematic analysis of wages until the well-known A.D. 301 Price Edict of Diocletian (see Section 10.3, p.173). This document therefore seeks to determine how wages changed between A.D. 275 – A.D. 299 by considering the wages paid in viticulture and labour contracts between these dates. The reasons for studying these contracts is that they form a short sequence of contracts that span the period of currency reform and supposed inflation.

It seems from the evidence of papyri P. Oxy. XLVII. 3354 (A.D. 257) and P. Oxy. XIV, 1631 (A.D. 280) that the total wage for viticulture-labour roughly doubled between A.D. 257 and 280. During this period Aurelian reformed the currency (in A.D. 274/5) and the application of Estiot's theory that there were eight drachmas to each post-A.D 274/5 reformed tetradrachm[817] gives a similar number of silver coins to be paid to the lessees between P. Oxy. XLVII. 3354 (A.D. 257) and P. Oxy. XIV, 1631 (A.D. 280). With an exchange rate of four drachmas to one tetradrachm[818] the total wage for viticulture work in A.D. 257 was worth 540 tetradrachms, and the application of Estiot's[819] theory would result 562 ½ post-A.D 274/5 reformed tetradrachms. In the interim period however the number of drachmas paid to the lessees has roughly doubled from 1,080 drachmas per person in A.D. 257 to 2,250 drachmas per person in A.D. 280. This would suggest that if there has been any inflation with regard to wages after A.D. 274/5 it has been no more than a doubling, particularly since these are private contracts and the increases do not reflect the decline in the silver content of the tetradrachm[820].

There is some evidence for the effect of Diocletian's reform on rates of pay per *aroura*. In papyri PSI XIII, 1338 (October A.D. 299). The rate of pay per *aroura* per person is 1,200 drachmas but in A.D. 257 it was 360 drachmas per person. In the intervening period Diocletian had introduced his new currency[821]. If this amount of 1,200 was to be paid in the very debased post-A.D. 274/5 reformed currency that was circulating period to A.D. 298 then we would see that the lessee would only receive c.0.2 – 0.2½ grams of silver per *aroura*. Given that from A.D 298 the nummus was introduced the wage of 1,200 drachmas in PSI

drivers indicates that there was no increase in the daily wage paid to ox- and ass-drivers between A.D. 235 and A.D. 269 in Egypt, despite the collapse in the silver content of the currency.

[817] Estiot (2012, p.550).

[818] On the parity between the denarius and the tetradrachm see Bagnall (2009, p.190); Corbier (2008a, p.347); Christiansen (2004b, p.43 – 44); Howgego (1985, p.52); Geissen (2012, p.563); Rathbone (1996, p.325 – 326); Van Minnen (2008, p.226).

[819] Estiot (2012, p.550).

[820] Cope *et al.* (1997, p.12); and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.

[821] Abdy (2012, p.589); Geissen (2012, p.557).

XIII, 1338 (A.D. 299) 25.8 grams of silver would be paid per *aroura*[822], which represents a significant improvement in the amount of silver.

The evidence of daily-wage rates for tenants is also consistent with a doubling of wages after A.D. 274/5. Since the evidence analysed by Rathbone[823] suggests that in the mid 3rd century a tenant's wage was about two drachmas per day. This would give a monthly wage of 60 drachmas for tenants prior to A.D. 274/5. Papyrus P.Wash.Univ 1.18 (dating to A.D. 286) however records a payment of 120 drachmas to "Saras" (a tenant). This would mean that the daily wage for tenants doubled in A.D. 275 – a figure which would be consistent with the doubling due to revaluation seen in viticulture contracts between A.D. 257 and A.D. 280 (P. Oxy XIV 1631). Since there was four drachmas to the tetradrachm prior to the reforms of A.D. 274/5[824] a monthly wage of 60 drachmas would equate to 15 tetradrachms per month. Noticeably the application Estiot's theory that A.D. 274/5 saw a doubling in the number of drachmas to the post-A.D. 274/5 reformed tetradrachm means that the wage of 120 drachmas in A.D. 286 would still be worth 15 post-A.D. 274/5 reformed tetradrachms; and is further evidence of stability despite the silver content of the currency which decreased from c.0.2 grams of silver between A.D. 268 and A.D. 278, to 0.01 grams of silver per coin in A.D. 279/80[825].

In the mid 3rd century the daily wage for hired labour was four drachmas (or one silver tetradrachm) per day (see Section 6.3, p.87). In A.D. 297 (after the introduction of Diocletian's new currency in A.D. 294-6) the papyrus evidence specifies day rates of 200 drachmas (in A.D. 297, contract P. Cair.Isid. 81) and 240 drachmas (in A.D. 299, contract P. Sakaon.53). . The figures of 200 drachmas per day in A.D. 297 and 240 drachmas per day in A.D. 299 would seem to be typical of wage payments for the end of the 3rd century[826] because the rate of 200 drachmas per day is over 50 times higher than the mid 3rd century rate of four drachmas per day. The question is to why such wage rates continue to be agreed during the currency reforms of Diocletian and the introduction of the nummus (A.D. 294-6). They are

[822] Using coins of 0.43 grams of silver, see Carson (1990, p.237).
[823] Rathbone (1991, p.102). See also Kehoe (2012, p.119-121).
[824] On the parity between the denarius and the tetradrachm see Bagnall (2009, p.190); Corbier (2008a, p.347); Christiansen (2004b, p.43 – 44); Howgego (1985, p.52); Geissen (2012, p.563); Rathbone (1996, p.325 – 326); Van Minnen (2008, p.226).
[825] Cope *et al.* (1997, p.12); and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235
[826] In A.D. 294 a chaff-collector earned 133 drachmas per day, or 4,000 drachmas per month in P. Oxy. 4597, see Coles *et al.* (2001b, p.186 – 189).

difficult to explain in terms of payment by Diocletian's nummi because these coins had a substantively better silver content with 0.43 grams of silver per coin rather than the debased post-A.D. 274/5 reformed tetradrachm which had 0.01 grams of silver per coin[827].

It is probable that the wages in A.D. 297 and 299[828] reflect the pre-nummus wage due to the rebellion of Domitianus in A.D. 297 – 298[829]. Moreover if people continued to pay the traditional rates of pay with the new nummi of Diocletian there would be a huge increase in silver that people were exchanging at the traditional rates of pay. Thus we can perhaps begin to understand the need for further currency reform in A.D. 301, especially if the nummus were introduced at a one-to-one rate with the old debased post-A.D. 274/5 reformed tetradrachms. This is because if these wages of 200 and 240 drachmas (in A.D. 297 and 299) were paid using nummi[830] then these labourers would earn 4.3 grams (in A.D. 297) and 5.16 grams (in A.D. 299). If by contrast they were paid in the post-A.D. 274/5 reformed tetradrachms then the labourers would be paid 0.1 – 0.12 grams of silver per day, a figure consistent with the 0.2 grams of silver that had been paid per day for work since A.D. 268[831], and unless the older tetradrachms were removed from circulation then the newer nummi with a better silver content would simply be hoarded[832]. One solution, of course, was to increase the face value of the nummus and devalue the older tetradrachms[833], and it is perhaps in this context that the A.D 301 Price Edict and the revaluation of the nummus should be understood. This is discussed in detail with reference to the A.D. 301 Price Edict, and the September A.D. 301 revaluation in Section 10.3 (p.173).

[827] Cope *et al.* (1997, p.12); and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.
[828] Contract P. Cair.Isid. 81 in A.D. 297 and contract P. Sakaon.53 in A.D. 299.
[829] Abdy (2012, p.589); Geissen (2012, p.557).
[830] This is because there seems to have been about 20 drachmas to each nummus, see Harl (1996a, p.151, 155).
[831] Cope *et al.* (1997, p.12); and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.
[832] Verboven (2007, p.250 – 251).
[833] Estiot (2012, p.548).

# Chapter 10. Evidence for Wage Stability A.D. 300 - 305

## Section 10.1. Introduction

The aim of this chapter is consider the value of daily wages[834] between A.D. 300 and A.D. 305[835]. This was a period in which inflation is assumed to have necessitated imperial intervention in the form of the Price Edict of (A.D. 301), an initiative that failed to curtail the price rises and necessitated the second currency reform of September A.D. 301[836]. This chapter will consider the purchase power of the daily wage for labourers and similar lower-status employments by reviewing the currency reforms and daily wage payments between A.D. 300 – 305 to determine whether any increase is due to currency revaluation or inflation. It will then analyze the "purchase-power" of daily wages between A.D. 300 – 305. In order to consider these aims this chapter will be divided into a brief outline of the study period between A.D. 300 – 305; a brief outline of Diocletian's currency reforms of A.D. 300 – 301; and analysis of wages between A.D. 300 – 305.

## Section 10.2. The Reign of Diocletian

Before analyzing the data from wages it is necessary to provide an historical introduction to the final years of the 3rd century A.D. against which the evidence of wages and prices can be examined. This is because the years between the accession of Diocletian in A.D 284 and his abdication in A.D. 305 are traditionally seen as a watershed for the Roman Empire characterised by political instability, external invasion, inflation, currency debasement, separatism and military rebellion[837]. The empire that emerged from these years is often compared unfavorably with the empire of the Principate of the 1st and 2nd centuries A.D. It is generally suggested to be a more bureaucratic, authoritarian empire in which the supposed "freedoms" and "vitality" that characterized the empire of the 1st and 2nd centuries A.D. are gone[838]. More nuanced interpretations exist but there is still an implied, and sometimes explicit, unfavorable comparison of the 4th century to the world of the 1st and 2nd centuries

[834] The wages considered are non-military, daily wages because the focus of this document has been the impact of currency reform, and degree of any inflation, experienced by the poor civilian population of Egypt during the 3rd century A.D. Military wages have been considered by scholars such as Alston (1994, p.113 – 123); Abdy, (2012, p.588 – 589); Southern and Karen (2000, p.1 – 206), amongst many others.

[835] A.D. 305 marks the abdication of Diocletian and the end of the study period A.D. 235 – A.D. 305. This is the period of the so-called 3rd century crisis.

[836] Estiot (2012, p.548).

[837] Discussion of the 3rd century crisis is considered fully in chapter 2. See footnote 4, p.15.

[838] Grant (1999, p.40-41) is a good example of a "popular" historian who does not challenge the traditional orthodoxy based on an uncritical reading of the 3rd century sources.

even in scholarly literature, for example Jongman (2007, p.183 – 200) who provocatively titles his work, "Gibbon was right".

Part of the reason for this perception of the 4th century empire are the well-documented changes that occurred during the rule of Diocletian including provincial reorganization and multiplication, the proliferation of army units, the establishment of an "orientalised" court ceremony that involved prostration, Christian persecution, and an increasingly hierarchical social system based not on Roman citizens and non-citizens but the lower classes "*humiliores*" and a stratified upper class: "*honestiores*" with different legal rights[839]. It also saw price-controls and inflation[840], currency change[841], and empire-wide changes to tax and taxation-systems[842].

[839] There is an extensive bibliography on the reign of Diocletian however a sample of the literature might include the following: For a nuanced study of aspects of the Diocletian's rule and reforms see Bowman (2008b, p.67 – 88)who notes that the army, bureaucracy, and fiscal administration were different in A.D. 305 than they had been 20 years earlier; and for a study of the religious iconography of Diocletian, his palaces, laws and provincial administration; that the currency reforms are not a response to chronic inflation of a return of barter, but actually remonetarization. See also Corcoran (2006, p.35 – 49) who gives a detailed account of the 3rd century and Diocletian's reforms including the ascent of Diocletian; the relationship of Diocletian and Maximian, and the nature of the Tetrachy; the role of Rome in the empire; the proliferation of office; Lactantius' criticisms; civic duty and the cities; Diocletian's tax reforms; his Edict of Maximum Prices; and his attitude of Christianity. Drinkwater (2008, p.28 – 66) considers the crisis years and Diocletian's rule and the degree to which the 3rd century was actually a crisis. See also Jones (1964, p.31, 37 – 47) who wrote the seminal study of the later Roman Empire and who considers Diocletian's reforms. Mitchell (2007, p.47-100) is a useful treatment of the changes to the empire and the rule of Diocletian and the subsequent developments. See Rees (2004) for a recent consideration of the reign of Diocletian and the current debates. Southern (2001) provides an excellent outline the period, while Williams (1996) is also a useful outline.

[840] Harl (1996a, p.148 – 150, 157) makes a very detailed analysis of the Roman economy with regard to Diocletian and his reforms. Temin (2009, p.12) considers the nature of prices and the 3rd century inflation, noting that the 3rd century A.D. inflation is not hyperinflation of 50% per month; that the average rate between 150 – 300 AD was 3.5% per annum but that the rate dependent on initial price and time. He notes (following Bagnall) that even an inflation rate of 15-16% per annum in 4th century does not stop people using money, see Temin (2009, p.10 – 12). He also analyses the difference between administered prices and free prices. Whittaker (1983, p.163 – 180) notes that continuation of Late Roman trade that continued beyond the German frontier on new axis. This is explored in more detail in Young (2001, p.24 – 192).

[841] For the coinage see Abdy (2012, p.584 - 600) who considers the coinage of Tetrarchy including the purpose of the Price Edict, and the relationship between gold, the Price Edict, see Abdy (2012, p.585 – 586) and military pay, see Abdy (2012, p.587). Bland (2012, p.655 -662) considers the value marks in 3rd century coinage. Carson (1990, p.235 – 237) gives a detailed analysis of the 3rd century coin reforms Aurelian and Diocletian. Christiansen studies hoard and circulation evidence in Egypt prior to Diocletian's currency reform Christiansen (2005b, p.279 – 283); he also studies the hoard evidence with reference to the Tetrarchy in Christiansen (2004b, p.126 – 135). Corbier considers the 3rd century and the changes to the currency in detail, including the Currency Edict and Price Edict, suggesting that 1lb of gold equals 72,000 denarii, and gold to silver of 1:12 (with one pound of silver costing 6,000 denarii), see Corbier (2008a, p.331, and 331 n.9). Estiot (2012, p.538 – 560) considers the marks on the coins of both Diocletian and Aurelian. She compares both currencies and mint marks, see Estiot (2012, p.545-554). Geissen (2012, p.561 – 583) has considered the currency in Egypt and in particular the relationship between the tetradrachm and nummus. Rathbone (1996, p.321 – 339) variously considers the price of commodities and wages in the 3rd century A.D., see also Rathbone (1997, p.182 – 244; 2009, p.299 – 326), considering the earnings and cost, and the value of gold relative to prices in the Price Edict (Rathbone, 2009 p.317) – a question previously considered by Pankiewicz (1985, p.171 – 182) and Reece (1973, p.239-245; 1975, p.299 – 306). Sperber (1966b, p.190 – 195) considered the relationship between the denarius

Despite this, a closer analysis of his rule would suggest that Diocletian was not solely responsible for all the changes during his reign. The differentiation between the classes of "*humiliores*" and "*honestiores*" was already becoming apparent during the 2nd century A.D[843]. while Christian persecution occurred periodically during the earlier empire and not uniquely under Diocletian. As for the reorganizations of the currency, taxation, and the army, these are typical of periodic changes that emperors made. Augustus "refounded" Rome after the civil war of the 1st century B.C. with an overhaul of all these areas; as did Septimus Severus who "refounded" Rome following the civil war after the death of Commodus in A.D. 192. Diocletian himself seems to have acted very much in this manner: "refounding" the empire. As emperor he attempted to reform the areas of administration, government and law; like Augustus and Severus he codified Roman law and in many ways his rule can be regarded as a return to the traditions of Roman government, and he himself, a conservative emperor[844].

Why then is Diocletian's reign seen as the point in which the Roman Empire "changes" into something new? Such a view is based upon an uncritical view of the potentially biased sources like Lactantius (A.D. 240 – 320)[845] and Eusebius (A.D. 263 – 339)[846], both of whom were Christians and opposed to Diocletian's persecutions; assumptions about how ancient economic-systems worked; and an imperfect knowledge of the reforms themselves. One criticism of Diocletian, for example, is that he increased the number of soldiers and subdivided the provinces, but we do not know the size of the Late Roman army units, and there is some evidence that they were much smaller than the legionary units of the 1st century[847]. Moreover the subdivision of the provinces gave greater access to the tax-paying provincials and more localized networks of distribution. These actions themselves are neither inherently good or bad, but they did formally revise the ad hoc arrangements that had existed (at least in name) since the 1st century A.D.; indeed the *annona*-system and

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and aureus in the late 3rd century A.D. drawing on evidence from Palestine. See also Groen-Vallinga and Tacoma (2013, p.1 – 63) for an assessment of the A.D. 301 Price Edict.

[842] For tax reforms see Boek (2008, p.1 – 178, particularly p.30 – 74) who comprehensively considers the tax reforms of Diocletian. Corbier also considers the reforms of Diocletian in detail including the tax reforms, munus and poll-tax, see Corbier (2008a, p.360 – 365).

[843] Fögen and Lee (2009, p.245 – 257). See also McGinn (2012, p.119) for an analysis of "humiliores" and "honestiores" in late Roman society; and also in German see Rilinger (1988, p.13 – 16).

[844] Corcoran (2006, p.35 – 49).

[845] Lactantius *de mortibus persecutorum* 7.6

[846] Eusebius ΕΚΚΛΗΣΙΑΣΤΙΚΗ ΙΣΤΟΡΙΑ VIII. 1 – 9.

[847] Southern and Karen (2000, p.30 - 31).

formalized "tax-in-kind" for the army and government are as much products of the Severan-era as they are of Diocletian[848].

## Section 10.3. Wages and the Price Edict of Diocletian

The purpose of the A.D. 301 Price Edict is unclear. Our only source for the A.D. 301 Price Edict, the Christian writer Lactantius, was a contemporary (and critic) of Diocletian. He states that the "extortions" of Diocletian drove up prices:

> He, when by various extortions he had made all things greatly expensive, he tried by means of a law on prices to limit their the cost of goods for sale. Then on account of the smallest and cheapest things much blood was shed; nor was anything appear for sale through fear, and the scarcity grew more worse, until, in the end, the ordinance, after having proved destructive to multitudes, was from mere necessity abrogated. (author's translation) [849].

Although this passage is part of an attack on Diocletian and his rule, the Price Edict was perhaps something that was important to Lactantius[850] and his contemporaries otherwise there would be no point in attributing the increase in prices to Diocletian. Moreover it seems from the tone that these price increases were therefore a "recent" phenomenon that occurred under his reign. This perception is consistent with the preamble to the Price Edict of A.D. 301 that also implies that the increases were a recent event. For Diocletian it is the action of speculators who restricted supply and drove up prices for this A.D. 301 Price Edict was explicitly aimed to prevent profiteering against those who purchased commodities like wheat and restricted its supply to force prices upwards:

> "For who is so greatly deaf of heart and is distant from the feeling of humanity who is able to ignore indeed will have felt, in [regard to] things for sale, which either are done with regard to retail activities, or are handled on a daily-basis in the interaction of cities, in the great immoderateness itself of prices so widespread that uncurbed lust

[848] Lo Cascio (2008b, p.152 – 153).

[849] Idem cum variis iniquitatibus immensam faceret caritatem, legem pretiis rerum venalium statuere conatus est; tunc ob exigua et vilia multus sanguis effusus, nec venale quicquam metu apparebat et caritas multo deterius exarsit, donec lex necessitate ipsa post multorum exitium solveretur. Lactantius, *de mortibus persecutorum* 7.6 The Latin text is hosted at http://www.thelatinlibrary.com/lactantius/demort.shtml [last accessed 08/07/2014].

[850] Lactantius was hostile to Diocletian and includes a reference to the failure of Price Edict in his account of the deaths of the persecuted Christians, see Lactantius, *de mortibus persecutorum* 7.6

of gain is mitigated neither by the abundance of resources nor by the fruitfulness of years" (author's translation)[851].

The Edict states that in some areas prices for soldiers were four-times and even eight-times their normal value[852], from which some of the evidence for 3rd century inflation is deduced – though the Edict admits that inflated prices are not uniform across the Empire[853]. The Edict therefore sets the maximum that might be charged for a commodity or service.

The role and nature of the Price Edict is however poorly understood[854]. It is possible that that the A.D. 301 Price Edict was introduced to curb inflation for it would seem on the evidence of Chapter 9, p.151 - 170 that considers liturgical contracts[855] that between A.D. 286 and A.D. 297 there was some sort of significant leap in wages from a mid-3rd century day-rate of four drachmas per day. If so the Price Edict was introduced to curb inflation it must mean that this inflation was a recent event since it would seem from the evidence that the major jump in wages occurred some ten-years earlier. When papyrus P. Oxy. LXVII 4597 (dating to A.D. 294) records a daily wage of 133 drachmas the chaff collector in A.D 294, and wages paid in A.D. 297 (papyrus P. Cair. Isid. 81) and 299 (papyrus P. Sakaon. 58) of 200 and 240 drachmas respectively. These increased daily wages however appear only to be increases in response to the debasement of the currency. This is because the post-A.D. 274/5 reformed tetradrachm had a silver content of 0.2 grams of silver per coin but the since A.D. 289/90 these wages would reflect the tetradrachma of the A.D. 290s had a silver content of

[851] Quis enim adeo optumsi pectoris et a sensu humanitatis extorris est qui ignorare posit, immo non senserit, in venalibus rebus, quae vel in mercimoniis aguntur vel diurna urbium conversatione tractantur, in tantum se licentiam difusisse pretiorum ut effrentata livido rapiendi nec rerum copia nec annorum ubertatibus mitigaretur; Tenney (1940, p.312-3); Giacchero (1974, p.135).

[852] "pretia venalium rerum non quadruple aut octuplo ita extorquere ut nomina aestimoneis et facti explicare humanae linguae ratio non posit?" Tenney (1940, p.314); Giacchero (1974, p.136). "thus they extort price of merchandise not fourfold, or eightfold so that in the account of the cost and the act, the cost is not able to be explained in human language" (author's translation).

[853] …cum iam ipsa humanitas deprecari videretur, non pretia venalium rerum – neque enim fieri id iustum putatur cum plurimae interdum provinciae felicitate optatae vilitatis et velut quodam afluentiae privilegio glorientur, sed modum statuendum esse constituimus… Tenney (1940, p.314- 5); Giacchero (1974, p.136).
Since it seems now humanity itself appeals for it, that we have have decided that must be set, not the prices of goods and services for sale (nor indeed would it be thought right, since meanwhile very many provinces are rejoicing in the blessing of desired low prices as if by some privilege of abundance) but a limit. (author's translation).

[854] Abdy (2012, p.585 – 587).

[855] In A.D. 294 a chaff-collector earned 133 drachmas per day P. Oxy. 4597 in Coles *et al.* (2001b p.186 – 189); In A.D. 297 papyrus P. Cair. 81 recorded a daily wage of 200 drachmas per day (Section 9.4, p.158 - 163); in A.D. 299 papyrus P.Sakaon records a rate of 240 drachmas per day (Section 9.6, p.163-165).

c.0.01 grams of silver per coin, or even less[856]. The conversion of these day rates into extremely debased tetradrachm mean that the workers were being paid roughly the same amount of silver as they would have been in the mid-3rd century (Section 9.4 and Section 9.6, p.158 -165).

The A.D. 301 Price Edict was also associated with a revaluation of the currency. When the Price Edict came into effect the face-value of the nummus was increased 2½x from 5 denarii communes to 12.5 denarii communes[857]. This has again been taken as further evidence inflation and the need for the A.D. 301 Price Edict[858] but more practical purpose for the A.D. 301 Price Edict might of course have been to stop the new nummi vanishing into hoards. This is because the nummus had a silver content of 0.43 grams of silver per coin[859], and this was substantially better than the old post-A.D. 274/5 tetradrachms that it replaced at a one-to-one rate since these had a nominal silver content of 0.01 grams of silver per coin[860]. As a result people might have hoarded the good silver nummi and continued to pay with older coins, requiring the Price Edict and upward revaluation of the nummus to bring them back into circulation[861].

To determine whether the degree of inflation implied within the Price Edict the wages of labourers and ass-drivers given by the Edict shall be considered against their 3rd century wages. This comparison should allow us to determine if the wages in the Price Edict reflect an inflated payment, or the traditional rates of pay (in terms of silver-coated coins) at the new value and whether wages remained stable. The data, moreover, can be used to determine the purchasing power implied in the Price Edict by comparison with the known costs of commodities in Egypt at that time[862].

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[856] Cope *et al.* (1997, p.12) and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.
[857] See footnote 954, p.195.
[858] Particularly since the Edict seems to have been withdrawn later the same year and the face-value of the nummus again doubled to 25 denarii communes.
[859] Carson (1990, p.238).
[860] Cope (1997, p.12) and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.
[861] Estiot (2012, p.548).
[862] Given that the Edict provided uniform prices and costs across the Eastern Empire it is considered fair to consider the purchasing power of those wages within the Price Edict against the costs of commodities from Egypt. This is because the Edict seems to have been promulgated in Egypt. This is partly the evidence of the Antinoopolis papyrus requesting price information from the guild of silversmiths with regard to an "edict" of the Prefect (Antinoopolis Papyri 1:38) in Roberts (1950 p.91, no.38), the concordance between prices of wheat per *artaba* in A.D 301-305 and those in the Price Edict; and the fragment of "Egyptian" Price Edict from an unspecified location that was transported to France in 1807, see Giacchero (1974, p.37).

## Section 10.4. Ass-drivers in the Price Edict of Diocletian

In Section 6.3 (p.87) it was demonstrated that there was no increase in the daily wage paid to ass-drivers between A.D. 235 and A.D. 269 in Egypt, despite the collapse in the silver content of the currency. Unfortunately there is no papyrological evidence in the papyri database[863] for the wages of ass-drivers between A.D. 270 and the Price Edict of Diocletian in A.D. 301 except perhaps the 10 drachmas paid in papyrus BGU 2.262 (dating to A.D. 286) – though it is not clear how this payment should be interpreted (See Section 9.3, p.156 - 158).

In the mid 3rd century the jobs of ass-driver and "skilled" or "heavy" labourer were all paid at a rate of four drachmas per day (See Section 6.3, p.87)[864]. The A.D. 301 Price Edict gives a daily rate for camel[865] and mule drivers, and labourers. The wages of ass-drivers and labourers since they can be compared to the wage–sequences in Section 6.3 (p.87); and for the sake of clarity the implications for ass- drivers and labourers are considered separately below:

**Table 50 Wages for Camel drivers, Ass-drivers and Labourers (A.D. 301). Data from Giacchero (1974, p.150)**

| Date (A.D.) | Item | Cost / day |
|---|---|---|
| 301 | Camel driver[866] | 25 denarii communes |
| 301 | Mule driver[867] | 25 denarii communes |
| 301 | Labourer[868] | 25 denarii communes |

The A.D. 301 Price Edict of Diocletian fixed the wage of an ass-driver at 25 denarii communes. This means that the daily wage for an ass-driver in A.D. 301 would be recorded as 100 drachmas[869]. In practice however an ass-driver in A.D. 301 would not be paid in drachmas because the Alexandrian mint was not minting drachmas (and indeed had not done

[863] http://www.papyri.info/ [last accessed 05/05/2014].
[864] This includes carpenters and other skilled trades.
[865] Previously it seems that camel-drivers could command a higher daily rate than ass-drivers: 6 drachmas per day for a camel-driver as opposed to 4 drachmas per day for an ass-driver (see, papyrus B.G.U. 14) cited in Johnson (1936, p.216 – 219).
[866] Tenney (1940, p.340); Giacchero (1974, p.150).
[867] Tenney (1940, p.340); Giacchero (1974, p.150).
[868] Tenney (1940, p.337); Giacchero (1974, p.150).
[869] The drachma, tetradrachm and denarius were no longer being minted in A.D. 301. They had been replaced by the nummus. The drachma remained (like the denarius communis outside Egypt) as a unit of account, against which there was a known rate of exchange. Since the denarius was the 1:1 equivalent of the old Egyptian tetradrachms and there were four drachmas to the tetradrachm, there must be 100 drachmas to a wage of 25 denarii communes (or tetradrachms). See the following for the parity of the denarius to the Egyptian tetradrachm see Bagnall (2009, p.190); Corbier (2008a, p.347); Christiansen (2004b, p.43 – 44); Howgego (1985, p.52); Geissen (2012, p.563); Rathbone (1996, p.325 – 326); Van Minnen (2008, p.226).

so since A.D. 274/5). The currency of A.D. 301 was based on the nummus, the principal coin of transaction.

**Table 51 Daily wages in the mid.-3rd century (Section 6.3, p.87 - 92) and in the A.D. 301 Price Edict. Data from Giacchero (1974, p.150).**

| Date (A.D.) | Item | drachma / day | Cost / day (silver coins) |
|---|---|---|---|
| 239 | ass driver | 4 drachmas | 1 tetradrachm |
| 269 | ass driver | 4 drachmas | 1 tetradrachm |
| 301 | ass driver | 100 drachmas | 2 nummi[870] |

When analyzed in terms of the coins of transaction (the silver-coated nummi) we see almost no significant change in the quantity of silver-coated coins paid to ass-drivers between A.D. 239, 269 and A.D. 301 – merely a doubling from one coin to two for a day's work (particularly given that this is the "maximum" that an ass-driver was allowed to charge so the day rate could in theory be less). It would seem that in A.D. 301 the Price Edict of Diocletian fixed the maximum daily wage for an ass-driver at double the mid-third century wage, despite a significant increase in drachmas between A.D. 269 and A.D. 301; it would also seem that the increase in drachmas is therefore a "notional" increase in response to the revaluation of the currency. This is clearly demonstrated by the amount of silver that the ass-drivers receive in the A.D. 301 Price Edict in Table 52 (p.177)

**Table 52 Ass-drive wages in terms of silver (for the mid.-3rd century see Section 6.3, p.87 - 92) and in the A.D. 301 Price Edict. Data from Giacchero (1974, p.150)**

| Date (A.D.) | Item | Silver coins / day | Silver per coin[871] | Amount of silver |
|---|---|---|---|---|
| 239 | ass driver | 1 tetradrachm | c.0.74-0.82 grams | c.0.74 - 0.82 grams |
| 269 | ass driver | 1 tetradrachm | c.0.2 grams | c.0.2 grams |
| 301 | ass driver | 2 nummi[872] | 0.43 grams | 0.86 grams |

Table 52 (p177) shows that in terms of the amount of silver paid to the ass-drivers in the A.D. 301 Price Edict of Diocletian there is a return to mid 3rd century rates of pay, in

[870] There were 12 ½ denarii communes (or notational tetradrachms) to the nummus.
[871] Data from Cope *et al.* (1997, p.12), and for the nummus Carson (1990, p.237 – 238).
[872] There were 12 ½ denarii communes (or notational tetradrachms) to the nummus.

terms of the amount of silver exchanged. Further evidence for a return to mid 3rd century rates of pay can also be demonstrated in the case of labourers.

## Section 10.5. Labourers in the Price Edict of Diocletian

There is some debate as to the "reality" of prices and wages in the A.D. 301 Price Edict of Diocletian[873] but the data analyzed in this chapter suggests that the maximum daily rate payable to labourers and ass-drivers reflects the historical reality of wages in Egypt in the 3rd century A.D. since the wages of labourers in the Price Edict can be directly compared with the private wage agreements in Egypt, in A.D. 275 – 299. The Price Edict gives the following daily wage, with maintenance, for labourers in A.D. 301.

**Table 53 Daily rate of pay for labourers in the A.D. 301 Price Edict. Data from Giacchero (1974, p.150)**

| Date (A.D.) | Item | Cost / day |
|---|---|---|
| 301 | Labourer[874] | 25 denarii communes |

In A.D. 301 wages were paid in nummi[875] and a comparison can be made of the number nummi actually paid per day to a labourer with the number of pre-A.D. 275 tetradrachms actually paid to labourers in the mid 3rd century (when the rate was four drachmas per day[876]).

**Table 54 Number silver-coated coins paid to a labourer per day. Data from Section 6.3, p.87 - 92; Giacchero (1974, p.150)**

| Date (A.D.) | Item | Wage / day | Silver coins paid / day |
|---|---|---|---|
| A.D. 257 | Labourer | 4 drachmas | 1 tetradrachm |
| A.D. 301 | Labourer | 100 drachmas | 2 nummi |

[873] Howgego (2009, p.292) attempts to determine how price change was driven by monetary change while Rathbone (2009, p.321) argued that some prices in the Price Edict reflect low-level actual cost prices in A.D. 301.; that while some wages are "reductive" and others are so variable that the Price Edict does not reflect a historical reality.

[874] Tenney (1940, p.337); Giacchero (1974, p.150).

[875] There were still a notional four sestercii to a denarius communis (outside Egypt) and since the denarius communis was the notional equivalent of the debased tetradrachms, and a notional four drachmas to the pre-reform tetradrachm or denarius. There were four drachmas to one tetradrachm. See Bagnall (2009, p.190; Corbier (2008a, p.338); Harl (1996a, p.120).

[876] The rate is indeed the same for carpenters who also seem to have earned four drachmas per day in the mid.3rd-century A.D. because in A.D. 258/9 a private estate records the payment of four drachmas to a carpenter, see papyrus P. Lond. 1170 in Johnson (1936, p.224 – 5). In A.D. 256 an Egyptian stonemason earned four drachmas per day. His rate in the A.D. 301 Price Edict was 50 denarii communes (200 drachmas), twice the rate for the labourer.

The data above seem to demonstrate that the A.D. 301 Price Edict set the number of coins that were actually exchanged for one-day's work was set at a similar rate to the one-day's rate in mid-3rd century. Section 10.4, p.176- 178 demonstrated that ass-drivers earning two nummi per day in the A.D. 301 Price Edict would earn c.0.86 grams of silver each day[877]. The wage for labourers is also two nummi. Like the ass-drivers, they would each earn up to 0.86 grams of silver per day which is very similar to the mid-3rd century amount of c.0.74-0.82 grams of silver per day[878]. The significance of this is that this is further evidence that the A.D. 301 Price Edict day rates were set at mid-3rd century rates of pay in terms of both coins, and the amount of silver paid.

**Section 10.6. P.Oxy. LXIII, 4353: Evidence of Wage Stability**

The A.D. 301 Price Edict of Diocletian seems to have been revoked by September A.D. 301[879]. The general impression given by scholars on the evidence of Lactantius is that this Edict was unsuccessful and that ruinous inflation continued despite the efforts of Price control (see Section 10.3, p.173 - 176), but there is actually some evidence that the Price Edict might have been successful in imposing some degree of stability in Egyptian wages after September A.D. 301.

A contract (P.Oxy. LXIII, 4353)[880] between an employer and a tapestry weaver survives from A.D. 304. This is a time of supposed inflationary increases. The contract is for an advance from a master weaver to a tapestry weaver, contracting him to work in a workshop. There is no detail as to the skill or ability of the weaver but since this is not an apprenticeship, we might suggest that the weaver is fully trained. Significantly a daily wage of 120 drachmas is agreed between the parties. A fine of two talents of silver is payable if he leaves the workshop prior to the end of the contract[881]. The daily wage of 120 drachmas needs to be converted into nummi for comparative purposes, for in A.D. 304 there were 25

[877] Carson's analysis shows the each nummus had 0.43 grams of silver, see Carson (1990, p.237 – 238).
[878] Cope *et al.* (1997, p.12); and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.
[879] See Corbier (2008a, p.336 and notes 22, 23) for the date (and debate) of the Currency Edict.
[880] Papyrus P.Oxy. LXIII, 4353 is published and discussed by Rea (1996, p.18 - 21).
[881] To determine the daily rate in denarii Rea uses the exchange rate of four drachmas to a silver-coated tetradrachm, see Rea (1996, p.20, n15). Rea (1996, p.20, n15) also regards a day rate of 30 denarii as low given the skill required but of course we have no idea of the quality but by contrast the Price Edict (though by now lapsed) had limited the maximum daily wage for a wool worker as 40 denarii (with grades of 30 denarii, 20 denarii and 15 denarii for the types of wool); for a linen-weaver 40 denarii (work of the first class) or 20 denarii (for work of second class).

denarii communes (or tetradrachms) to the nummus[882]. This daily wage would therefore be 1.2 nummi per day, or 36 nummi per month.

**Table 55 A.D. 304 Tapestry weaver's wage in nummi. Data from Rea (1996, p.18 - 21).**

| Daily rate (drachma) | Daily rate (denarii communes) | Daily rate (nummi) |
|---|---|---|
| 120 drachmas[883] | 30 denarii communes | 1.2 silver nummi[884] |

The daily wage of 120 drachmas per day is significant for although there is a difference of activity (linen weaving as opposed to tapestry weaving) the wage of 120 drachmas can be compared with the final-year wages for apprentice linen-weavers in the mid 3rd-century. In the mid 3rd-century wages paid to apprentices in their final year of training (and therefore almost professional) are strikingly similar in terms of the number of silver-coated coins paid. For example, in A.D. 253 a final-year apprentice linen-weaver earned 20 silver-coated tetradrachms per month while in A.D. 304 the tapestry weaver earned 36 silver-coated nummi per month[885]. Even though these wages are not for same task it is noticeable that the numbers of coins actually paid to a weaver who has completed his training and the wages paid to a final year apprentice have not dramatically increased from the mid-3rd century in terms of the number of coins actually paid, particularly as Vallinga and Tacoma[886] note that it is the skill is the distinguishing factor in pay rather than the profession itself. This therefore allows some limited comparison between similar professions.

**Table 56 Number silver-coated coins paid to a weavers per month: A.D. 253 and A.D. 304 (see Section 6.4, p.92 - 99) and also Rea (1996, p.18 - 21).**

| Date (A.D.) | Person | Wage per month | Number of coins paid per month |
|---|---|---|---|
| A.D. 257 | Linen-weaver | 80 drachmas | 20 tetradrachms |

[882] Diocletian had revalued the currency, increasing it from 12 ½ to 25 denarii communes to the nummus when he rescinded the A.D.301 Price Edict in September A.D. 301.
[883] Four drachmas to one denarii communis. For the parity of the denarius to the Egyptian tetradrachm see Bagnall (2009, p.190); Corbier (2008a, p.347); Christiansen (2004b, p.43 – 44); Howgego (1985, p.52); Geissen (2012, p.563); Rathbone (1996, p.325 – 326); Van Minnen (2008, p.226).
[884] 120 drachmas divided by 100 (the number of drachmas to the nummus) after the September A.D. 301 revaluation of the nummus to 25 denarii communes. Estiot (2012, p.548). For the parity of the drachma to the Egyptian tetradrachm see Bagnall (2009, p.190); Corbier (2008a, p.347); Christiansen (2004b, p.43 – 44); Howgego (1985, p.52); Geissen (2012, p.563); Rathbone (1996, p.325 – 326); Van Minnen (2008, p.226).
[885] 120 drachmas per day times 30 days gives 3,600 drachmas per month. This is divided by 100 which is the number of notional drachmas to the nummus in A.D. 305. This is because there were four notional drachmas to a tetradrachm or denarius communis, and there were 25 denarii communes to the nummus.
[886] For wages in the Price Edict see Groen-Vallinga and Tacoma (2013, p.2 – 6, 10, 22).

| | | | |
|---|---|---|---|
| A.D. 304 | Tapestry-weaver | 3600 drachmas | 36 nummi |

There is also parity between the early-termination fines contained within the contract. Again despite the difference in occupation and status (apprentice linen-weaver and trained tapestry weaver) the contract in A.D. 253 specified a fine of 400 drachmas which equates to 100 silver-coated tetradrachms. In A.D. 304 the fine for the tapestry-weaver leaving his workshop was 12,000 drachmas (two talents). This equated to 120 nummi and is similar to the fine of 100 tetradrachms in A.D. 257.

**Table 57 Silver-coated coins payable as fines in weaving contracts: A.D. 253 and A.D. 304. Data from Rea (1996, p.18 - 21).**

| Date (A.D.) | Person | Early-termination fine | Fine in silver coins |
|---|---|---|---|
| A.D. 257 | Linen-weaver | 400 drachmas | 100 tetradrachms |
| A.D. 304 | Tapestry-weaver | 12,000 drachmas | 120 nummi |

Table 57 is interesting as the parity between the fines is suggestive that wages and contracts are not responding to inflation – rather revaluation of the currency[887].

In conclusion there is no evidence in the A.D. 304 contract to suggest that this is a master-weaver, nor whether the daily wage of 120 drachmas is particularly unusual. Rea has already noted that he regards it as low[888], and perhaps this indicates that this contract reflects low-status work. The daily wage of 120 drachmas is therefore significant since it does not seem that weaving wages (if these can be compared) have substantively increased since the A.D. 250s. More significantly the daily rate of 120 drachmas payable in A.D. 304 is comparable to the pre-Price Edict and currency-reform wages paid to labourers in A.D. 297 and A.D. 299. These were 200 drachmas and 240 drachmas per day, respectively. Given that

[887] Further evidence that the fine is not responding to inflation can be seen in the amount of silver that would be paid by the fines and daily wages. In A.D. 253 a fine of 100 tetradrachms, paid in the tetradrachms of Maximus Thrax with a silver content of around 0.82 grams of silver per coin would give 82 grams of silver. In A.D. 304 the 120 nummi fine for a tapestry weaver would be paid in coins with a silver content of 0.43grams of silver per coin. This would mean that the fine was worth only 51 grams of silver. This is paralleled by the amount of silver paid to the workers. The monthly wage for a final-year apprentice linen-weaver in A.D. 253 was 20 tetradrachms. If this were paid by paid in the tetradrachms of Maximus Thrax with a silver content of around 0.82 grams of silver per coin, the apprentice would be paid 16.4 grams of silver per month. By contrast the tapestry weaver received 36 nummi per month. Since this would be paid in nummi with a silver content of 0.43 grams per coin they would receive c.15.48 grams of silver per month. In a sense it does not matter if the wages paid in A.D. 253 did so in older coins with a better silver content, the amount of silver paid to these workers has not substantively increased between A.D. 253 and A.D. 304.

[888] Rea (1996, p.20, n.15).

the A.D. 301 Price Edict and currency-reform doubled the number of drachmas to the nummus and halved-wages[889], and a wage of 240 drachmas can be halved to 120 drachmas. This A.D. 304 wage for a tapestry weaver is consistent with the rate of 120 drachmas given in the A.D. 301 Price Edict in which labourers were paid 100 drachmas per day (plus maintenance). Also the maximum daily wage for a wool worker[890] was 160 drachmas (with grades of 120 drachmas, 80 drachmas and 60 drachmas denarii for lower types of wool working); for a linen-weaver the Price Edict specifies 160 drachmas (work of the first class) or 80 drachmas (for work of second class). The wage of 120 drachmas suggests that even though the A.D. 301 Price Edict had lapsed wages continued to be agreed to its standard.

**Section 10.7. P. Oxy. VI. 895**

Further evidence of wage-stability comes indirectly from a papyrus dating to A.D. 305 (P. Oxy. VI. 895). This papyrus contains a section of accounts rendered by the *comarchs* of village of Tampeti in the Fayum to the office of the *logistes*, Aurelius Seuthis alias Horion. It includes an item that described three workmen sent to Babylon[891] at a rate of 120 drachmas per day.

> 'In the consulship of our lords Constantius and Maximianus, most renowned Caesars, for the fifth time. To Aurelius Seuthes also called Horion, logistes of the Oxyrhynchite nome, from Aurelius Sakaon son of Petiris, and Aurelius Psois son of Patabes, both comarchs of the village of Tampeti. In reply to your request in the present 21st and 13th year, in accordance with the order of his Excellency the prefect Clodius Culcianus, for the village-accounts of our village in the two months Pharmouthi and Pachon, we, regarding this as a necessary duty, present them for your information, as follows: For the price of papyrus and writing-materials . . . of three workmen sent to Babylon 120 drachmas ; for the price of papyrus and writing-materials ... of one workman sent to . . . 1[. .] drachmas; total together 2[. .drachmas. . .' (P. Oxy. VI. 895)[892]

[889] Estiot (2012, p.548).
[890] Tapestry-weaver rates are sadly not recorded in the A.D. 301 Price Edict.
[891] This was the Egyptian port near modern Cairo in the Nile Delta at the mouth of Trajan's Canal, some 140 km to the north of Oxyrhynchus.
[892] Translation in Grenfell and Hunt (1898, p.215-216). The Greek reads: ἐπὶ ὑπάτων τῶν κυρίων ἡμῶ[ν Κων]σ[ταντ]ίου καὶ Μαξιμιανοῦ τῶν ἐπιφανεστάτων Καισάρων τὸ ε. Αὐρηλίῳ Σεύθι τῷ καὶ Ὡρίωνι λ[ο]γιστῇ Ὀξυρυγχίτ[ου] παρὰ Αὐρηλίων Σακάωνος Πετίριος καὶ Ψόιτος Παταβῆτος ἀμφοτέρων κωμαρχῶν κώμης Ταμπέτι. τοῦ ἐνεστῶτος κα καὶ ιγ (ἔτους) ἐπιζητοῦντί σοι κατὰ κέλευσιν τοῦ διασημοτάτου ἡμῶν ἡγεμόνος Κλωδίου Κουλκιανοῦ τοὺς κωμητ[ικο]ὺς λόγους τῆς ἡμετέρας κώμης μηνῶν δύο τοῦ τε Φαρμοῦθι καὶ τοῦ Παχὼν ἀναγκ[αῖ]ω[ν][ ἡγ]ησάμενοι ἐπι-δίδομεν ἵν' εἰδέναι [ἔχῃ]ς. [ἔ]στι δέ·τιμῆς χάρτου καὶ γράπ[τρων

Although the papyrus does not state that the workmen are to be each paid 120 drachmas per day it would seem surprising if their wage were only 40 drachmas each in A.D. 305 given that the Price Edict itself specified 100 drachmas per day for labourers, and their journey would seem to be more than one day's travel. Further evidence to confirm this analysis comes from a second very fragmented line. This is an entry for the labourer who was sent to a location that is perhaps Memphis:

"of one workman sent to ?Memphis? 1[. .] drachmas…" (P. Oxy. VI. 895)[893]

Crucial to the argument is that the entry preserves the start of his wage. Grenfell and Hunt transcribed the wage a "ρ" which is the number code for "100". This is contrary to the papyrus database[894] which transliterates the wage as "α" the number code "1". A close examination of the actual papyrus confirms that Grenfell and Hunt were correct and that the correct reading is "100", with the rest of the figure lost (see Appendix 3: Papyrus P.Oxy.VI 895, p.239). This evidence would suggest that there is wage stability in the post-Price Edict period, at least until A.D. 305 (the abdication of Diocletian and the end of the study period) since a wage of 120 drachmas is consistent with the labourer rates in the A.D. 301 Price Edict.

Several other papyri also record day wages for liturgical work[895]. Papyrus P. Oxy. 4597 from A.D. 294 records that a chaff-collector earned 133 drachmas per day, or 4,000 drachmas per month[896] this would mean that the chaff-collector is earning c. 6 ⅔ - 8 post-AD.

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εἰσαγ(?)]γελίας(?) ἐργατῶν τριῶν ἀποσταλέντ[ων..... ] ἐπὶ Βαβυλῶνα (δραχμαὶ) ρ̣κ̣, τιμῆς χάρτου καὶ γράπ[τρων̣. ελί]ας ἄλ̣λου ἐργάτου ἑνὸς 15[ἀποστ]αλεντωνἐπὶ [τὴν Μεμφ]ιτῶν π̣ό̣λ̣ιν (δραχμαὶ) α[̣. ] [γί(νονται)] ὁμοῦ (δραχμαὶ) β[̣. ]ρ̣. [..... ]. Hosted on http://www.papyri.info/ddbdp/p.oxy;6;895 [Accessed 10/2/2014].

[893] Translation in (Grenfell and Hunt, 1898 p.215-216). The Greek reads: ἐργάτου ἑνὸς 15[ἀποστ]αλεντωνἐπὶ [τὴν Μεμφ]ιτῶν π̣ό̣λ̣ιν (δραχμαὶ) α[̣. ] [γί(νονται)] ὁμοῦ (δραχμαὶ) β[̣. ]ρ̣. [ ..... ]. Hosted on http://www.papyri.info/ddbdp/p.oxy;6;895 [Accessed 10/2/2014].

[894] http://www.papyri.info/ddbdp/p.oxy;6;895 [last accessed 08/07/2014].

[895] Our most detailed understanding of the impact of liturgical work upon the curial class can be seen in the Isidorus archive. Aurelius Isidorus was in A.D. 289-290 *kephalaioles* (in charge of supplying wheat to the state bakery); in A.D. 299-300 *pediophylax* (field guard); in A.D. 300-301 *apaitetes* (collector of tax for the Karanis district); in 303-304 a "collector of meat"; in A.D. 308-309 *komarch* (an official in charge of village administration) and also *sitologus* (in charge of the local state granaries) in A.D. 309-310 he was again *sitologus*; in A.D. 310 – 311 he was "collector of chaff"; in A.D. 313-314 *tesserarius* (traditionally in charge of guards but also liaising with the authorities and carrying out their orders); in A.D. 317 *ergasia* (literally a "workman"); and undertook an unknown duty in A.D. 318-319. On average he performed a government duty every two-years over a twenty-year period, see Boak and Youtie (1960, p.8 – 10).

[896] Coles *et al.* (2001b, p.186 – 189).

274/5 tetradrachms per day[897]. As the silver content of each coin is around 0.01 grams of silver this would mean a wage of about 0. 06 - 0.08 grams of silver per day. In A.D. 297 (P. Cair. Isid. 81) records labour work on Trajan's Canal with a wage of 200 drachmas per day (1 talent per month) in P. Cair. Isid. 81[898], for which they earned c.0.1 grams of silver per day (see Section 9.5, p.159 - 163). In A.D. 299 (P.Sakaon 58) records that workmen from the village of Theadelphia were paid 240 drachmas per day (1 talent, 1000 drachmas per month) to travel and work at Babylon in Egypt for which they earned c.0.12 grams of silver per day (see Section 9.6, p.163 - 165). Two further papyri dating to A.D. 301 are also relevant (papyrus PSI IX 1037)[899] and P. Oxy XXXVIII 2859[900].

In A.D. 301 a ῥαβδούχος (kind of policemen) was also paid 400 drachmas per day (2 talents per month) in (papyrus PSI IX 1037). This papyrus dates to the year A.D. 301, the same as the A.D. 301 Edict of Maximum Prices, but the month is not recorded so it is not clear if the daily rate was agreed under the Edict but it is noticeable that it is roughly double the rate of 240 drachmas per day in A.D. 299 (papyrus P. Sakaon 58). If his wage dates to the time of the Price Edict then there were 25 drachmas to each nummus. This would mean that he earned 16 nummi per day, and this was 6.88[901] grams of silver per day. If the papyrus dates to the end of the year, after the upward revaluation of the currency then there were 50 drachmas to the nummus (see 954, p195 of the 2nd currency reform). This would mean that his daily wage would 8 nummi per day, and would mean that he earned c.3.44 grams of silver per day. Finally Papyrus P. Oxy XXXVIII 2859 dating to Nov. A.D. 301 is a contract for a *dekanos*[902] was paid 250 drachmas per day (2 talents 3000 drachmas for two months which equals 15,000 drachmas for two months). His wage was therefore worth 5 nummi and 2.15 grams of silver[903]. Given however the higher social class of these liturgists it is not really possible to compare them to the labourers' wages.

[897] Estiot (2012, p.552) considers that by A.D. 294 there are 16 drachmas to the post-AD. 274/5 tetradrachm and Harl (1996a, p.151, 155) suggests that there are 20 drachmas to the post-AD. 274/5 tetradrachm.
[898] Boak and Youtie (1960, p.316 - 317).
[899] Papyrus hosted on http://www.papyri.info/hgv/17467 [accessed 05/05/2014]. For a general study see Drecoll (1997) for a detailed study (in German) of liturgical duties in Egypt in the 3rd and 4th centuries A.D; and also the detailed study by Naphtali (1982, p.65 – 109).
[900] Weinstein *et al.* (1971, p.85 - 86).
[901] Each nummus had 0.43 grams of silver, see Carson (1990, p.237 – 238).
[902] The *dekanoi* were in charge of a "militia" and liaised with military officers of centurion-rank through "curatores", see Alston (2002, p.81 – 83). There seems to be high degree of responsibility and the liturgists in this papyri belong to high social-class, and are *ex-exegetes* (senior officials) and for this reason it is not considered with the labour contracts above.
[903] Each nummus had 0.43 grams of silver, see Carson (1990, p.237 – 238).

## Section 10.8. Conclusion

It would therefore seem that in the period between A.D. 294 to 300, the "basic" rate of pay for labouring work was 200 – 240 drachmas. The A.D. 301 Price Edict, and concurrent currency reform set a new standard of 120 drachmas, and that when this is converted into nummi, the amount of silver paid per day between A.D. 300 – 305 was comparable to the amount paid to labourers in the mid- 3rd century A.D. In order to determine if the known price-increases from the Egyptian papyri in the late 3rd century and early 4th century represent inflation, or the revaluation of the currency, the next chapter will compare known costs for wheat and barley with their prices in the A.D. 301 Price Edict of Diocletian[904]. These costs will then be used to determine the purchase-value of the daily wages between A.D. 275 and A.D. 305.

[904] It is known that the Price Edict was promulgated in Egypt from the declaration of the Silversmith recorded in the Antinoopolis Papyri 1:38, and published in Roberts (1950, p.91, no.38).

# Chapter 11. Prices in the 3rd Century A.D.

To determine if the known price-increases from the Egyptian papyri in the late 3rd century and early 4th century represent inflation or the revaluation of the currency this chapter will compare known market costs for wheat and barley with their prices in the A.D. 301 Price Edict of Diocletian[905]. The costs will then be compared with daily wages to determine the purchase-value of the daily wages between A.D. 275 and A.D. 305, and to determine the number of days it was necessary to work in order to earn one-month's supply of wheat or barley. In order to consider prices and pricing in the 3rd century it is necessary to consider price determinants and how they affected price-setting in the 3rd century A.D.

## Section 11.1. Price determinants in the 3rd century A.D.

When examined in detail the economic systems within a province are a complex system of redistribution. Polanyi highlights that all economic systems require redistribution from family, to local, to regional and even state levels[906]. In each direction there are two-way movements of credit, money, labour and resources, and those economic systems exist not only vertically but also horizontally[907]. Horden and Purcell[908] have done much to demonstrate the interconnected nature of the Mediterranean world – a world connected in a multiplicity of ways and at a multiplicity of levels; a network which is dominated by fluidity, flux, and change; and in which diversification rather than specialization is the response. It is a world in which traditional distinctions or categorizations like those of trader and pirate are not fixed[909]. Mattingly[910] has used a similar approach to highlight the interconnectivity and multiplicity of exchanges that support the *annona*-system of Rome, both provincial (between towns, rural-towns and production points), and extra-provincial networks; thereby creating primary, secondary and tertiary economies, exchange-systems and economic networks. Indeed Mattingly[911] characterizes the imperial economy of Rome as a system with "a huge amount of

[905] It is known that the Price Edict was promulgated in Egypt from the declaration of the Guild of Silversmiths recorded in the Antinoopolis Papyri 1:38, in Roberts (1950, p.91, no.38).
[906] Polanyi (1957b, p.254). A redistribution web might be local markets, ports, government facilities, villages, towns and markets, and of course the lowest point in a distribution-web: the individual farms.
[907] Pryor (1977, p.154 – 155).
[908] Horden and Purcell (2000).
[909] Horden and Purcell (2000, p.123 – 172; 342 – 401).
[910] Mattingly (2007, p.220 - 222).
[911] Mattingly (2007, p.221).

redistributive economic activity" in tandem with both provincial-local economics and extra-provincial economies.

Something of the complexity of this system can be glimpsed if we consider Pryor's[912] examples of transaction types with reference to Roman redistributive systems. These systems can include commercial transactions which require an agreed medium of exchange (in this case coins), and non-commercial transactions which require a means of payment that is not necessarily coins. Non-commercial transactions can cover gifts, payment in kind (perhaps a share of harvest), fines and peace-offerings. They can also include sacred or indentured labour (one can consider slave, gladiator or even temple service). Finally they can also include donatives, prestige tokens, and ornaments given in return for service. Not only are all these types of exchange occurring simultaneously in the Roman Empire at all levels of society. They are occurring simultaneously in all regions and at all levels within a region within the economic "web" of the Roman Empire. Moreover these exchange are happening concurrently within an exchange web that is "interconnected" not only in physical but also non-physical ways with social or religious networks and connections. To understand therefore how commodities were priced within the Roman Empire it is necessary to understand that there were both commercial and non-commercial transactions that were occurring in the Roman economic systems, and also something of the factors that affect the prices of those commodities[913].

For a monetary exchange system on the scale of the Roman Empire to function it required "markets" and for those markets to function they required both a "supply" crowd and a "demand crowd"[914]. At a most basic level these twin principles are the determinants of commodity costs. However descriptions of commodity prices from Egypt tend to assume something of a modern free-market economy.[915] This is not the assumption of this thesis since a direct link between ancient markets and market-prices, and the modern functioning of

[912] Pryor (1977, p.154 - 55).
[913] Adapting the work of Pryor (1977, p.154 - 55) with regard to systems of exchange and distribution in primitive and peasant economies For further explorations see (Polanyi, 1957c p.12 – 26) on marketless trading and (pre-monetary) exchange. On the Greeks and economic theory see Polanyi (1957b, p.64 – 94). On the mechanisms of exchange, see Polanyi (1957b, p.243 – 269). See also Oppenheim (1957, p.27 – 37) on Mesopotamian economic theory that explores state-directed economic systems - the principals of which can be applied to the Roman *annona*-system.
[914] See Polanyi (1957b, p.267).
[915] Rathbone (2005, p.712), for example, argues that it is a free-market. See also Bagnall (2005, p.187 – 207) for a discussion of the political and social structures of Roman Egypt.

market-systems is an artificial and over-simplistic approach. Temin[916] noted that when considering market-prices one has to differentiate between "free" prices and "state-administered" prices. This document argues the majority of the prices within Roman markets in Egypt were both "administered" and "free", in that costs were allowed to follow market forces provided they stayed within a range of acceptable "fair" costs – a fair range of costs that might be decided by guilds, government or set by tradition. Recognition of this restriction allows us to adapt Polyani's initial model and apply it to prices in Egypt in the 3rd century wherein the cost of a product can move up or down, but solely within the encompassing oval that reflects the point at which state officials, or local magistrates, or even guild officials intervene.

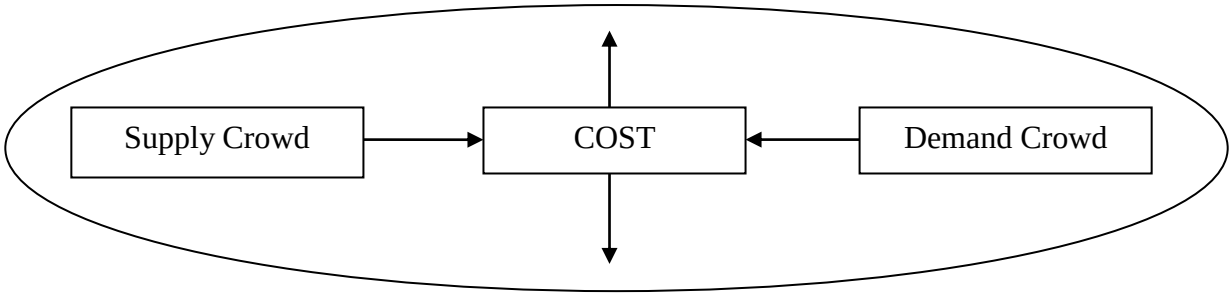


**Figure 17 Degree of price movement prior to market intervention. Point of intervention marked by the oval (author's diagram)**

In the above figure the oval represents the degree to which prices are allowed to increase or decrease prior to market intervention by the authorities. As is schematically represented, the movement of market costs beyond a recognized range tended (in the case of essentials) to invoke civic intervention to stabilize prices or supply. Moreover the need for cities to control the circulation of silver[917] meant that the prices in Roman markets were closely scrutinized. The evidence of Egypt points to inspections: guilds were periodically required to submit details of prices to the administration. One example is the declaration of the silversmiths in the Antinoopolis Papyri[918]. In this example the Prefect had required statements of prices from the guilds to ensure compliance with a new Edict, possibly the A.D. 301 Price Edict. They reported that one pound of worked silver in A.D. 301 was 62 denarii

[916] See Temin (2009, p.2-3). Duncan-Jones (1976a, p.243) notes that in "Lower Egypt" official prices for wheat in the 1st and 2nd centuries A.D. were 30% lower than private prices. He also notes that within a year wheat prices could fluctuate dramatically. For example the seasonal prices for wheat in Sicily (74 B.C.) was 20 sestercii per *modius* prior to harvest and 12 sestercii per *modius* after harvest, see Duncan-Jones (1976a, p.243).
[917] By requiring the transactions of the marketplace to be in bronze the cities guaranteed a supply of silver via the money-changers. To purchase basic commodities silver would need to be exchanged for bronze spending coins. The silver would then be purchased by the city and used for its tax liability (see Section 5.8, p.77).
[918] Papyrus Antinoopolis 1:38 in Roberts (1950, p.91 – 92, no.38).

while one pound of unworked (poured) silver was 31 denarii[919]. Likewise the guilds of iron and bronze workers reported the values of their goods in Oxyrhynchus: papyrus, P. Oxy I, 84 dating to A.D. 316 (for the guild of ironworkers) and papyrus, P. Oxy I, 85 dating to A.D. 338[920]. This allowed the cities to monitor and act against pricing that was deemed unfair and ensure stability within their markets. Indeed in a purely free-market commodity prices would be allowed to move without any interference. This would seem however contrary to ancient ideas[921]. Markets were monitored, controlled, and even organized; and when prices for essential commodities begin to seem excessive it becomes the duty of the government, or the wealthy, to intervene and ensure that commodities like wheat remain at "affordable" prices even in times of real scarcity. The model adopted within this paper is that market prices for commodities in Roman Egypt in the 3rd century A.D. are administered prices and there is therefore a presumption that external social and political factors affect commodity prices to ensure stability rather than change. Only if those factors are significantly disrupted do we see prices materially alter for the long-term.

## Section 11.2. Factors affecting "administered" prices: The Demand Crowd

The degree of demand on "administered prices" depends very much on the degree of surplus capital in the local population. The nature of the available employment is a significant determinant in the demand for commodities. Verboven[922], notes, that a limiting factor for the 3rd century model of steep inflation was the lack of demand inflation in 3rd century A.D. Roman Egypt since the majority of the populace have little surplus. This must be partly explained by the nature of employment in Egypt within the 3rd century A.D. The main employment area was agriculture, and much of the employment was of course seasonal with contracts that varied from short to long-term[923]. Wages for tenancies and day-wages seem to have remained fixed for much of the 3rd century A.D. (see Chapter 6, p.82 - 101)

[919] The declaration is published, "in accordance with the edict of the Prefect", see Roberts (1950, p.91, no.38). See footnote 338, p.73.
[920] Grenfell and Hunt (1898, p.146-7).
[921] As early as Aristotle we see an expression that excessive profiteering, at the expense of one's fellow citizens, was something shameful, a view that gets a more fully expressed within a Roman ideal by Cicero in his treatise *de officiis*, see Cicero, *de offic*iis, 3.16-17. A rich man was expected to be a generous patron and there were times when cash needed to be spent because ones status, and the poorer plebeians demanded it of a wealthy man, see Ferguson, (1918, p.519); and most explicitly in the preamble to the A.D. 301 Price Edict which is targeted against those making immodest profits, see footnotes 851 - 853, p.174 .
[922] Verboven (2007, p.252) argues that there is little demand-reason for 3rd century inflation since people had very little surplus and thus, little demand. This means that since demand fails to increase neither production quantities nor costs will directly increase, though they might move for other reasons like a sudden glut of wheat at harvest time.
[923] Kehoe (2012, p.120 - 125).

By contrast day workers might have had a seasonally varied range of income, given that wages were often paid for a few days of work. For day-labourers diversification and movement would have been essential for survival: movement to and from the countryside and towns to farms and estates (imperial, private, and even temple estates, for example), or to the towns and villages - to wherever there was employment[924] . The degree to which they could have bargained for their wages is of course doubtful. Large estates would have placed the "wage-setting" power in the hands of the land owners reducing the upward movement of wages for both day-labourers and tenants, and thereby the available surplus capital. It is suggested that the demand limits imposed by their lack of surplus capital would have been a significant restriction to price movement in 3rd century A.D. Egypt.

Further restrictions to the liquidity of the demand crowd are of course taxation[925]. Taxation was not simply direct imperial taxes in coin but it can also take the form of tribute[926]. Within the study period taxation seems to have changed very little[927]: there were a wide range of taxes[928] from direct cash taxes like the poll tax, taxes in kind, and various *ad valorem* taxes on commodities. Taxes included local taxes, *portoria* taxes, trade taxes that included monopoly taxes, capitation taxes (taxes on numbers of individuals engaged in a

[924] See again Kehoe (2012, p.120 - 125). Of course employment opportunities were not always equal since access to employment might have been hereditary, restricted by apprenticeships, and the number of candidates competing for employment – particularly unskilled work. Where employment was "free" rather than "hereditary" the proposition suggested by Horden and Purcell (2000, p.222 – 227) of "maximisation" and "diversity of exploitation" should apply: cash workers must surely have maximised their wages from a variety of employments, activities, including family, patronage and connections. Just like the farmer, the successful individual will have exploited all available economic niches. Erdkamp (2012, p.242 – 251) notes that the idea of town-dwellers who do not work the land is an ancient one but that even if only 10-20% of a town do not directly work the land there is not strict division between the two; towns were the locations where estate owners and farmers converted their goods to money, and those towns (and their inhabitants) are part of a hinterland where the majority of people were directly linked to both "worlds".

[925] These restrictions also affect the supply market in much the same way. They are considered with the demand crowd simply because taxation can directly affect the purchase ability of the demand crowd.

[926] The cities might provide a tribute to the Roman State that was not just money based. Goffart (1974 p. 12, 14) notes the wide range of the term "*tributum*" and it is clear that even in the age of Augustus non-monetary payments are being made to the Roman state like hides and horses; or even labour like the Austurians who seem to have provided labour in the gold mines of Northwest Spain as their "tributum", see Orejas and Sánchez-Palencia (2002, p.593). "*Tributa*" however seem largely to be processed by the local authorities before dispatch to the Roman authorities and by the 3rd century A.D. this was known as the *annona*.

[927] Taxes changed little in the life of the empire – emperors preferring to raise income from other means than taxes. Corbier (2008a, p.377) notes that there was no restructuring of tax before the end of 3rd century, and when Maximinius (A.D. 235 – 238) tried to increase taxes in Africa it resulted in rebellion. As a result they seem unable to raise the basic level of taxation without a hostile reaction although they could add new taxes, see Corbier (2008a, p.378).

[928] See footnote 365, p.78 for an account of taxation in the Cambridge Ancient History. Bagnall (1994, p.88) considers tribute. He considers Egyptian taxation in the 4th century more generally in Bagnall (1980 p.185 – 195); Duncan-Jones (1994b, p.47 – 56, table 4.7 p.57) also considers taxation in Egypt and notes that tax revenues seem to fall over time). Rathbone (2005, p.705 – 712, 717) too considers taxation in Egypt.

profession)[929].Taxes also included rentals from city and sacred estates. State taxes that consisted of the *tributum capitis* (the poll tax[930]) which was paid in cash[931] by all males children (including slaves) outside Alexandria[932], a land tax that was collected in kind, for grain land[933]; or money, for vineyards and oliveyards[934]; and the 3rd century *annona militaris*[935] that was only regularized as a tax under Diocletian around A.D. 287[936]

In larger towns there might have been a member of the procurator's *officia* to collect taxes on manumissions, inheritances, and fines but provincial staffs were small and unlikely to be in every town[937] and in villages and smaller areas the most likely collectors were nominated by the town councils and "headmen". Importantly, how a town paid its tax is a matter of indifference and provided that government's share was sent to representatives of the imperial government for redistribution, the towns and villages are allowed to spend any extra revenues[938]. It is clearly the receipt of tax that was of importance to the government. Since the imperial government was only interested in the total tax paid, and communities have the freedom to make up a shortfall in any manner that suits them, the imperial governor, rather than the *curia*, is therefore the legal point of recourse against too heavy exaction by the local town officials[939].

The effect of government policies (particularly taxation) on wage stability is hard to assess. A simplistic[940] picture would suggest that if the tax demands increased then wages

[929] Boek (2008, p.50 – 51).
[930] There are many poll tax demands and receipts preserved in the papyrus evidence. See footnote 368, p.79. Another example is papyrus P. Oxy. XLII, 3107 which notes that in A.D. 238, 20 drachmas was demanded of slaves, see Corbier (2008a, p.379).
[931] The importance of the poll tax to the monetary economy of the empire lies in the fact that it had to be paid in cash, see Christiansen (2004a, p.45). This meant that no matter how debased the currency, cash was still required for the payment of the poll tax and therefore cash-wages remained important. Howgego (1992, p.24) makes a similar point that coins are still used in crisis.
[932] Boek (2008, p.48).
[933] See footnote 371, p.79.
[934] Boek (2008, p.46 – 47)
[935] To collect the *annona* militaris the government issued their requirements to the "*praepositus pagi*" (in charge of a district), who informed the "*exactor susceptores*". They then notified the village "*comarchs*" (officials in each village who ensured the fair distribution of the tax demand and were responsible for its collection), see Boek (2008, p.60).
[936] Boek (2008, p.67); Bagnall (1994, p.88).
[937] Goffart (1974 p.15).
[938] Goffart (1974 p.10) cites the case of Tenos as evidence. It is the tax that matters and not the method of collection, or indeed the individual share. Further evidence of this can be seen in papyrus P. Oxy. LXVII 4597, A.D. 294 where liturgists are able to transfer their obligation to another, see Coles *et al.* (2001, p.186 – 189).
[939] Goffart (1974 p.10).
[940] Monson (2007, p.2 - 3) gives a more sophisticated tool to consider the impact of government policy on province. See footnote 362, p.78 for a full discussion.

would increase to pay those taxes. In 3rd century A.D. Egypt there was very little increase in taxes except in the *annona militaris* – a tax "in-kind", and therefore not a monetary payment. In the 3rd century A.D., however, taxes, prices and demographics are linked. Bagnall[941] notes the case of Fayum (one of the most productive areas of Egypt) in the late the 3rd and early 4th centuries the area is in terminal decline and the depopulated, with little external investment from the towns. Despite the economic collapse of the area taxes were still required; and indeed, due to the inflexibility of the system at a local level the taxes were quite possibly the same levels of tax that were required from more productive areas closer to the Nile. In his analysis he demonstrates there is a fall of 95% in the taxation rate at Karanis between A.D. 167 and A.D. 378. The evidence of tax registers indicates that the population has drastically dropped from a possible total population at Karanis of c.4,000 in the 2nd century, to c.420 people in A.D. 338. At Theadelphia the population also seems to have dropped from c.2,660 people in the 2nd century, to c.100 people in A.D. 312 [942] For such a fertile and productive area the reasons for this decline are not clear: slow recovery from the plague; lack of maintenance of the irrigation ditches; state neglect; from a lack of "urban" interest and investment in the land are all suggested but the inhabitants blamed the water infrastructure which they argued had not been maintained[943].

Quite clearly for those families left in the Fayum of the early 4th century A.D. the absence of employment, investment, and the steady requirement to pay their taxes, would suggest that the "demand-crowd" was not in a position to pay increased prices for imported goods. Indeed it would suggest that the lack of capital, and thus demand, would mitigate against increased market prices for commodities, and even act as a disincentive for private individuals to import goods, or to even compete with prices in those markets that survived.

### Section 11.3. Factors affecting "administered" prices: The Supply Crowd

Supply limits might be regarded as restrictions on the amount of commodities that might reach the marketplace. With regard to raw materials the degree to which commodities could be locally produced or manufactured limited price movement. An initial limit to supply-costs was the degree to which a settlement was located away from either coast or river valleys. Those cities on the periphery of the Mediterranean Sea were part of an intricate trade-network that varied from official state administered trade and mercantile trade, to

[941] Bagnall (1985 p.293 – 295) reprinted in Bagnall (2003a, p.293-295).
[942] Bagnall (1985 p.295 – 296) reprinted in Bagnall (2003a, p.295-296).
[943] Bagnall (1985 p.296 - 306) reprinted in Bagnall (2003a, p.296 - 306).

piracy or small-scale cabotage[944]. To some extent river and good road networks allowed the redistribution of surplus to peripheral areas but since such commodities would need to be transported and redistributed from their entry points (unless they are accompanied by some sort of state subsidy, state shipment, or mandatory duty) the price would need to include the cost of transportation[945]. One clear example of the limits of geo-climatic restrictions to a supply crowd in 3rd century A.D. Egypt was of course the limiting factors of the Nile and desert. Beyond the Nile-"strip" commodities would have to be transported across the desert to oasis-settlements, and unless such transportations were undertaken as estate-work or duties, this must have been added to the price; yet in the case of wheat the further one moved from the Nile estuary and periphery of Alexandria, the lower wheat prices were[946] in the agricultural hinterland of Roman Egypt.

For a "private" supply crowd to have an incentive to move goods it will expect to sell those products for a profit and to people that can afford the costs. The only means to do so was either bulk-shipment to reduce the transportation cost – something that the Nile and its associated canals might make possible in Egypt, or goods that were transported as part of official supply chains or semi-official cargoes. Thus we might expect to see a greater range of imported materials supplied to state-employees and contractors than to disparate rural estates in 3rd century Egypt. Clearly the terminal decline in the Fayum noted by Bagnall[947] at the start of the 4th century would suggest that there might be fewer luxury items than during more economically prosperous periods; but with sufficient population, and use of the state-supply networks, profits might be made could still make commodities worth transporting to more remote areas[948]. The *annona* shipments might also include a secondary cargo which allows the cheap (bulk) movement of commodities in "official" cargoes to remote sites associated with state production and *annona*-supply[949]

In an agricultural community the "supply crowd" was also governed by seasonal gluts or lacks of crops. Within the Roman Empire, and also Egypt, the price of wheat could and did

[944] Horden and Purcell (2000, p.123 – 172).
[945] There is increasing evidence that perhaps road movement to peripheral areas need not be the barrier to redistribution that it was once considered. Mattingly (2007, p.285) suggests that internal trade (based on archaeological evidence) was larger than a "few luxuries" in transportation.
[946] Duncan-Jones (1976a, p.243) noted that prices in Lower Egypt were significantly higher than those of Upper Egypt.
[947] Bagnall (1985 p.293 – 295) reprinted in Bagnall (2003a, p.293-295).
[948] Bagnall, (2008, p.29).
[949] Mattingly (2007, p.173 – 178) notes the wide range of commodities at the Egypt stone quarries.

vary depending on the time of the year and success, or otherwise, of the crop. Crop failures and harvests, though their immediate effects must have been incredibly traumatic, were short-term events. and even though those prices were of course not allowed beyond acceptable limits (the point at which government "stepped-in" to subsidize prices) once the crisis was over prices were expected to return to their original levels. This is clear from the long-term stability of wheat prices in the 1st to 3rd centuries – despite periodic shortages, the plagues of the Antonine and mid 3rd century periods, and periodic rebellions[950].

One final factor affecting any discussion of price in Egypt, in the 3rd century A.D. that stands outside the diagram of Polanyi's, "supply-" and "demand-crowds" must be that of government policy with regard to currency. Not only are the numbers of actual coins in circulation a factor in determining prices, but also the perception of the currency and its worth. In this area of the late 3rd century (from A.D. 275 – A.D. 299) there was significant change. For the first 10 years of his reign, Diocletian was content to mint Egyptian coins to the standards of his predecessors with a negligible amount of silver[951] but in A.D. 296 Diocletian introduced a new coin, the nummus (See Section 7.5, p.115 - 119).

The effect of this new coin on prices is not entirely clear but Diocletian would have had to decree that the new nummi and the debased post A.D. 274/5 reformed tetradrachms issued in his reign between A.D. 285 – 296 would need to be exchanged at a one-to-one rate[952] otherwise he would have reduced the value of all coin hoards and savings in his own earlier coins. Nummi and the post-A.D. 274/5 reformed tetradrachms of Aurelian would need to be exchanged at a one-to-one rate, otherwise the effect on public trust would have been significant. The reaction in Egypt for the new currency is hard to assess but it seems very possible that of the rebellion by Domitianus[953] in c. A.D. 297 - 8 occurred either prior to, or

[950] Duncan-Jones (1976a, p.241 – 262) provides a particularly good analysis that clearly demonstrates long periods of stability. Rathbone (1997, p.217 – 220) also notes this.
[951] See footnote 600, p.116.
[952] The evidence of papyri P. Isid. 81 and P. Sakaon. 58 would seem to suggest that the new nummus was immediately hoarded because if the wages in these papyri were paid using the new nummi the labourers would receive substantively more silver for their work than they had at the start of the A.D. 290s (Section 9.7, p.165).
[953] It is possible that the A.D. 294 – 96 reform and introduction of the nummus triggered the rebellion – particularly since Domitianus rejects the currency of Diocletian and mints his own, Greek-style tetradrachms, see Geissen (2012, p.557).

in response to, the currency reform[954]. This meant that the introduction of the nummus to Egypt was delayed until A.D. 299.

It is against this uncertainty that the A.D. 301 reforms of Diocletian must be understood. The evidence of this document suggests that in A.D. 299, in Egypt, wages were still to be agreed at pre-nummi rates, and as a result large amounts of silver were being exchanged for transactions that previously had required very little (Section 9.7, p.165). This is because the nummus was being exchanged on a par with the old reformed tetradrachm but had 20-times more silver per coin than the tetradrachms minted in the late A.D. 280s and early 290s. There was therefore an incentive to store a coin of 0.43 grams of silver and spend a coin of 0.01 grams of silver[955]. In A.D. 301 the value of the nummus was doubled and the face-value of the nummus was increased 2½-times from 5 denarii communes (20 drachmas) to 12 ½ denarii communes (50 drachmas)[956].This evidence has been taken as evidence by many scholars of inflation[957] but the upwards revaluations of the nummus would have been necessary to ensure that Diocletian's nummus was used as the coin of transaction, and not stored because of its superior silver content when compared with the debased tetradrachms from the first 10-years of his reign.

The effect of the currency revaluation on prices would have been seen in a change to the number of drachmas for an item. In order to ensure that items that were previously worth one or more tetradrachms continued to be worth one or more silver coins, items that had been previously worth one nummus (20 drachmas) in A.D. 297 - 301 would have to increase their worth in drachmas by 2½-times in order to be worth one of the new nummi. With the 2nd currency revaluation later in A.D. 301 the cost in drachmas of the same item would need to increase to 100 drachmas to be worth one nummus[958].

[954] Inscriptional evidence from Aphrodisias shows that the nummus was worth five denarii communes in A.D. 300 and that the neo-antoninianus (a coin that looked exactly like the "reformed" silver tetradrachms of Aurelian and Probus onwards, until the reform of A.D. 296-7, See Callu and Barringdon (2010a, p.290, n.20).
[955] Carson (1990, p.237 – 238); Cope *et al.* (1997, p.12).
[956] Harl (1985, p.263 – 270).
[957] Particularly since the Edict seems to have been withdrawn later the same year and the face-value of the nummus again doubled to 25 denarii communes, see Estiot (2012, p.548).
[958] These revaluations are well documented. See Abdy (2012, p.586); Estiot (2012, p.548); Carson (1990, p.237 – 238); Corbier (2008a, p.335).

**Table 58 Revaluation of the nummus as expressed in drachmas A.D. 299 – 305. Data from Estiot (2012, p.548 – 549); Harl (1985, p.263 – 269)**

| Date | bronze drachmas | tetradrachms/denarii | nummi | Increase |
|---|---|---|---|---|
| A.D. 290 – 299 | 20 | 5 | 1 | |
| A.D. 299 – 301 | 50 | 12 ½ | 1 | 2½x |
| A.D. 301 - 305 | 100 | 25 | 1 | 2x |

Table 58 (above) indicates that an item worth one silver tetradrachm (20 drachmas) in A.D. 297 would need to be revalued to 100 drachmas if it was to continue to be worth one new silver coin (a nummus). To determine if this is correct the following section considers the costs of wheat and barley in the 3rd century A.D., and how they were affected by the currency reforms.

## Section 11.4. Egyptian Wheat Prices A.D.300 - 305

Traditionally the evidence of wheat prices from Egypt in the 3rd century A.D. has been used to demonstrate price inflation at the end of the 3rd century A.D. The price of wheat, per *artaba* (Egypt) and per *modius* (outside Egypt)[959] is used as the main evidence for an inflationary increase at the end of the 3rd and start of the 4th centuries. This is because Egyptian private wheat prices are between 12 – 24 drachmas per *artaba* in the 3rd century and in A.D. 246 the single official price of wheat was c.24 drachmas per *artaba*. After A.D. 276 the official price of wheat seems to jump to 200 drachmas in A.D. 276 though the reading and dating of this is not entirely clear[960]; between A.D. 281 – 294 wheat continued between 200 – 300 drachmas per *artaba*; and within the Price Edict of A.D. 301 wheat cost 1,200 – 1,333 drachmas per *artaba* (See Table 59, p.198 for a full summary).

Egyptian wheat prices however must be used with caution firstly because the actual measure are not always clear[961], nor is it always clear if later prices reflect "market" costs or

[959] For a discussion of weights and measures see Duncan-Jones (1976b, p.53-62; 1976c, p.43 - 52). He notes that the late Roman *artaba* equated to 4 ½ *modii*. For other discussions on the size of the *modius castrensis* see Duncan-Jones (1976b, 44-45; 1976c, p.43 – 53). On the size of the *choenix*, *artaba* and *modius* see also Bagnall (2001, p.7 – 11). On a heavier *artaba* and with a restatement of the difficulties, see Bagnall (2009, p.186 – 187). On the *artab* sack see Mayerson (1998, p.189 – 194). From the Price Edict of A.D. 301 there is evidence of the variety of measures: a *pentamodia* or five *modius* tub, a one *modius* measure, and a wood bowl at ½ *modius*, see Tenney (1940, p.365).

[960] For the debate on O. Mich. 1.157 see footnote 562, p.110; and Appendix 4: Ostracon O.Mich. 1.157, p.241

[961] It seems that the *modius castrensis* was about ⅓ larger than the traditional Italian *modius* and so an Italian *modius* cost 66 ⅔ denarii under the A.D. 301 Price Edict that stated one *modius castrensis* was worth 100

state-controlled costs. Indeed the price of wheat on the market itself might have been affected by the need to provide the *annona* – not least the extension of the *annona* to every citizen of the Alexandrian class who had performed a liturgy[962], which might have, for example, reduced the amount of wheat for sale in the market place, or increased its price. Individual wheat prices were also subject to seasonal variations and the price of wheat per *modius*[963] fluctuated within the course of a year[964].

Outside Egypt the 3rd century evidence for the cost of wheat per *modius* is sparse and tends to be literary in nature. Sperber gives the cost of one *modius* of wheat from Palestine between A.D. 220 – 250 as one denarius (the cheapest) and four denarii (the most expensive). This cost is borne out by another third century literary reference. In Apollonius, Prince of Tyre, a fair price (as opposed to the famine price) for one *modius* is two denarii[965]. The costs in Apollonius Prince of Tyre must be considered with caution since it is a fanciful fiction but the story gives a subsidized cost of two denarii per *modius* that is not dissimilar to the cost one denarius per *modius* cited by Sperber[966]; and it is possible that this reflects the cost of wheat outside Egypt prior to A.D. 250.[967]. The evidence above does not imply that the prices have been significantly affected by inflation and this stability is mirrored in the wheat prices from Egypt (see below).

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denarii communes, see Pankiewicz (1985, p.171 – 182). Since there were 4 ½ Italian *modii* to the *artaba* then the cost of one *artaba* was 4 ½ times 66.67 denarii communes. This equals 1,200 drachmas to an *artaba* under the A.D. 301 Price Edict because the denarius equated to the tetradrachm, which in turn equated to four drachmas. One *artaba* in the Price Edict must therefore have cost c.1,200 drachmas. This is echoed by Bagnall (1989, p.69) who suggests that one *artaba* cost 1,200 – 1,333 drachmas.

962 Papyri P. Oxy. XL: 2903, 2906 - 2908, 2913, 2914, 2921 in Rea (1972, p.30 – 83).

963 Four *modii* of wheat would support a male for one month and 8 – 16 sestercii per month was therefore the basic cost, see Harl (1996a, p.271). This was 8 – 16 bronze drachmas per month (48 – 96 obols per month). 4 ½ *modii*, moreover equated to one *artaba* of wheat in Egypt, see Duncan-Jones (1976b, p.44-45).

964 Duncan-Jones (1976a, p.243) notes that there is a substantive difference between costs per *artaba* prior- and post-harvest. In A.D. 45 he notes a difference of between 4 – 8 drachmas per *modius*, depending on the time of the year. See also Rathbone (1997, p.217 – 220).

965 A date prior to A.D. 250 is suggested because of the comment in chapter 34: "The girl said: 'He gave me 40 gold aurei.' The young man said: '... how great he was, of a man so rich, if he gave to you a whole pound of gold' (puella ait: "quater denos mihi aureos dedit." iuvenis ait: "...quid magnum illi fuisset, homini tam diviti, si libram auri tibi daret integram?" (Author's translation). This tells us that at the time of composition a pound of gold was worth 40 aurei and dates the poem to 2nd quarter of the third century, perhaps around the time of Severus Alexander since gold coins were minted during his reign at 54 to the pound of gold, thereafter 69 to the pound in the A.D. 240s; and finally 100 to the pound during the joint reign of Valerian and Gallienus, see Duncan-Jones (1974, p.252). If this text does indeed date from the early – mid third century then official rates would mean one aureus (of Severan issue) would be worth 25 denarii. 40 aurei would therefore be worth 1000 denarii and 1.6 kg of silver.

966 Sperber (1965, p.251).

967 Duncan-Jones (1974, p.51) calculates the cost per *modius* of wheat outside Egypt from the following: Cost of wheat in Sicily (70s B.C), Cost per *modius* in sestercii: two – three sestercii or ½ - ¾ denarii; Cost of wheat in Pisidian Antioch (1st century A.D.), 2 ¼ sestercii or c.½ denarius; Cost of wheat in Sicca Veneria (late 2nd century), 2 ½ sestercii or ½ denarius.

The Egyptian data for wheat prices seems to indicate a steep increase in the prices for private transactions in wheat at the end of the third century from a private cost of c. 12 – 16 drachmas per *artaba*, to a single private cost 24 drachmas per *artaba* in A.D. 270 (that could be due to exceptional conditions as there are costs of 20 – 24 drachmas in the mid-A.D. 250s). After A.D. 275 it becomes harder to determine whether prices for wheat are "private" or official payments because we lack an extensive archive of private wheat prices. In terms of "official" prices there is only one mid 3rd century cost of 24 drachmas per *artaba* dating to A.D. 246, and an undated 40 drachmas per *artaba* cost. Thereafter all the costs and prices for wheat tend to be associated with official commutations of tax into cash and *annona* costs in contrast to the evidence of private transactions from the mid 3rd century. In A.D. 276, one *artaba* of wheat might have been 200 drachmas[968]; in A.D. 293 the cost of commuting the tax liability was at a cost of 300 drachmas per *artaba*. Further commutation of the tax liability occurred in A.D. 294 at a cost 216, 220, 228, 232 drachmas per *artaba*[969]. In early A.D. 301 we have a price per *artaba* of 640 drachmas (CPR VI.75), and in the same year we also have the official Price Edict maximum cost of 100 denarii per *modius castrensis* which equated to around 1,200 – 1,333 drachmas per *artaba*[970]. After this there are two more prices, a tax payment in A.D. 303 of 1,900 drachmas per *artaba*, and a final payment in A.D. 304/5 of 1,300 drachmas per *artaba*.

**Table 59 Mid.-late 3rd century wheat prices per *artaba* Rathbone (1996, p.331, 2); Duncan-Jones (1976a, p.241 – 262)**

| Date A.D. | Costs per *artaba* |
|---|---|
| 246 Official Price | 24 drachmas |
| 249 Private Contract | 24 drachmas |
| 250 Private Contract | 20 drachmas |
| 251 Private Contract | 20 drachmas |
| 252 Private Contract | 24 drachmas |
| 253 Private Contract | 16 drachmas |
| 254 Private Contract | 12 drachmas |
| 255 Private Contract | 16 drachmas |
| 259 Private Contract | 16 drachmas |

[968] Youtie (1945, p.144 – 147), though disputed and then restated by Bagnall (1992b, p.138, n.6). But for the debate on O. Mich. 1.157 see footnote 562, p.110; and see Appendix 4: Ostracon O.Mich. 1.157, p.241.
[969] Rathbone (1996, p.330).
[970] Bagnall (1989, p.69).

| | |
|---|---|
| 260 Private Contract | 16 drachmas |
| 263 Private Contract | 12 drachmas |
| 270 Private Contract | 24 drachmas |
| ?274 Official Price | 40 drachmas |
| ?276 Official Price[971] | 200 drachmas |
| 293 Official Price | 300 drachmas |
| 294 Official Price | 216, 220, 228, 232 drachmas |
| 301 (Price Edict) | 1,200 – 1,333 drachmas |
| 301 ?Official Price[972] | 640 drachmas |
| 303 Official Price | 1,900 drachmas |
| 304/5 Private Contract | 1,300 drachmas[973] |

Crucial to the analysis of prices is papyrus CPR VI.75[974] dating to A.D. 301 from Hermopolis. This papyrus dates to between 26 January - 24 January in A.D. 301 and records a sale of 640 drachmas per *artaba*. The Greek papyrus is very fragmented but translated as follows[975]:

> ...of corn *artabas*
> four being of grain
> *artabas* 8 [they] themselves having been reckoned
> at 6[?00?] drachmas [2nd hand] I have signed for
> 8 *artabas* of grain at 640 drachmas [apiece]
> (CPR VI.75) [976].

[971] For the debate on O. Mich. 1.157 see footnote 562, p.110; and see Appendix 4: Ostracon O.Mich. 1.157, p.241.
[972] This is CPR VI.75. It is possibly an official Price – based only on the formulaic structure of the text.
[973] Papyrus P.Oxy. XXXVI. 2798 in Coles *et al.* (1970, p.92). See Appendix 7: 4th century papyri with wheat prices analysed in text, p.312.
[974] Harrauer (1985, p.126); Bagnall (1989, p.69).
[975] Bagnall (1989, p.69).
[976] τιε[ -ca.?- ]
αμα. . .  [ -ca.?- σί(του) (ἀρτάβας)]
τέσσαρας γίν[(ονται) σί(του)]
(ἀρτάβαι) η λογισθ(εῖσαι) αὐ[ταὶ]
5 ἐκ (δραχμῶν) ς. .  (hand 2) ἐσημ(ειωσάμην) [σίτου]
ὀκτὼ ἀρτάβ(ας) ἐκ δραχ[μ(ῶν) ἑξα-]
κοσίων τεσσεράκοντ[α]
(hand 1) ιζ (ἔτους) καὶ ις (ἔτους) καὶ θ (ἔτους) Μεχ[εὶρ -ca.?- ]

The fragmentary nature means the some of the Greek is a little unclear however, the receipt line provides clarity: since a second person has signed for eight *artabas* at 640 drachmas apiece[977]. This interpretation is supported by Bagnall who points out:

> The editor offers some reserves about this reading, which appears in the note to line 5, but it is in my opinion correct; no other reading is both possible in itself and consonant with the rest of the text[978].

Bagnall argues that the figure of 600 – 640 drachmas per *artaba* is correct for the month of Mecheir (26 January to 24 February[979]) and this means that when the Currency Edict took effect in September 301 and the rate of denarii communes to the nummus doubled from 12 ½ – 25 denarii communes (50 – 100 drachmas)[980], the cost of one *artaba* of wheat doubled in A.D. 301 to between 1200 – 1280 drachmas[981]. Given that the maximum that an *artaba* of wheat might cost in the Price Edict[982] was 1,200 – 1,333 drachmas per *artaba* it would seem that this sale (private or official) of 600 – 640 drachmas per *artaba* was half the maximum value of wheat per *artaba* in the Edict. Interestingly given that this price is so close to the start of the year (when the nummus was revalued from five denarii communes to 12 ½ denarii communes[983]) it is possible to surmise that the price per *artaba* before A.D. 301 was c.240 – 253 drachmas per *artaba*, and interestingly this is very close to the figure per *artaba* in A.D. 294 and again suggests that the increases in wheat prices can be explained simply by revaluation rather than inflation.

**Table 60 Possible late 3rd century wheat prices based upon the evidence of CPR. VI. 75. Data from Bagnall (1989, p.69); Rathbone (1996, p.331, 2); Duncan-Jones (1976a, p.241 – 262)**

| Date A.D. | Costs per *artaba* |
|---|---|
| 293 Official Price | 300 drachmas |
| 294 Official Price | 216, 220, 228, 232 drachmas |

[977] The use of the preposition of "ἐκ" used throughout this papyrus (and others of this period) and seems to be used to denote items "apiece" or "at the price of".
[978] Bagnall (1989, p.69, n.6).
[979] The start of the Roman-Egyptian year was Thoth that fell on the 29th of August (30th in a leap-year). Sowing took place in November to January, and harvest began in April. For details of the farming year see Gazda (1983, p.3).
[980] See the evidence for the 2nd revaluation from Aphrodisias (footnote 802, p.164).
[981] Bagnall (1989, p.69).
[982] That the A.D. 301 Price Edict is was already in force in the early part of A.D. 301 see footnote 338, p.73.
[983] See Harl (1985, p.269) for 20 drachmas (or 5 denarii) to the first nummi.

| | |
|---|---|
| ?300 (possible price based on revaluation of CPR VI.75) | 240 - 253 drachmas |
| 301 (Price Edict) | 1,200 – 1,333 drachmas |
| 301 (papyrus CPR VI. 75) | 640 drachmas |
| 301 (possible price based on revaluation of CPR VI.75) | 1,280 drachmas |
| 303 Official Price | 1,900 drachmas |
| 304/5 ?Official Price | 1,300 drachmas[984] |

The estimated figure of 1,280 drachmas that is deduced from CPR VI.75. by applying the September A.D. 301 currency revaluation of the nummus is applied to the 640 drachmas in CPR VI.75 might be accurate. This is because this figure is not only close to the actual cost of the *artaba* in the Price Edict[985] but it also the actual cost of an *artaba* of wheat in purchased in A.D. 304/5 given in Papyrus (P.Oxy. 36. 2798).

Papyrus (P.Oxy. 36. 2798) dating to A.D. 304/5 gives a private contract for wheat with a price of 2,600 drachmas in silver for two *artaba* of wheat. The contract is a private contract between three bath-attendants. The text reads:

> Aurelius Munatius and Aurelius Ammonius, dressing-room attendants, to Aurelius Horion their fellow worker, greetings. We have received from you for the price of two *artabas* of corn, (being) (*artabas*) 2, of silver drachmas 2000 <400>, (being) (drachma) 2400. Year 13 and 1 of our lords Constantius and Galerius, Augusti, and Severus and Maximinus most noble Caesars. (Hand 2) We Aurelius Munatius and Aurelius Ammonius have received as aforesaid. I Aurelius Didymus wrote on behalf of them because they do not know letters." (P.Oxy XXXVI, 2798)[986].

Papyrus P.Oxy. 36. 2798 (dating to A.D. 304/5) gives a cost for one *artaba* of wheat as 1,300 drachmas and is significant because the maximum cost for one *artaba* of wheat in the Price Edict of A.D. 301 was 100 denarii communes[987], and this equates to c.1,200 – 1,333 drachmas[988]. Although the Price Edict seems to have lapsed in late A.D. 301 the price in this

[984] Papyrus P.Oxy. XXXVI. 2798 in Coles *et al.* (1970, p.92); see Appendix 7: 4th century papyri with wheat prices analysed in text, p.315.
[985] Bagnall (1989, p.69).
[986] Translation in Coles *et al*. (1970, p.92).
[987] Giacchero (1974, p.138).
[988] Bagnall (1989, p.69).

private transaction has not increased beyond the A.D. 301 value for the Price Edict. It corresponds, moreover, closely to the price of 1,200 – 1,280 drachmas based on an estimated doubling of 640 drachmas given in CPR VI.75 when the currency revaluation is applied. The significance of this is that in September A.D. 301 the value of the nummus to denarii communis was again doubled from 12 ½ to 25 denarii communes to the nummus, and this seems to be demonstrated by these private wheat prices. More interesting is that the private cost of one *artaba* of wheat in A.D. 304/5 has not altered since the private transaction of 640 drachmas (in A.D. 301), and also continues to reflect the maximum cost per *artaba* of wheat from the lapsed Price Edict of A.D. 301 – long since lapsed. This is surely clear evidence that wheat prices are not increasing at an inflationary rate.

The only other evidence for wheat costs per artaba between A.D. 300 and 305 is an ostrakon from Thebes dating to A.D. 303 (O.Bodl.2.2062). This gives a slightly higher priced per *artaba* of wheat than either the official cost (of 1,200 – 1,333 drachmas) or the cost of 1,300 drachmas in papyrus (P.Oxy. 37. 2798). The text reads

> The woman Loloutos, of [?παστ(οφόρου)?] has given on account of the expense of corn. She has supplied it in the market, the payment for each *artaba* being of silver denarii four-hundred and seventy-five. Year 20 and year 19 and year 12. Choiak 22. [Hand 2] Eudaimon signed (Author's translation[989]).

The fact that the cost per *artaba* is in denarii suggests that this is some sort of official payment, the cost of which can be calculated as 1,900 drachmas[990]. This would seem to indicate an inflationary increase in the price of wheat per *artaba* but it is necessary to be cautious because the date of the transaction is the month of Choiak which works out as the 19th of December. Given the date and price, the evidence of this ostrakon (O.Bodl.2.2062) should not be considered as evidence of increasing prices but actually part of the normal

[989] γυ(νὴ) Λολοῦτος παστ(οφόρου) διέγ(ραψεν) ὑπ(ὲρ) διάφορου
σίτου οὗ παρέσχεν πρὸς τὴν ἐπ' ἀγο-
ρᾶς τιμὴν ἑκάστης (ἀρτάβης) με ἀργυ(ρίου)
(δηνάρια) τετρακόσια ἑβδομήκοντα πέντε
(ἔτους) κ καὶ (ἔτους) ιθ καὶ (ἔτους) ιβ Χοίακ κβ.
(hand 2) [Εὐδα]ίμων σεσημίωμαι
Greek text hosted a http://papyri.info/ddbdp/o.bodl;2;2062 [Accessed 15/02/2014]; see also Appendix 7: 4th century papyri with wheat prices analysed in text, p.313.

[990] There were four drachmas to one tetradrachm. See Bagnall (2009, p.190); Corbier (2008a, p.338); Harl (1996a, p.120).

seasonal variation of wheat prices. Since the harvest does not commence until April this ostrakon relates to a time of the year when prices could be much higher due to scarcity. Harl[991] notes that the price of wheat in early spring price could rise to 6 – 10 times its normal value even in times of plenty like A.D, 45/46., and that the price per *artaba* varied between 1 – 2 tetradrachms per *artaba* within a single year, a point also noted by Duncan-Jones and Bagnall[992]. If prices are indeed so variable it would suggest that a price could double to around 2,400 – 2,667 drachmas within the course of a given year.

The costs per *artaba* of wheat in 3rd-century point to stability in price at the start of the 4th century since the private cost per *artaba* of wheat in A.D. 304/5 has not exceeded the "official" price in the 301 Price Edict. Moreover the increases and revaluation would seem to suggest that in terms of the silver coins per *artaba*, there has only been a 4-5 fold increase since the mid 3rd century, and that the revaluation of the currency in September A.D. 301 was successful in ensuring that the number of silver coins paid per *artaba* in A.D. 304/5 had not increased since A.D 301.

**Table 61 Number of silver coins payable per *artaba* of wheat. Data from Bagnall (1989, p.69-70); Rathbone (1996, p.331, 2); Duncan-Jones (1976a, p.241 – 262)**

| Date (A.D.) | Cost per *artaba* | tetradrachms / nummi |
|---|---|---|
| Mid 3rd cent. | c.12 – 16 drachmas | 3 – 4 tetradrachms[993] |
| 276 | 200 drachmas | 8 "reformed" tetradrachms[994] |
| 293 | 300 drachmas | 15 "reformed" tetradrachms[995] |
| 294 | 216 – 232 drachmas | 10.8 – 11.6 reformed" tetradrachms[996] |
| 301 | 640 drachmas | 12.8 nummi[997] |
| 301 (Price Edict) | 1,200 drachmas | 24 nummi[998] |
| 303 | 1,900 drachmas | 19 nummi[999] |

[991] Harl (1996a, p.277).
[992] Duncan-Jones (1976a, p.241 – 263); Bagnall (1989, p.70 – 71).
[993] Four drachmas to each tetradrachm. For the parity of the denarius to the Egyptian tetradrachm see Bagnall (2009, p.190); Corbier (2008a, p.347); Christiansen (2004b, p.43 – 44); Howgego (1985, p.52); Geissen (2012, p.563); Rathbone (1996, p.325 – 326); Van Minnen (2008, p.226).
[994] Eight drachmas to the "reformed tetradrachm".
[995] Perhaps 20 drachmas to the "reformed tetradrachm".
[996] Perhaps 20 drachmas to the "reformed tetradrachm".
[997] 50 drachmas to the nummus.
[998] 50 drachmas to the nummus.
[999] 100 drachmas to the nummus.

| | | |
|---|---|---|
| 304/5 | 1,300 drachmas | 13 nummi[1000] |

This is evidence of the continuing stability of prices at the end of the 3rd and the opening years of the 4th centuries A.D.

**Section 11.5. How much would this cost a labourer?**

Chapter 6 (p.82) demonstrated that there was no increase in the daily wage paid to Ox- and Ass-drivers between A.D. 235 and A.D. 269 in Egypt, despite the collapse in the silver content of the currency; while Chapter 7 - 9 (p101 -170) demonstrated that between A.D. 274/5 and A.D. 299 the daily wage for labourers had increased so that between A.D. 294 and A.D. 299 the daily rate of pay for work rose to around 200 – 240 drachmas per day. It would seem that this increase occurred around A.D. 289/90 though it is not clear if this increase was in response to Diocletian's reforms or some other factor.

To determine how far a labourer could have afforded a month's supply of wheat it is necessary to compare the wages at the end of the 3rd century with the cost of wheat. In the words of Duncan-Jones[1001]:

> "purchase power of precious metal is not constant [price affected by] many differences in ancient spending patterns and modern price structure. The only valid index of purchase power of ancient money is provided by prices and wages"

The evidence of wages and wheat costs can be compared to determine the purchasing power of wages in the late 3rd-century. The comparison is as follows:

**Table 62 Wages and wheat costs in drachmas (late 3rd-century A.D.) Data elaborated from the tables prepared by Bagnall (1989, p.69); Rathbone (1996, p.331, 2); Duncan-Jones (1976a, p.241 – 262)**

| Date (A.D.) | Labouring wage per day | Private cost wheat of per *artaba* | Official cost wheat of per *artaba* |
|---|---|---|---|
| Mid 3rd cent. | 2 – 4 drachmas | c.12 – 16 drachma | c.24 drachma |
| 275 | 8 drachma? | Not known | Not known |
| 276 | 8 drachmas? | Not known | 200 drachmas?[1002] |

[1000] 100 drachmas to the nummus.
[1001] Duncan-Jones (1974, p.11).

| | | | |
|---|---|---|---|
| 286 | 4 - 8 drachmas[1003] | Not known | Not known |
| 293 | Not known | Not known | 300 drachmas |
| 294 | 133.33 drachmas?[1004] | Not known | 216 – 232 drachmas |
| 297 | 200 drachmas | Not known | Not known |
| 299 | 240 drachmas | Not known | Not known |
| 301 | 100 drachmas | Not known | 640 drachmas |
| 301 (Price Edict) | 100 drachmas | Not known | 1,200 – 1,333 drachmas[1005] |
| 303 | Not known | Not known | 1,900 drachmas |
| 304 | 120 drachmas | Not known | Not known |
| 305 | 120 drachmas | 1,300 drachmas | Not known |

The date above would suggest that in the mid 3rd century a month's supply of wheat (an *artaba*) cost between six or eight day's work in a private sale (if the wage is two drachmas per day), and between three or four day's work in private sale (if the wage is the standard day-rate of four drachmas); moreover the official rate of 24 drachmas per *artaba* would require six day's work for a labourer on the standard day-rate of four drachmas per day, and 12 day's work if they were earning two drachmas per day. For the labourers in A.D. 286 it would seem that that one *artaba* might have cost between 25 - 50 day's work but these are estate workers and it is possible that they were paid at a lower rate and supported by maintenance. The "official" cost per *artaba* in A.D. 276[1006] and the 290s varied between 200 – 300 drachmas. One day's work in A.D. 293, 297 and 299 was variously 133[1007], 200[1008] and 240[1009] drachmas per day. It would therefore seem that in the A.D. 290s an *artaba* of wheat might have cost around one or two days' wages (at least until early A.D. 301 when we have a cost of 640 drachmas per *artaba*). Given that the daily wages in A.D. 297 and 299 are still around 200 – 250 drachmas per day it is possible that an *artaba* of wheat cost at most three day's work, much as it did in the mid 3rd century.

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[1002] For the debate on O. Mich. 1.157 see footnote 562, p.110; and see Appendix 4: Ostracon O.Mich. 1.157, p.241.
[1003] Based in P.Wash.Univ.1.18.
[1004] This is the daily wage for a "chaff collector", so not really a labourer (but included as it marks a point when after which higher day rates are agreed for labourers).
[1005] This is the maximum cost in the Price Edict.
[1006] Bagnall (1999, p.330); Duncan-Jones (2002, p.152) but this is not entirely clear. For the debate on O. Mich. 1.157 see footnote 562, p.110; and see Appendix 4: Ostracon O.Mich. 1.157, p.241.
[1007] 133.33 drachmas per day for a chaff collector in papyrus P. Oxy. LXVII 4597 in A.D. 294.
[1008] See P. Cair. Isid. 81.
[1009] See P. Sakaon 58.

In the A.D. 301 Price Edict it would seem that the maximum cost of an *artaba* of wheat was increased to about 12 day's work (based upon a daily wage of 100 drachmas per day[1010]). Since the cost of one *artaba* of wheat in a private transaction of A.D. 304/5 was 1,300 drachmas it would mean that the *artaba* cost c.11 day's work[1011], indicating that it had not substantively increased since the official prices in A.D. 301.[1012] In terms of percentages it would seem that in the mid. 3rd century a labourer on a day rate of one tetradrachm per day, buying a month's supply of wheat (one *artaba*) at 12 drachmas, would spend 40% of his monthly income on a private purchase of wheat. By comparison the tapestry weaver would expend 36% of his monthly wage on a month's supply of bread from a "private" source[1013].

By A.D. 301 given that the drachma was only a notional unit of reckoning during this period it is instructive to compare the number of silver-coated coins (either pre-A.D.275 tetradrachms, post A.D. 275 reformed tetradrachms, and nummi) that were paid for an *artaba* of wheat.

**Table 63 Wages and wheat costs in silver-coated coins (late 3rd-century). Data from Chapter 8 (p.119 - 178); P. Oxy XXXVIII 2859; Papyrus P. Oxy. LXVII 4597; Bagnall (1989, p.69); Rathbone (1996, p.331-332); Duncan-Jones (1976a, p.241 – 262)**

| Date (A.D.) | Labouring wage per day | Private cost of wheat per *artaba* | Official cost of wheat per *artaba* |
|---|---|---|---|

[1010] Though this included maintenance so the amount of wheat a labourer required per month might be slightly less. See Allen (2007, p.3) on the value of the food maintenance and wage in Price Edict. He considers the wage, with maintenance, converted into currency to be 25 – 36.1 denarii per day. Duncan-Jones (1974, p.11) considers wages in the Price Edict and compares that the lowest wage of Price Edict to the wages of slaves in the 1st century A.D. who earned 20 sestercii and five *modii* per month. This equated to one part in kind and 1-2 parts in cash while in the 3rd century A.D. the equivalence was one part in kind and 1 ½ - 3 cash so that the *modius castrensis* was worth 250 – 500 denarii per *modius* (subject to the measures used).

[1011] Based upon the daily wage of 120 drachmas in papyrus P.Oxy. LXIII, 4353 for the tapestry weaver in A.D. 304/5, and papyri P. Oxy. VI. 895, for the labourers in A.D. 305.

[1012] The ostrakon (O.Bodl.2.2062) from A.D. 303 indicates a higher seasonal price. The price itself is within the fluctuations that seen in the mid-3rd century yearly fluctuations, and indicates that in December the price of wheat per *artaba* would have cost 19 day's wages.

[1013] See Groen-Vallinga and Tacoma (2013, p.29 – 31) for an account of how a labourer might spend his maximum wage under the A.D. 301 Price Edict. See also Allen (2007, p.4 – 9) who argues that a wages in the Edict were low, and that an unskilled labourer could only buy 56% of a "respectability basket" of goods that consists of bread, beans or lentils, meat, oil, cheese, eggs, wine, soap, linen, candles, lamp oil and fuel; but 110% of a "bare-bones" basket of goods that consists of wheat, beans or lentils, meat, oil, soap, linen, candles, lamp oil, and fuel. Scheidel (2010, p.433)by contrast argues that an unskilled rural labourer could buy only 25–50 % of the respectability basket or 70–90 of the bare bones basket, based on Egyptian prices rather than the rates in the A.D. 301 Price Edict.

| | | | |
|---|---|---|---|
| Mid 3rd cent. | ½ - 1 tetradrachm | c.3 – 4 tetradrachms | c.6 tetradrachms |
| 276 | Not known | Not known | 25 reformed tetradrachms[1014] |
| 286 | ½ - 1 reformed tetradrachm | Not known | Not known |
| 293 | Not known | Not known | 10 reformed tetradrachms |
| 294 | 6.3 – 8.6 reformed tetradrachms[1015] | Not known | c.11 – 12 reformed tetradrachms |
| 297 | 10 nummi | Not known | Not known |
| 299 | 12 nummi | Not known | Not known |
| 301 | 2 nummi | 12.8 nummi | 24 nummi |
| 303 | Not known | Not known | 19 nummi |
| 304/5 | 1.2 nummi | 1,300 nummi | 13 nummi |

The data above would suggest that in terms of the coins paid to labourers and similar professions like ass-drivers, the cost of one *artaba* of wheat had increased from six silver-coated coins (in the mid 3rd century) to 12 silver-coated nummi by A.D. 303[1016] (with a peak of 24 silver-coated nummi in A.D. 301). In terms of difference, this is a four-fold increase between the mid 3rd century, and the A.D. 301 Price-Edict[1017]. Thereafter in A.D. 303 and 304/5 the increase on the numbers of silver-coated coins paid per *artaba* on those of the mid 3rd century A.D. is actually only a two-fold or three-fold increase.

### Section 11.6. Barley

Barley was another staple crop of the Roman Empire – as useful for animals as it is for humans. For an analysis of price, it is useful because a second, smaller, list of prices per

[1014] For the debate on O. Mich. 1.157 see footnote 562, p.110; and see Appendix 4: Ostracon O.Mich. 1.157, p.241.

[1015] The wage of a chaff collector, and though not strictly a labouring wage, included as it marks the point after which much higher day wages for labourers are agreed.

[1016] It is possible that the high day rates in A.D. 297 and 299 might have accounted for the high cost of wheat though there is no evidence in the contract that this is the case.

[1017] An excellent example of the A.D. 301 Price Edict in operation can be seen in papyrus P.Sakaon 95, dating to June 25th – July 24th in A.D. 301. This papyrus records a sale (possibly a private sale) of 37 pounds of clean spun wool for 3,000 drachmas (papyrus P.Sakaon 95)

This can be compared to the price in the Edict of A.D. 301. In the Price Edict there five types of wool: wool of Tarentum (1 pound, washed): 175 denarii communes; wool of Laodiceia (one pound, washed): 150 denarii communes; wool of Asturia (one pound, washed) 100 denarii communes; wool of best middle quality (1 pound, washed) 50 denarii communes; wool of all other [types] (1 pound, washed) 25 denarii communes, see Tenney (1940, p.384 – 385).

The 3,000 drachmas in papyrus P.Sakaon 95 amounts to 750 denarii communes for 37 pounds. By dividing the 750 denarii communes by the 37 pounds of wool a price can be calculated of 20.3 denarii communes per pound of wool. Interestingly this corresponds the figure of 25 denarii communes to the pound, the lowest rate for wool in the Price Edict. The Greek text is hosted at http://papyri.info/ddbdp/p.sakaon;;95 [Accessed 19/02/2014]. See also (Parássoglou, 1978 p.219 -212).

*artaba* is preserved. These can be compared with the cost of barley in the Price Edict, and therefore as a test for the analysis of wheat

**Table 64 Costs for Barley per *artaba*. Data from Lendon (1990, p.110 – 111)**

| Date (A.D.) | Cost per *artaba* | Cost per *artaba* (in silver) |
|---|---|---|
| 45/6 | 4 drachmas[1018] | 1 tetradrachm |
| 192 | 10 drachmas, 1 obol[1019] | c.2 ½ tetradrachms |
| 284 | Minimal: 100 drachmas[1020] | 12 ½ "reformed" tetradrachms[1021] |
| 301 (Price Edict) | 1,200 – 1,333 drachmas[1022] | 24 nummi |

Although there is less of a sequence of prices, the cost of barley, is consistent with pattern observed for wheat. In the 3rd century the cost per *artaba* (assuming the same measures were used as were used for wheat) was one or two day's work. By A.D. 284 there is a figure of 100 drachmas per *artaba* and this means that one *artaba* of barley in A.D. 284 cost a minimum of five day's work. Unsurprisingly the price per *artaba* is a standardized with the cost of wheat in the A.D. 301 Price Edict[1023].

## Section 11.7. Conclusion

In conclusion, the period between A.D. 300 and 305 was marked by some wage and price stability; and the economic reforms of Diocletian seemed to have ensured some stability during this period.

[1018] Papyrus P.Mich 127 in Johnson (1936, p.312); Lendon (1990, p.110 – 111).
[1019] See Lendon (1990, p.109 – 111).
[1020] Papyri P.Sakaon. 94 gives a cost for the sale of barley in A.D. 284, see Parássoglou (1978, p.209 – 210). The payment is 3,000 drachmas for the remainder of the price of 30 *artaba*e. This means that 1 *artaba* of barley in A.D.284 sold for a minimum of 100 drachmas, or five reformed tetradrachms. Given that this "λοιπὰς τειμῆς" or the "remainder of the price" the price per *artaba* would have been higher.
[1021] There would seem to be eight drachmas to the post A.D. 274/5 reformed tetradrachm, see Estiot (2012, p.549 – 551; see also Section 9.7, p.165 - 170).
[1022] This is the price in Diocletian's Price Edict of 100 denarii communes per *modius castrensis*, see Tenney (1940, p.318), and more recently (Giacchero, 1974 p.138-139). The *modius castrensis*. To make a comparison the cost in the A.D 301 Price Edict needs to be converted into a comparable unit: that *artaba* that is worth 4.5 *modii*. Since the Italian *modius* was only 66.67 denarii communes (as opposed to the 100 denarii communes for a *modius castrensis*) we see a figure in the Price Edict of 300.01 denarii communes (or 1200.06 – 1,333 drachmas).
[1023] The same measure is even used: the *modius castrensis* which is a ⅓ larger than the old Italian *modius*.

In terms of wages the Price Edict successfully halved the day rate payable to labourers and other low-skilled professions. In the case of labourers day rates in A.D. 297 and 299 were respectively 200 drachmas, and 240 drachmas per day. The A.D. 301 Price Edict and 1st currency reform (prior to A.D. 301)[1024] effectively limited the daily wage at 100 drachmas, whilst reducing the number of silver coins paid to workers from 12 nummi (in A.D. 299) to two nummi per day. This reduced the number of silver-coated coins paid to the mid 3rd century and A.D. 275 rates of about one silver-coated coin per day. Thereafter the 2nd currency reform[1025] in late A.D. 301 again reduced the daily rate to one silver-coated coin per day. The evidence that these acts were successful (at least until A.D. 305) can be seen in two papyri: the private contract between the weaver and the workshop owner contracting the weaver for 120 drachmas per day (without maintenance) in A.D. 304/5, and the rate of 120 drachmas paid to workers in A.D 305.

This stability is mirrored in the prices for wheat which are still within the A.D. 301 Price Edict levels, even in the private transaction of A.D. 305 where one *artaba* of wheat costs 1,300 drachmas which is roughly the same as one *artaba* of wheat cost in the lapsed Edict of A.D. 301. Clearly this indicates that, whilst they fluctuate, prices are remaining stable at a new level; or they are still being controlled, even in private transactions, despite the lapse of the Price Edict.

By contrast after the sequence of private transactions there is only a single private cost for wheat – that of A.D. 305 between the locker attendants, and this is sold at the "official" price. It is not clear that the official price is substantively different to the "private" price; and those "inflated" official prices can be accounted for by revaluation. For example the cost in A.D. 301 of 640 drachmas per *artaba* which is subject to the A.D. 301 revaluation of the nummus from five denarii communes to 12 ½ denarii communes is only double the cost of an *artaba* of wheat in the A.D. 290s. Clearly the price remains the same, and it is being revalued upwards. Moreover the 640 drachmas per *artaba* would match the maximum allowable under the Price Edict of the second revaluation of A.D. 301 were applied.

[1024] When the nummus was revalued from 5 denarii communes to 12 ½ denarii communes, see Harl (1996a, p.151, 155).
[1025] When the nummus was revalued from 12 ½ denarii communes to 25 denarii communes, see Estiot (2012, p.548).

# Chapter 12. Overall Conclusions

This research has examined the theory that the period between A.D. 235 and 299 was a period of inflation[1026]. The importance of this research is that it attempts to explain the price increases in Egyptian papyri after A.D. 274/5 without the presumption of inflation.

Scholars like Rathbone[1027] have already made the suggestion that the reforms of Aurelian in A.D. 274 meant the Egyptian tetradrachm was revalued to correspond with his new currency outside Egypt. This is because there is a significant increase in the notional cost of wheat at this time, but the actual value of the tetradrachm after A.D. 274/5 is not clear[1028]. This is important because an understanding of the value of the Egyptian tetradrachm relative to the bronze drachmas in A.D. 274/5 means that the value of the wage agreements (which are expressed in drachmas) can be understood in terms of the number of silver coins to be exchanged. Knowing the number of tetradrachms to be exchanged it is possible to apply the data for chemical analysis of the Egyptian tetradrachm by Cope[1029] to determine if the wage agreements reflect the amount of silver in the currency. By therefore considering the number of silver coins paid for work between A.D. 274/5 and 305, and the silver content of this coins, this research attempts to provide direct evidence as to how wages are responding to the changes to the currency between A.D. 235 – 305.

## Section 12.1. Results A.D. 235 - 275

Section 6.1 analysed wage agreements for potters between A.D. 243 – 274/5[1030]. During this period the silver content of the tetradrachm was debased from c.0.82 grams of silver in A.D. 243, to c.0.67 grams of silver by A.D. 260[1031], but the wage paid to the potters

[1026] This is because standard accounts of the economic inflation of the 3rd century A.D. in Egypt are based on the inference that prices rose in accordance with the debasement of the Egyptian tetradrachm, see Rathbone (1996, p.330 -331) and that the reforms of Aurelian in A.D. 274/5 saw an inflationary increase in wheat prices, either due to the reforms themselves, or because they reflect the increased cost of wheat due to the debasement of the currency, see Cope *et al.* (1997, p.12).
[1027] Rathbone (1996, p.330 - 331).
[1028] Bland (2012, p.655 – 662); Estiot (2012, p.549 – 500); Corbier (2008a, p.343); Cope *et al.* (1997, p.12); Harl (1996a, p.151, 155).
[1029] Cope *et al.* (1997, p.12).
[1030] The three pottery contracts: P.Oxy. L.3595 (dating to A.D. 243); P.Oxy. L.3596 (dating to A.D. 245 – 55) and P.Oxy. L.3597 **(**dating to A.D. 260) span the middle-years of the 3rd century A.D., between A.D. 243 and A.D. 260.
[1031] Cope *et al.* (1997, p.12).

in the contracts did not change to reflect the debasement of the currency[1032] (see Section 6.2, p.86 - 87). This consistency in wages indicated that in these contracts the tetradrachm was still being exchanged at its face-value, rather than its silver content; and that this is evidence that in these mid 3rd century contracts the wage rates were not being affected by currency debasement and inflation.

This result is also demonstrated by the analysis of ass and ox-drivers in Section 6.3 (p.87 - 92) which analyses wage agreements for ass and ox-drivers between A.D. 235 - 269[1033]. The results demonstrate that the standard daily wage for ass and ox-drivers in the 3rd century was four bronze drachmas, or one-silver tetradrachm; and that this was the standard daily wage for any hired labour in the 3rd century. The importance of this standard wage of four drachmas (or one silver tetradrachm) is that this was the standard wage until at least A.D. 268, regardless of the debasement of the currency[1034]. This stability of wage payments is further evidence that the Egyptian tetradrachm was being exchanged at its face-value, rather than its silver content, during this period. This is evidence for continued economic stability during a period that is traditionally supposed to be affected by inflation[1035]. Further evidence of this stability can be seen in the wages paid to apprentice linen-weavers.

Section 6.4 (p.92) analyses wage agreements for linen-weavers in the 3rd century. The detail contained within these contracts allowed an analysis of the wages paid in the final year of the apprenticeship, and also the penalty for a breach of contract, to be made. Interestingly the date-range of the contracts, between A.D. 66 and 272 demonstrate that Egyptian tetradrachms were being exchanged at their face-value within wage agreements, rather than the silver content of the currency which collapsed during this period[1036]. This is because the monthly wage paid in the final year of the apprenticeship remains consistent between A.D. 66 and A.D. 271. In A.D. 66 the monthly wage is 20 drachmas, and in c.A.D. 271 the monthly

[1032] This is because in contract P.Oxy. L.3595 (A.D. 243) the potter was paid 32 drachmas per 100 *ceramia*-jars; in contract P.Oxy. L.3597 (A.D. 260) the potter was paid 32 drachmas per 100 *ceramia*-jars.
[1033] Ass and ox-driver contracts have been extensive studied by Drexhage (1991, p.345 – 347) and Rathbone (1991, p.148 – 174). These contracts cover a period of time in the 3rd century that saw debasement, see Cope *et al.* (1997, p.12), possible plague, see Bagnall (2000, p.288 – 292) and the rebellion of Quietus, see Abdy (2012, p.589) and Geissen (2012, p.557). Given that the number of bronze drachmas to the Egyptian tetradrachm prior to A.D. 274/5 is well known, see Cope *et al.* (1997, p.12) it is therefore possible to determine whether wages increased in response to the debasement of the currency, and other problems of the 3rd century A.D.
[1034] Cope *et al.* (1997, p.12).
[1035] See footnote 5, p.16.
[1036] This is because between A.D. 66 and c. 271 the silver content of the Egyptian tetradrachm fell from 2.21 grams of silver per coin in A.D. 66, to 0.2 grams of silver per coin in A.D. 271, see Cope *et al.* (1997, p.12), and yet their wages have not altered.

wage is still 20 drachmas, or five tetradrachms[1037]. The monthly wage has therefore remained unaltered despite a decline in the silver[1038]; indeed the only increase visible in these contracts is the fine, which doubles from 100 drachmas to 200 drachmas between A.D. 66 and 270[1039]. The stability of wage payments and penalty clauses in these contracts is further evidence that prior to A.D. 274/5 the Egyptian tetradrachm was being exchanged at its face-value, rather than its silver content. This is indicative of economic stability until the reforms of Aurelian in A.D. 274/5, rather than inflation. The results of this study can be demonstrated by the following graph (Figure 18, p.212) that plots the wages for potters, ass and ox-drivers, and apprentices against the silver content of the tetradrachm. If there is uncertainty over a given date the "range" is given, for example the silver analysis of the tetradrachm can only be loosely dated to A.D. 238 – 244.

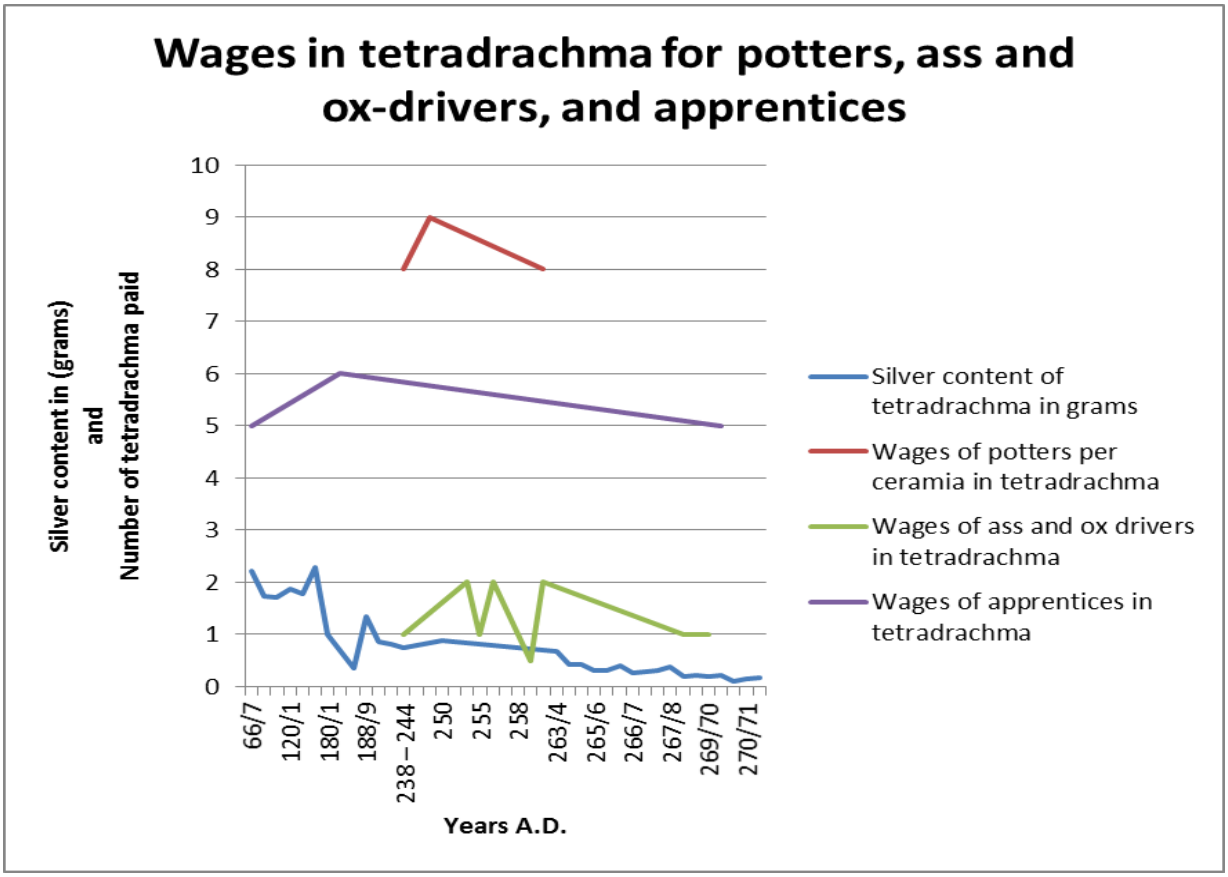


**Figure 18 Wages of potters, ass and ox-drivers, and apprentices prior to A.D. 274/5. Data from Cockle (1981, p.87-97); Cope *et al.*(1997, p.12); Drexhage (1991, p.345 – 347); and interpreted in Chapter 6**

[1037] There were four bronze drachmas to the Egyptian tetradrachm prior to A.D. 274/5, see Corbier (2008a, p.347); Howgego (1985, p.52).
[1038] The decline in the silver content of the currency was from 2.21 grams of silver per coin in A.D. 66, to 0.2 grams of silver per coin in A.D. 274/5, see Cope *et al.* (1997, p.12).
[1039] This doubling is consistent with the evidence across a range of commodities that some sort of revaluation occurred in A.D. 180 – 190, see Rathbone (1996, p.330 - 331). This revaluation occurred perhaps as a result of plague Howgego *et al.* (2013, p.26); Kehoe (2012, p.114).

The graph shows that despite the debasement of the currency in terms of wages for potters, ass and ox-drivers, and apprentices, there was no corresponding increase in pay in proportion to the degree of debasement.

The reasons for the lack of wage increase, despite the debasement of the currency are not clear. Why did wages not respond to the debasement of the Alexandrian tetradrachm prior to its reform in A.D. 274/5? It is possible that emperor guaranteed the acceptance of his coins and enforced their exchange and acceptance. An alternative possibility is that the aristocracy and elites kept the "good" silver coins and made payments in debased silver coins; forcing their contractors to accept those coins. Since there does not seem to be any corresponding maintenance increase in payments prior to A.D. 274/5 it is necessary to accept that perhaps commodity prices were similarly unaffected (or slow to be affected by the debasement). This suggests that for day-labourers like ass and ox-drivers their debased wages were still sufficient to purchase necessary commodities like grain, wine, vegetables and oil; even prior to A.D. 274/5. For Egypt at least, this might be because the main period of debasement happened in A.D. 266/7, and that in Egypt the silver content of the tetradrachm had actually been stable since A.D. 268[1040].

**Section 12.2. Results A.D. 275 - 299**

This research sought to determine the impact that the reforms of Aurelian had on wages in A.D. 274/5 – A.D. 299. The reason for considering this period is that the papyrological evidence seems to show a significant leap in the cost of wheat (in A.D. 276[1041]) however this leap is based only on one wheat price prior to A.D. 293[1042]. As a result it was determined to study viticulture labour contracts since they provide a short sequence of contracts and wage agreements between A.D. 269/77 – A.D 299[1043].

[1040] Cope *et al.* (1997, p.12); and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235
[1041] For the debate on O. Mich. 1.157 see footnote 562, p.110; and see Appendix 4: Ostracon O.Mich. 1.157, p.241.
[1042] Other costs like those of houses are more subjective and based on perceptions of value or location, while the cost of horses shows that prices ascribed to post A.D. 274/5 period were paid in the 1st century A.D.
[1043] These are contracts P. Col. 10, 280 dating to A.D. 269/77; P. Oxy. XIV 1631, dating to A.D. 280; P.Laur. 4 166 dating to A.D. 289-290; and PSI XIII, 1338 dating to A.D. 299. A detailed viticulture-labour agreement, contract P. Oxy XLVII, 3354 (dating to A.D 257) also survives that pre-dates the reforms of Aurelian and the major currency debasement of the 3rd century A.D. The data from this contract was used to analyze the post-A.D. 274/5 viticulture labour contracts.

The analysis of these viticulture labour contracts is striking. In terms of the total wages paid between A.D. 257 and A.D. 269/77[1044] there is little increase in the overall wage. This is because the wage in A.D. 257 is 2,160 drachmas and the wage in A.D. 269/77 is probably 2,800 drachmas. If contract P. Col. 10. 280 dates to A.D. 277 it shows that wages had not substantively changed between A.D. 257 and A.D. 277[1045], despite the currency reforms of Aurelian in A.D. 274/5. This is particularly surprising since the reforms of A.D. 274/5 are argued to have led to price and wage increases[1046]. If Estiot[1047] is correct to argue that from A.D. 274/5 there are eight drachmas to each reformed tetradrachm of Aurelian, then we would expect the number of drachmas in the contract to have increased two-fold. If, by contrast Harl[1048], is correct to argue that there were 20 drachmas to each post A.D. 274/5 reformed tetradrachm of Aurelian then we would have expected the wage to increase five-fold. If contract P. Col. 10.280 does indeed date from A.D. 277 then the slight difference between the total wage in A.D. 277 of 2,800 drachmas, and the wage in A.D. 257 of 2,160 drachmas, would suggest any of the drachma-tetradrachm relationship was small. The application of Estiot's theory[1049] means that 27 ½ post A.D. 274/5 reformed tetradrachms were paid to the lessees in A.D. 277 (P. Col. 10.280), and the number of silver tetradrachms paid to the lessee in A.D. 257, in contract P. Oxy. XLVII 3354, was 32 ½ tetradrachms. The parity between these figures suggests that Estiot is correct to argue that the reforms of Aurelian saw only a doubling in the number of drachmas to the new post A.D. 274/5 reformed tetradrachm.

Further evidence for stability after the A.D. 274/5 reforms of Aurelian is demonstrated by an analysis of contract P. Oxy. XIV, 1631 (A.D. 280). This contract seems to show that the total number of drachmas paid for viticulture labour roughly doubles between A.D. 257 and 280 (from 2,160 drachmas in A.D. 257, to 4,500 drachmas in A.D. 280). This doubling is consistent with Estiot's theory that Aurelian valued his new reformed tetradrachm at eight drachmas[1050]. The evidence in support of Estiot's[1051] theory is gained

[1044] The contracts are P. Oxy. XLVII 3354, dating to A.D. 257, and P. Col. 10. 280, dating to A.D. 269/77.
[1045] See Section 8.12, p.141 - 146.
[1046] Rathbone (1996, p.330 – 332)
[1047] Since Estiot (2012, p.549 - 550) argues that there were eight drachmas to each reformed tetradrachm in A.D. 274/5.
[1048] Since Harl (1996a, p.147) argues that there were 20 drachmas to each reformed tetradrachm in A.D. 274/5.
[1049] This is that ratio of eight drachmas to each post A.D. 274/5 reformed tetradrachm of Aurelian, see Estiot (2012, p.549 - 550).
[1050] Estiot (2012, p.549 - 550).

from the conversion of the wage of 4,500 drachmas in contract P. Oxy. XIV. 1631 into post-A.D. 274 reformed tetradrachm. Since Estiot suggests that there are eight drachmas to one post-A.D. 274 reformed tetradrachm, the total of 4,500 drachmas can be divided by eight to give 562 ½ post-A.D. 274 reformed tetradrachms. This result is extremely close to the 540 tetradrachms paid in contract P. Oxy. XLVII, 3354 (A.D. 257). It suggests that in Egypt Aurelian's new coins were no more than double-value coins.

**Table 65 Tetradrachms paid using Estiot's ratio of eight drachmas to one tetradrachm. See Estiot (2012, p.549 - 550) applied to the number of silver tetradrachms in papyri P. Oxy. XLVII, 3354 (A.D. 257); P. Oxy. XIV, 1631 (A.D. 280)**

| Date | Total payment | Silver tetradrachms |
|---|---|---|
| A.D. 257 | 2,160 drachmas | 540 tetradrachms |
| A.D. 280 | 4,500 drachmas | 562 ½ reformed tetradrachms |

Table 65 (above) would suggest that wages remained stable between 257 and 280 in terms of the number of tetradrachms and reformed tetradrachms paid; that the increase in drachmas between A.D. 257 and A.D. 280 can be accounted for by the revaluation of the currency[1052]. This is because the number of drachmas in A.D. 280 is roughly double the number of drachmas in A.D. 257, but that the number of silver coins paid to the lessees in A.D. 280 is very close to the number of silver coins paid in A.D. 257. This stability can also be explained with reference to Cope's analysis of the Egyptian tetradrachm which demonstrates that between A.D. 268 and A.D. 278 the silver content of the Egyptian tetradrachm remained at roughly 0.2 grams of silver per coin, only beginning to decline from A.D. 279 – 80 onwards[1053]. It is therefore possible that the currency stability (in terms of silver content of the tetradrachm) of the previous twelve-years were yet to manifest themselves in the contracts of A.D. 280.

The results of private viticulture labour agreements suggest that wage inflation was more limited in the late 3rd century than might be expected. This is because the introduction of Aurelian's currency at eight drachmas to each post A.D. 274/5 reformed tetradrachm

[1051] See Estiot (2012, p.549 - 550) for the theory is that there were 20 drachmas to each post A.D. 274/5 tetradrachm.
[1052] Estiot (2012, p.549-550).
[1053] Some individual issues seem to have dropped below the standard of 0.2 grams, noticeably the A.D. 276/77 one of the two examples of the A.D. 277/8 issue by Probus. These were 0.16 and 0.15 grams. Another analysis of the A.D. 277/8 issue gives a coin of 0.21 grams of silver, see Cope *et al.* (1997, p.12).

accounts for the increase in drachmas seen in viticulture wages between A.D. 257[1054] and A.D. 277 (if papyrus P. Col. 10.280 dates to A.D. 277), and between A.D. 277 and A.D. 280[1055]. It seems that in A.D. 280 the lessees were still receiving a comparable number of silver coins to the lessees in A.D. 257 and further evidence that Estiot[1056] is correct.

The wage paid per *aroura* to viticulture lessees between A.D. 257 and A.D. 299 is significant because it covers a period when the silver content of currency declined from around 0.8 grams of silver per coin to 0.01 grams of silver per coin[1057]; the number of drachmas to the silver tetradrachm was reformed[1058]; and a new currency, the nummus was introduced[1059]. The results demonstrate there was a steep increase in the number of drachmas paid for work around A.D. 289/90 but that Diocletian seems to have attempted to restore the amount of silver paid in wages to mid 3rd century levels. This can be seen in papyrus PSI XIII 1338, dating to A.D. 299, in which the wage per *aroura* of viticulture labour is 1,200 drachmas per *aroura*. If it were paid in the debased post A.D. 274/5 tetradrachms in circulation during the A.D. 280s then the lessee would have received very little silver; but the introduction of the nummus results in a significant increase in the amount of silver paid for that labour. Table 66 demonstrates this difference

**Table 66 The payment per man, per *aroura*, in papyri P. Oxy. XLVII, 3354; P. Laur. 4.166 and PSI XIII 1338 paid in debased tetradrachms and in nummi. Coin data from Cope *et al.* (1997, p.12); Carson (1990, p.237 – 238).**

| Date | tetradrachms | Silver per coin | Silver per *aroura* |
|---|---|---|---|
| A.D. 257 | 45 tetradrachms | 0.6 - 0.8 grams | 27 – 36 grams |
| A.D. 289/90 | 200 – 250 reformed tetradrachms | 0.01 grams | 2 – 2 ½ grams |
| A.D. 299 | 60 **reformed tetradrachms** | 0.01 grams | 0.6 grams |
| A.D. 299 | 60 **nummi** | 0.43 grams | 25.8 grams |

Table 66 shows that after the full introduction of the nummus in A.D. 299 there was a return to the mid 3rd century rates of pay in terms of silver. This is because the use of the nummus for payment means that the amount of silver paid to the lessees returns to mid 3rd

[1054] P. Oxy. XLVII, 3354.
[1055] P. Oxy. XIV, 1631.
[1056] Estiot (2012, p.549 - 550).
[1057] Cope *et al.* (1997, p.12).
[1058] Estiot (2012, p.549 - 550).
[1059] See Chapter 7, p.101 - 119; Chapter 8, p.119 - 151; Carson (1990, p.237 – 238).

century rate per *aroura*. This parity of silver with the 3rd century is further illustrated in the results of other labour contracts.

## Section 12.3. Results A.D. 275 – 299, Other Labour Contracts

The analysis of daily wages for other types of labour was undertaken to "test" the results of the viticulture labour contracts that date between A.D. 274/5 and A.D. 299 (see Chapter 9, p.151 - 170[1060]). Unlike the papyri documenting viticulture labour, these papyri do not form a coherent comparable sequence because they are different agreements for a variety of low-status hired labour, with the exception of P.Wash.Univ.1.18 (A.D. 286) which seems to be an extract from a farm-account specifying monthly wages and duties for tenants. As a result contract P.Wash.Univ.1.18 (A.D. 286) was considered first to determine if the tenant wage in A.D. 286 demonstrates a significant increase in wages to those labour wages pre-dating the A.D. 274/5[1061].

The results of the analysis of papyrus P.Wash.Univ.1.18 demonstrates that there was only a moderate increase in wages for the tenants in A.D. 286. This also supports the theory of Estiot[1062] that the number of drachmas to the new reformed tetradrachm of A.D. 274/5 only doubled; and this papyrus is further evidence this ratio had remained stable until A.D. 286[1063]. The wage of 120 drachmas per month in papyrus P. Wash.1.18 is also consistent with the wages paid to viticulture-labourers in A.D. 257 because the wages for viticulture labour range from 100 drachmas per person for reed-pulling, to 200 drachmas per person, for pruning, while thinning foliage was paid at 50 drachmas per person Chapter 8 (p.126 - 130)[1064]. This is further evidence that the reforms of Aurelian in A.D. 274/5 did not result in a major increase in wages.

Since the number of drachmas paid per day to tenants in papyrus P.Wash.Univ.1.18 is double the number paid to tenants in the mid 3rd century[1065] this is evidence that Estiot's

[1060] These are B.G.U. 2.624, a letter to a farm manager dating to A.D. 285; P.Wash.Univ.1.18, an extract from a farm account dating to A.D.286; P.Cair.Isid. 81, a labour agreement dating to A.D. 297; and P. Sakaon. 58, a labour agreement dating to A.D. 299.
[1061] These were P. Oxy XLVII 3354 dating to A.D. 257, and the ass- and ox-driver wages in Section 6.3, p.87.
[1062] Estiot (2012, p.549 - 550).
[1063] This is because the monthly wage 120 drachmas can be divided by 30 days to give a daily rate of four drachmas per day. It would seem that the tenants are being paid double the standard pre-A.D. 274/5 day wage of two drachmas, see Kehoe (2012, p.122 – 123). See also Rathbone (1991, p.148 – 174) on wages for tenants.
[1064] The wages can be divided by 30 days to give a daily wage of between c. 1 ½ drachmas per day to c. 6 ½ per day.
[1065] Rathbone (1991, p.148 – 174).

theory that the A.D. 274/5 reforms of Aurelian saw the doubling of the number drachmas to the reformed tetradrachm is correct[1066]. This is also confirmed by the fragmentary letter (BGU 2.624 dating to A.D 285) which specifies a series of small payments in drachmas that only make sense if the number of drachmas to each post A.D. 274/5 reformed tetradrachm had not substantially increased in A.D. 274/5.

This stability is slightly puzzling given that the silver content of the tetradrachm was by A.D. 286 a mere 0.01 grams of silver per coin[1067] but it is possible either that it took a number of years for the debased post-A.D. 279 coins to enter circulation in sufficient quantities to affect wage agreements; that confidence in the currency took a similar length of time to erode; that landlords continued to enforce older rates of pay by additional maintenance, or because there was still a strong labour market. Indeed the analysis of the surviving daily labour rates between A.D. 274/5 and A.D. 299 seem to demonstrate that stability in wages lasts until around A.D. 286. After this date there was a substantive increase in the day-rate of wages[1068] paid to labourers between A.D. 289/90[1069] and 300[1070]. The surviving wage contracts are P. Cair. Isid. 81 (A.D. 297) and P. Sakaon. 58 (A.D. 299). These preserve daily rates of 200 and 240 drachmas which are not inconsistent with the increase in wages per *aroura* to 4,000 drachma per *aroura* preserved in papyrus P. Laur.4.166 dating to A.D. 289/90[1071]. Since both Estiot and Harl are in agreement that by A.D. 297 there were 20 drachmas to the post-A.D. 274/5 reformed tetradrachm[1072] this figure can be applied to the daily wages of 200 drachmas (A.D. 297) and 240 drachmas (A.D. 299) to give a daily wage of 10 and 12 silver coins[1073].

The analysis of the two contracts P. Cair. Isid. 81 (A.D. 297) and P. Sakaon. 58 (A.D. 299) implies that the wages of 200 and 240 drachmas reflect actual wage rates prior to

[1066] Estiot (2012, p.549 - 500).
[1067] Cope *et al.* (1997, p.12).
[1068] The first evidence of this increased rate is in A.D.294 when 133.33 drachmas were paid per day to a chaff collector in P. Oxy 4597.
[1069] On the basis of papyrus P.Laur.4.166 (Section 8.12, p.141-146).
[1070] Prior to A.D. 274/5 daily wages were based on fractions or multiples of a standard four drachmas (one-silver tetradrachm) per day, see Corbier (2008a, p.347). By A.D. 297, however, contracts P. Cair. Isid. 81 and P. Sakaon. 58 (A.D. 297 and A.D. 299) specify rates of 200 drachmas and 240 drachmas respectively.
[1071] See Section 8.12, p.141 - 146.
[1072] Estiot (2012, p.548); Harl (1996a, p.151, 155).
[1073] If the amount of silver paid per day to the workers in the contracts P. Cair. Isid. 81 and P. Sakaon. 58 (A.D. 297 and A.D. 299) is calculated assuming that the coins are nummi with a silver content of 0.43 grams of silver per coin, see Carson (1990, p.237 – 238), then a daily wage of 10 or 12 silver coins would give 4.3 or 5.16 grams of silver per day.

Diocletian's reform the currency, but they also suggest that there was a reluctance to use the new nummi that were minted for everyday transactions (see Section 8.12, p.141 - 146). Evidence for this reluctance is seen in the Egyptian rebellion of Domitianus (A.D. 297 – 8), and his rejection of the new currency by minting the older tetradrachms[1074]. This is because the silver content of the Egyptian currency prior to Diocletian's introduction of the nummus was only 0.01 grams of silver per coin[1075]. If the amount of silver is calculated using daily wage rates of 10 or 12 post-A.D. 274/5 reformed tetradrachms, then the amount of silver paid per day in papyri P. Cair. Isid. 81 (A.D. 297) and P. Sakaon. 58 (A.D. 299) would be 0.1 grams (in A.D. 297) and 0.12 grams (in A.D. 299). Interestingly these values that are very close the 0.2 grams of silver that would be paid to a worker using one silver the tetradrachm between A.D. 268 and A.D. 278/9. This suggests that these contracts reflect the pre-nummus wage rates.

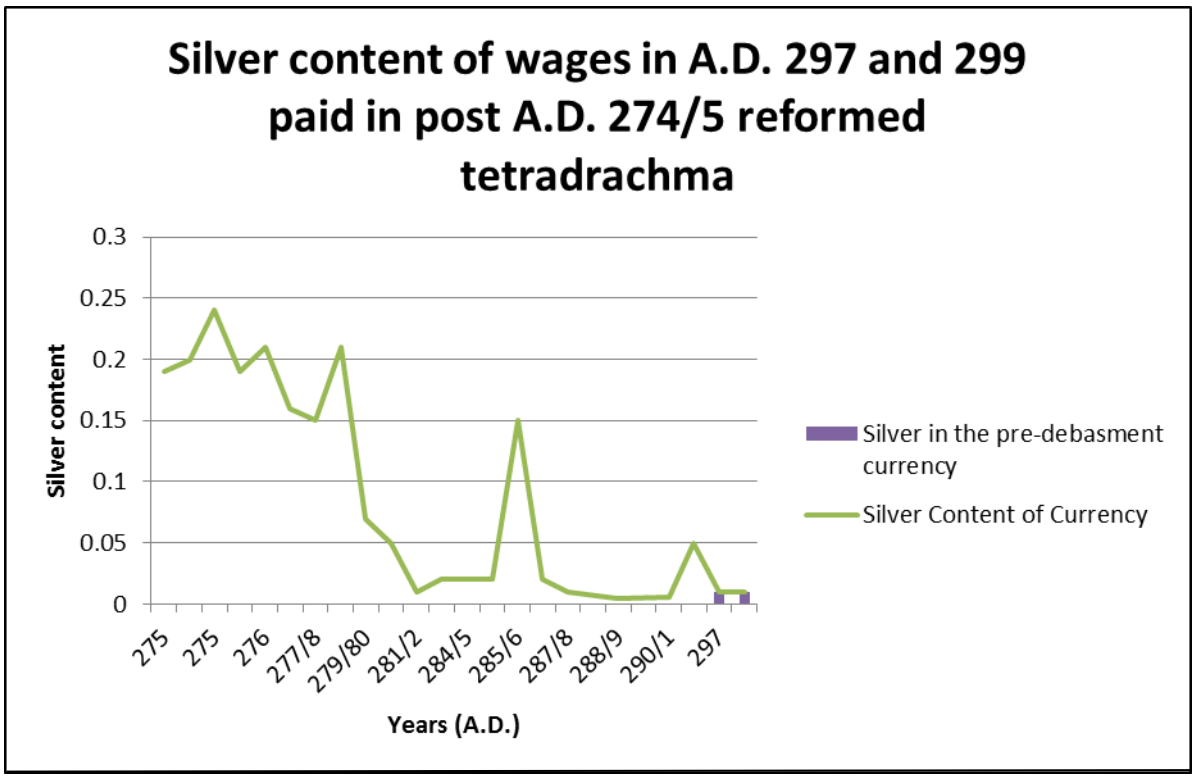


**Figure 19 The amount of silver paid in papyri P.Cair. Isid. 81 (A.D. 297) and P. Sakaon.58 (A.D. 299) if calculated in pre-nummus currency. Data from Cope *et al.* (1997, p.12)**

The reluctance to use nummi which is implied by contracts P.Cair. Isid. 81 and P. Sakaon.58[1076] provides further evidence as to why nummi were hoarded. If contracts P.Cair.

[1074] Abdy (2012, p.589).
[1075] Cope *et al.* (1997, p.12).
[1076] See Section 9.4, p.158 and Section 9.6, p.163.

Isid. 81 and P. Sakaon.58 were paid in Diocletian's new nummi, and these had a one-to-one relationship with the older post-A.D. 274/5 reformed tetradrachm, then the workers in contracts P.Cair. Isid. 81 and P. Sakaon.58 would have received a wage of 4.3 and 5.16 grams of silver per day[1077] in A.D. 297 and A.D. 299, as opposed to the 0.2 grams per day that had been traditional between A.D. 268 and A.D. 278/9. If the new nummi of Diocletian were introduced at the same rate as his earlier debased issues this means wages that previously were worth a legible amount of silver were suddenly being paid with 4.3 and 5.16 grams of silver. The appearance of coins with 43-times more silver than the debased post-A.D. 274/5 reformed tetradrachms being used at a one-to-one ratio with the older more debased tetradrachms would have meant that the nummi would vanished into hoards and necessitate the revaluation of the older tetradrachms[1078], and new nummi, to ensure that the nummus was used in preference to the older tetradrachms.

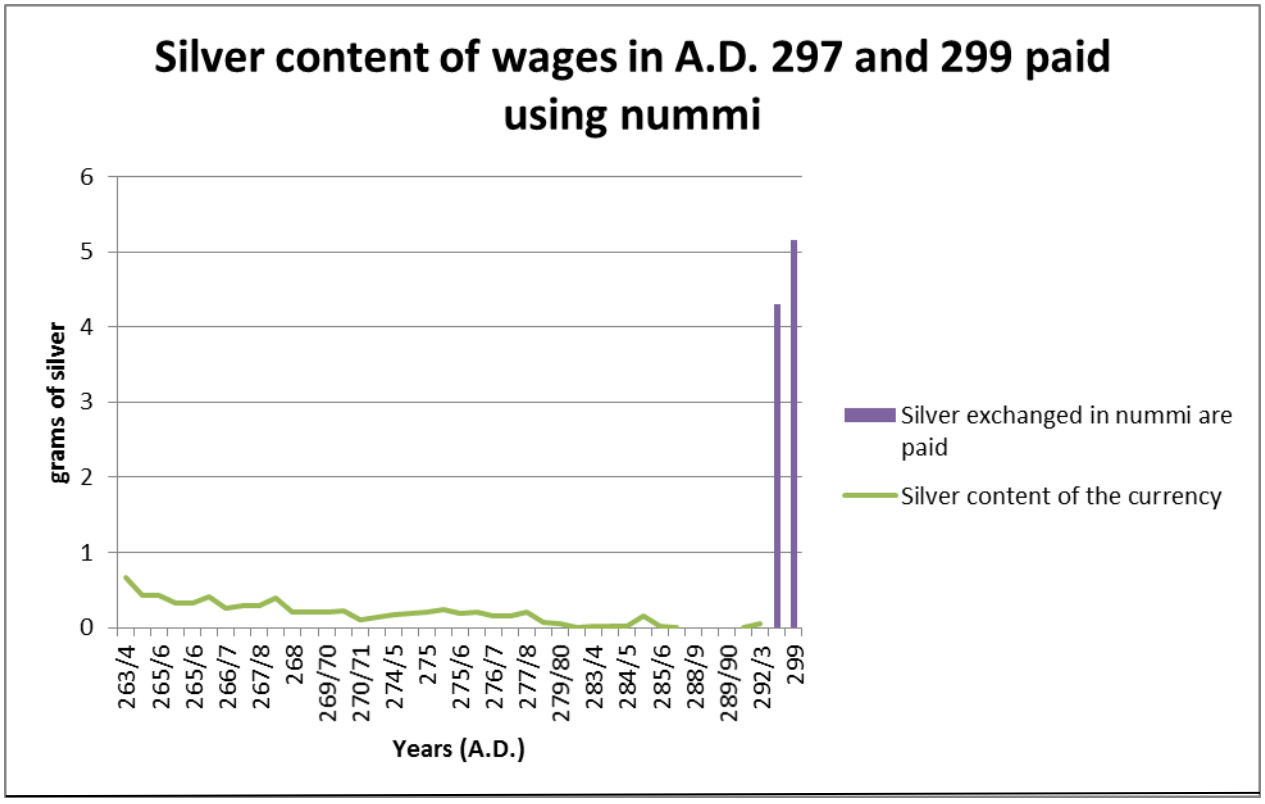


**Figure 20 Comparison of silver paid in 297 and 299 if they were paid in nummi. Data from Cope *et al.* (1997, p.12) P.Cair. Isid. 81 and P. Sakaon.58**

[1077] This is because the silver content of the nummus at this time was 0.43 grams of silver per coin as opposed to the 0.01 grams of silver in the pre-nummus currency, see Carson (1990, p.237 – 238).
[1078] Estiot (2012, p.548).

Contract PSI XIII 1338 (A.D. 299) also demonstrates the difficulties associated with the introduction of the nummus[1079]. If the rate of 1,200 drachmas paid to the lessee per *aroura* in A.D. 299 is calculated on the number of 20 drachmas per nummi then the lessee would be in receipt of 60 new nummi coins[1080]. The quality of these coins is such that he would be receiving almost 25.8 grams[1081] of silver per *aroura* compared to the lessee in A.D. 289/90 (contract P.Laur. 4 166) who was in receipt of c.2 grams of silver per *aroura*[1082]. If however those 60 nummi are multiplied by the silver content of the debased currency that circulated in the early A.D. 280s and which had about 0.01 grams of silver per coin, then we see that the lessee is in receipt of 0.6 grams of silver per *aroura*. This is a figure more in line with the c.2 – 2.5 grams of silver per *aroura* paid in A.D. 289/90 (contract P.Laur.4.166). This result suggests that there was a continued unwillingness to use the new nummi in daily transactions[1083].

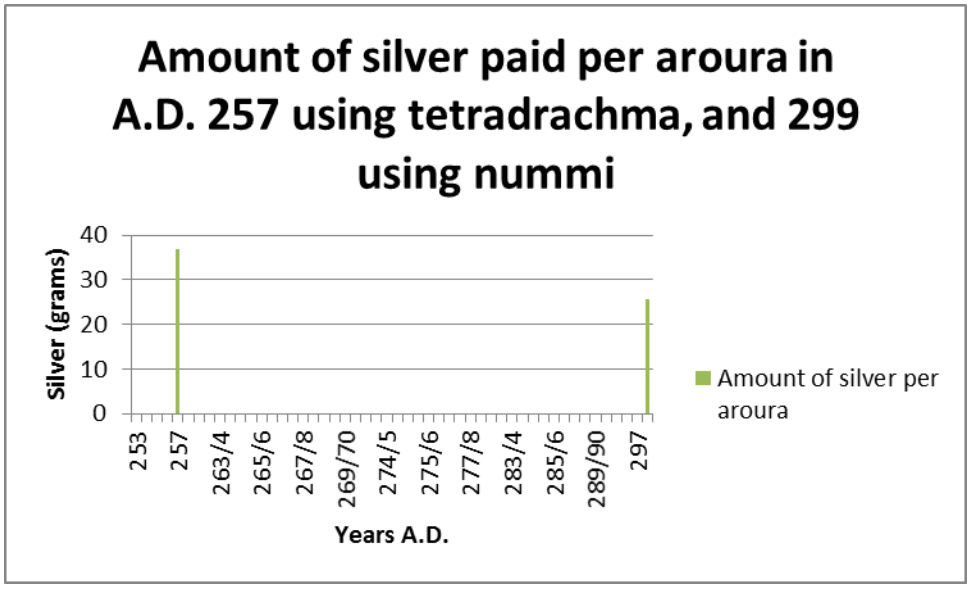


**Figure 21 Amount of silver paid per *aroura* using a ratio of 20 drachmas to one nummus in A.D. 299. Data from Cope *et al.* (1997, p.12); P. Oxy XLVII 3354 (A.D. 257); PSI XIII 1338 (A.D. 299)**

This is consistent with the results of the viticulture wages paid per *aroura* in PSI XIII 1338 (A.D. 299) in which the use of nummi in the transaction would result in a significant

[1079] Abdy (2012, p.589).
[1080] Harl (1996a, p.151, 155).
[1081] This is because each nummus had a silver content of 0.43 grams of silver per coin, see Carson (1990, p.237 – 238).
[1082] This is because the post A.D. 274/5 reformed tetradrachm had only c.0.01 grams of silver per coin. For the silver contents see Cope *et al.* (1997, p.12).
[1083] It is perhaps to encourage the use of the nummi as a coin of transaction that the coins were revalued to 50 drachmas per nummus by A.D. 300; that the A.D. 301 Price Edict was promulgated; and that the nummus was again revalued to 100 drachmas per nummus in September A.D. 301, see Abdy (2012, p.589); Harl (1985, p.263 – 270); Sutherland (1961, p.94 – 97).

amount of silver paid per *aroura*. This would be 25.8 grams of silver per *aroura*[1084].The result of 25.8 grams of silver is not inconsistent with the c.37 grams of silver received by the lessees per *aroura* in A.D. 257 (contract P. Oxy. XLVII, 3354)[1085]. Since the introduction of the nummus at a ratio of 20 drachmas to each nummus[1086] would result in a payment of 25.8 grams of silver per *aroura* this suggests that one aim of the introduction of the nummus was to return the amount of silver paid in transactions to the levels of the mid 3rd century. This suggests that there was a "standard" for the amount of silver paid for various types of work to which Diocletian wished to return to a standard wage.

In A.D. 301 the currency of the empire was revalued by Diocletian and this reform meant that there were 100 drachmas for each nummus[1087], perhaps to encourage its use and to ensure that they were not hoarded[1088]. This is because the silver content of the nummus at 0.43 grams of silver per coin[1089] was far superior to the older tetradrachms[1090]. If the nummus was used on a one-to-one basis with the tetradrachm that it replaced then there would be an incentive to save the nummus rather than spend the nummus, therefore the revaluation of the nummus from 20 drachmas to 50 drachmas per nummus that occurred in A.D. 299 – 300[1091] might have been necessary if people were still continuing to pay wages and for commodities in the older post-A.D. 274/5 reformed tetradrachms. Given these circumstance it is possible that this explains the A.D. 301 Price Edict, and subsequent revaluation of the nummus from 50 to 100 drachmas[1092] as the upward revaluation of the nummus relative to the older post-A.D. 274 tetradrachms would ensure the use of the nummus[1093]. The question that remains however is why Diocletian wanted to replace the debased currency with a good coin of transaction? It is possible that he wanted to return to the standard of one or two coins per day for wages, as was the rate in the mid 3rd century. This would explain why he decided to

[1084] This is calculated using the ratio of 20 drachmas to each nummus Abdy (2012, p.589); Harl (1985, p.263 – 270).
[1085] This is because the rate per aroura in (contract P. Oxy. XLVII, 3354) was 45 tetradrachms per person. This figure can be multiplied by the silver content of the currency which was around 0.82 grams of silver per aroura to give a figure of 36.9 grams of silver per aroura. See Cope *et al.* (1997, p.12).
[1086] Harl (1996a, p.151, 155).
[1087] On the revaluation see amongst many others Abdy (2012, p.586 – 587); Bland (2012, p.655 – 662); Carson, (1990, p.237 – 238); Estiot (2012, p.548); Harl (1985, p.263 – 270).
[1088] Abdy (2012, p.586); See also Estiot (2012, p.548); Harl (1985, p.263 – 270).
[1089] Carson (1990, p.237 – 238).
[1090] These had a silver content of around 0.01 grams of silver per coin.
[1091] Harl (1996a, p.150 - 155).
[1092] Abdy (2012, p.589); Harl (1985, p.263 – 270).
[1093] Estiot (2012, p.548).

introduce a silver-billon coin with 0.43 grams of silver[1094] since this is consistent with the mid 3rd century wage both in terms of coin numbers and silver content[1095].

## Section 12.4. Results A.D. 300 - 305

The results of the study demonstrate that A.D. 301 Price Edict, and the revaluations of the currency in A.D. 299/300 and 301 were successful in returning the wages paid in daily wage transactions, to the wage standards of the early – mid. 3rd century A.D. Prior to A.D. 274/5 the wage for an ass driver was four drachmas, or one-silver tetradrachm (see Section 6.3, p.87). In A.D. 301 the maximum wage for an ass driver was 100 drachmas which was worth two nummi[1096], at most a doubling of the mid 3rd century wage[1097].

The evidence for wages paid to ass drivers by the A.D. 301 Price Edict is mirrored in the wages paid to labourers in the mid 3rd century. Under the terms of A.D. 301 Price Edict a labourer's wage was also worth 25 denarii communes which equates to 100 drachmas, or one nummus[1098]. This means that a labourer in A.D. 301 was earning 0.43 grams of silver per day, and this compares well with the 0.6 grams of silver day of A.D. 263/4, and 0.2 grams of silver per day, that a labourer would earn from A.D. 268[1099]. To test the degree of success or otherwise that the A.D. 301 Price Edict had on wages a papyrus P. Oxy. VI. 895 (dating to A.D. 305) was identified that specified a rate of 120 drachmas per day for labourers. Since the number of drachmas to the nummus had increased in September A.D. 301 to 100 drachmas[1100] this means that a wage of 120 drachmas was worth an awkward 1.2 nummi, but in terms of silver they were paid 0.516 grams of silver per day. It is significant despite the abolition of the A.D. 301 Price Edict, wages for labourers remained stable until A.D. 305, and at levels that reflect the amount of silver paid per day to labourers in the early – mid 3rd century.

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[1094] Carson (1990, p.237 – 238).
[1095] Cope *et al.* (1997, p.12).
[1096] This is because there were 50 drachmas to the nummus, see Abdy (2012, p.586); Estiot (2012, p.548); Harl, (1985, p.263 – 270).
[1097] Prior to A.D. 274/5 an ass driver received a wage that reflected the face-value of the currency. Prior to the devaluation of A.D. 263 this wage was worth between 0.8 grams of silver per coin, see Cope *et al.* (1997, p.12), between A.D. 263/4 – 268 it was worth 0.6 grams of silver per coin, and in A.D. 268 it was worth 0.2 grams of silver per coin Cope *et al.* (1997, p.12). Under the A.D. 301 Edict of Maximum Prices an ass driver earning two nummi at 0.43 grams of silver per coin would earn 0.86 grams of silver per day, see Carson (1990, p.237 – 238). This is a rate that comparable with the wage in A.D. 263 and is further evidence of a return to the mid 3rd century wage rates.
[1098] Abdy (2012, p.586); Estiot (2012, p.548); Harl (1985, p.263 – 270).
[1099] Cope *et al.* (1997, p.12).
[1100] See Abdy (2012, p.586); Bland (2012, p.655 – 662); Estiot (2012, p.548); Harl (1985, p.263 – 270).

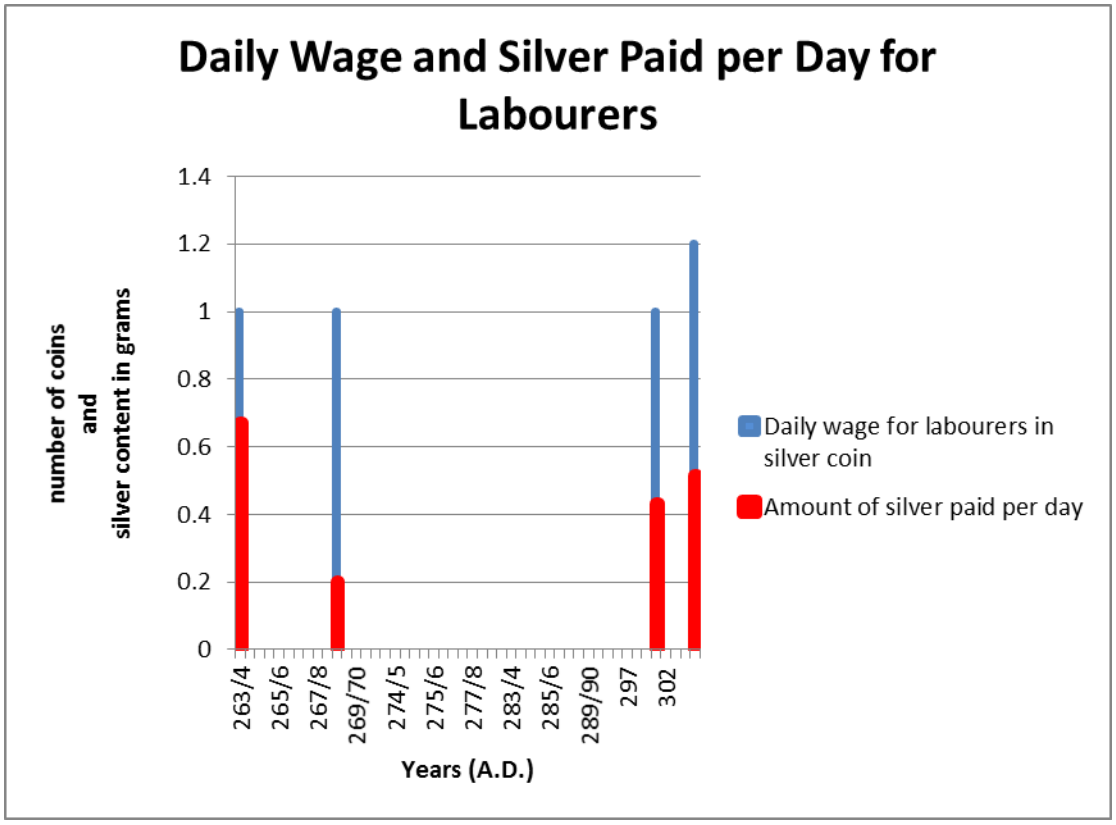


**Figure 22 Daily wage for labourers and amount of silver exchanged each day. Data from Cope *et al.* (1997, p.12); Drexhage (1991, p.345 – 347); Rathbone (1997, p.330 -331); Giacchero (1974, p.150); papyri P.Oxy. LXII, 4351 (A.D. 304); P. Oxy. VI. 895**

Further evidence that there was wage stability after the revocation of the A.D. 301 Price Edict is also seen in papyrus P.Oxy. LXII, 4351 (A.D. 304) which is a contract of employment between a tapestry weaver and a workshop owner for 120 drachmas per day. In terms of silver coins the tapestry weaver was being paid 36 nummi per month. This is significant because it compares well to the monthly wage paid to apprentice weavers prior to A.D. 274/5, who received 20 tetradrachms per month (see Section 6.4, p.92), and points not only to wages that reflect early – mid 3rd century rates, but also ongoing wage stability after the revocation of the A.D. 301 Price Edict.

### Section 12.5. Results Wheat Costs

The final stage of this research was to consider the evidence of wheat and barley costs between A.D. 235 and 305 to determine, if possible, the nature of their increase. The main evidence for an increase in the cost of wheat comes from "official" prices. There is however only one mid 3rd century cost of 24 drachmas per *artaba*[1101], dating to A.D. 246, and an

[1101] Rathbone (1996, p.330) provides official wheat prices which can can be summarized thus: A.D. 79-162, cost per artaha: 8 drachmas; A.D. 198, cost per *artaba*: 8 drachmas; A.D. 246, cost per *artaba*: 24 drachmas;

undated 40 drachmas per *artaba* cost[1102] between A.D. 235 and 274/5. In A.D. 276, one *artaba* of wheat was 200 drachmas but again there are no other "official" prices until A.D. 293 when the cost of commuting the tax liability was at a cost of 300 drachmas per *artaba*. Further commutation of the *artaba* tax liability in to cash occurred in A.D. 294 at a cost 216, 220, 228, 232 drachmas per *artaba*[1103]. In early A.D. 301 we have a price per *artaba* of 640 drachmas, and in the same year we also have the official Price Edict maximum cost of 100 denarii per *modius castrensis* which equated to around 1,200 – 1,333 drachmas per *artaba*. After this there are two more prices, a tax payment in A.D. 303 of 1,900 drachmas per *artaba*, and a final payment in A.D. 304/5 of 1,300 drachmas per *artaba*.

Of these costs, the A.D. 276 figure of 200 drachmas suggests a five-fold, or ten-fold increase between the rates of 24 and 40 drachmas per *artaba* in A.D. 274/5 though this is not entirely clear. The absence of an undisputed price[1104] between A.D. 246 (when wheat cost 24 drachmas per *artaba*) and A.D. 293 (when wheat cost 300 drachmas per *artaba*)[1105] make it hard to determine how wheat prices responded to the revaluation of the currency in A.D. 274/5. If, as is suggested above, Estiot is correct to suggest that Aurelian's reform meant that there were eight drachmas to the post–A.D. 274/5 reformed tetradrachm[1106], and if the 200 drachma per artaba recorded on ostrakon O. Mich. 1. 157 can be dated to A.D. 276[1107] then this means that an *artaba* of wheat in A.D. 276 was worth 25 post–A.D. 274/5 reformed tetradrachms. This equates to five grams of silver using the rate of 0.2 grams of silver per coin and this is almost the same as the 4.5 grams of silver paid per *artaba* in A.D. 246[1108], suggesting continuity in the official cost of wheat rather than inflationary increases.

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A.D. 276, cost per *artaba*: 200 drachmas; A.D. 293, cost per *artaba*: 300 drachmas; A.D. 294, cost per *artaba*: 216, 220, 228, 232 drachmas per *artaba*.

[1102] Rathbone (1996, p.331, 2) ascribes this cost to "before A.D. 275" given the official A.D. 276 cost per *artaba* of 200 drachmas.

[1103] Rathbone (1996, p.330).

[1104] For the debate on O. Mich. 1.157 that dates to A.D. 276 see footnote 562, p.110; and see Appendix 4: Ostracon O.Mich. 1.157, p.241.

[1105] Rathbone (1997, p.217 - 220).

[1106] Estiot (2012, p.549 – 550).

[1107] For the debate on O. Mich. 1.157 that dates to A.D. 276 see footnote 562, p.110; and see Appendix 4: Ostracon O.Mich. 1.157, p.241.

[1108] See Cope *et al.* (1997, p.12); and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235. This is because the cost of wheat was worth 4.5 grams of silver per artaba. This is calculated by dividing the 24 drachmas by four, which was the rate of drachmas to the tetradrachm in A.D. 246, see Bagnall (2009, p.190); Corbier (2008a, p.338); Harl (1996a, p.120). The result of 5 tetradrachms is multiplied by the silver content of the tetradrachm at this time. This was around 0.8 grams of silver per coin, see Cope *et al.* (1997, p.12).

The costs of 300 drachmas per *artaba*, and costs 216, 220, 228, 232 drachmas per *artaba* in A.D. 293 and 294 do not seem to reflect the debasement of the currency in which the silver content of the post-A.D. 274/5 reformed tetradrachm fell to about 0.01 grams of silver[1109]. Had these costs reflected the debasement of the currency from 0.2 grams of silver per coin in A.D. 276, to 0.01 grams of silver coin in A.D. 293 and 294, then we would have expected a 20-fold increase in the cost per *artaba*. This is clearly not the case and suggests that these costs are "managed" prices[1110], particularly since they are transactions with the state, and are not market costs. By contrast the evidence for private wheat prices between A.D. 301 and 305 includes one private agreement. This agreement is contract P.Oxy. XXXVII 2798[1111] in which one *artaba* of wheat costs 1,300 drachmas. Clearly the private cost of one *artaba* of wheat continues to broadly reflect the maximum cost per *artaba* of wheat from the Price Edict of A.D. 301 which had long since lapsed. This can be clearly demonstrated in Figure 23, p.226.

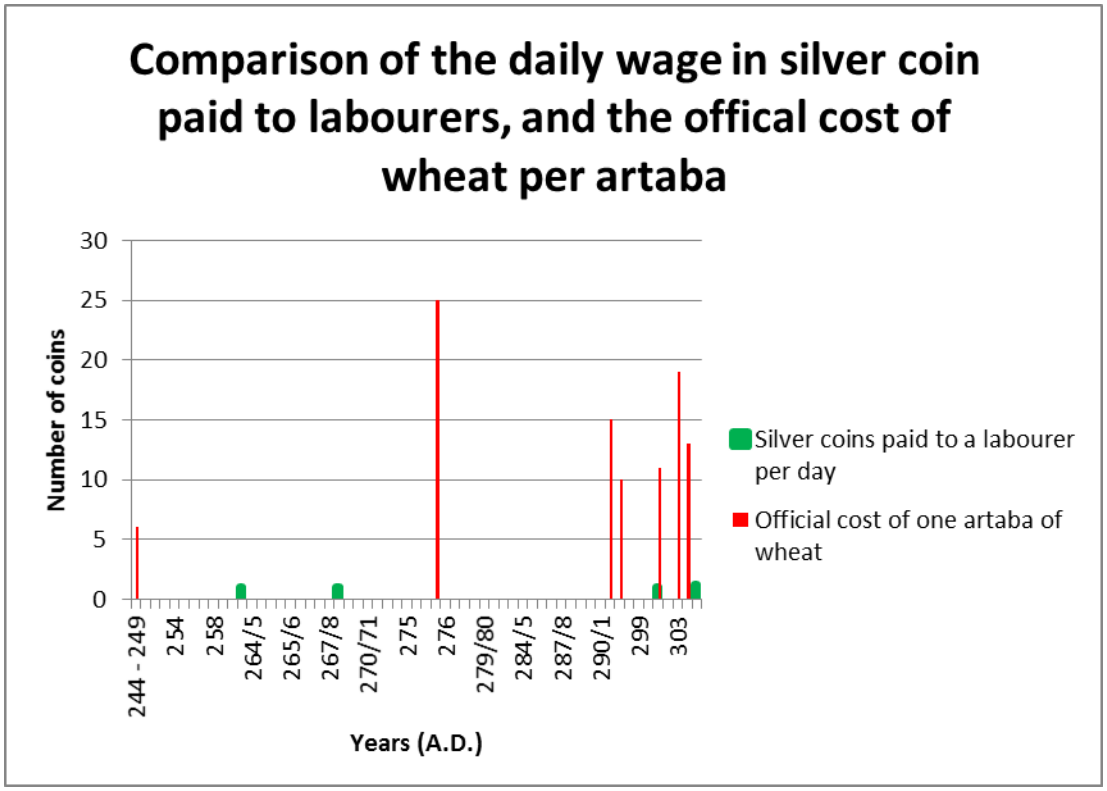


**Figure 23 Comparison of the cost of one *artaba* of wheat and a labourer's wage. Data from Cope *et al.* (1997 p.12); Duncan-Jones (1976a, p.252 – 253); Rathbone (1997, p.217 – 220).**

[1109] Cope *et al.* (1997, p.12); and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.
[1110] Temin (2009, p.2-3).
[1111] Coles *et al*. (1970, p.92).

Figure 23 indicates that the revaluations of A.D. 300 broadly maintained the number of silver coins needed to purchase one *artaba* of wheat at 11 – 18 coins. This stability can also be seen in the graph below in terms of the amount of silver paid per artaba of wheat and to a labourer for one day's work. Indeed Figure 24 (below) also show the cost per *artaba* of wheat in terms of silver and the amount of silver paid per day to a labourer. A linear trendline has been included to show the parity in the amount of silver paid to labourers per day in the middle of the 3rd century, and at the start of the 4th century, when the nummus was the coin of transaction[1112].

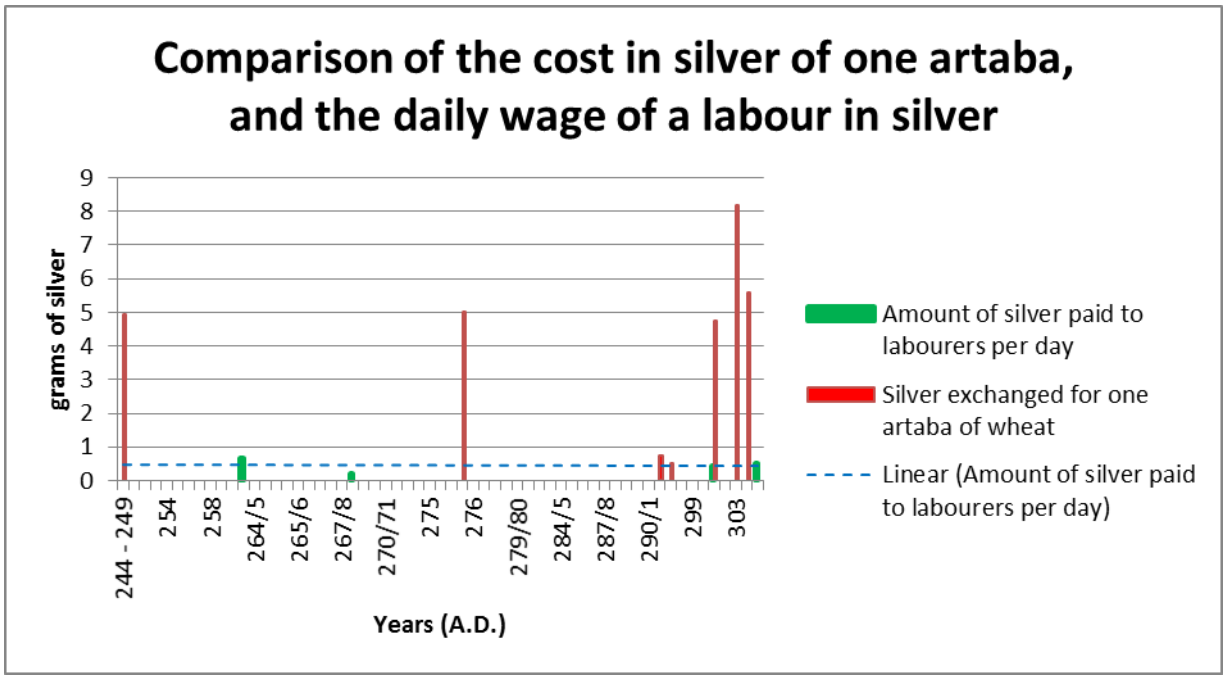


**Figure 24 Comparison of the wage and the official cost of one *artaba* of wheat in silver. Data from Cope *et al.*, (1997, p.12); Duncan-Jones (1976a, p.252 – 253); Rathbone (1997, p.217 – 220).**

This is surely evidence that wheat prices are not increasing at an inflationary rate but continue to reflect an accepted rate, because the amount of silver paid per *artaba* is being broadly maintained; and that the amount of silver exchanged for one *artaba* of wheat returned roughly to the mid 3rd century levels by the start of the 4th century. This implies that prices and wages between A.D. 300 – 305 are more stable than anticipated, and reflect a successful return to 3rd century rates in terms of wages and costs.

[1112] Carson (1990, p.237 – 238).

## Section 12.6. Significance of the results

The overall conclusion of this research is that the theory of a 3rd century inflationary crisis in Egypt is over stated. The evidence of wage-agreements is relatively abundant compared to the evidence for wheat prices, and given that these wage agreements are private arrangements they are potentially a better test as to how the economy of the 3rd century A.D. in Egypt responded to the currency debasement and political pressures of that century. It is noticeable that the evidence of wage agreements prior to A.D. 274/5 show that wages were agreed at traditional rates, and that these rates do not reflect the debasement of the currency. This is a significant point because so many studies have made the point that the 3rd century A.D. is a period of significant inflation in response to debasement[1113]. From the results of this research it would seem that until A.D. 274/5 the wages for the lower-classes do not reflect the debasement of the currency until c.A.D 289/90 and it is therefore fair to ask how far the debasement of the currency prior to A.D. 274 actually affected the economic activity both in Egypt and beyond.

Between A.D. 274/5 and 299 the results of this research would suggest that the Egyptian tetradrachm of Aurelian in A.D. 274/5 was initially valued at eight drachmas (in essence it was a double-value coin), and that this coin continued a silver standard of 0.2 grams per coin that had begun in A.D. 268[1114]. As such it seems that wages responded to the new value of the tetradrachm by doubling, and then remaining stable until perhaps as late as A.D. 286 or even A.D. 289/90, despite a reduction to the silver content of the currency in A.D. 278/9[1115]. This is significant evidence of stability given the controversy over the debasements of the 3rd century A.D. and the actual value of Aurelian's tetradrachms[1116]. It is only in the period after A.D. 286 that there is evidence for wages that reflect the actual silver content of the currency. This is because wage agreements between A.D. 290 and 299 exhibit a significant increase in the number of drachmas, which can be converted into silver coins that roughly reflect the traditional daily wage between A.D. 268 and 286 of 0.2 grams of silver.

[1113] See footnotes 4 - 6, p.15 - 16.
[1114] Cope *et al.* (1997, p.12).
[1115] From 0.2 grams of silver per coin to 0.01 grams of silver per coin by A.D 281, see Cope *et al.* (1997, p.12)
[1116] See Ferri (2012, p.19 – 20) on the reforms of Aurelian, and see footnote 61, p.26.

The evidence of this research also suggests that Diocletian's reforms might have been associated with a period of stability between A.D. 301 – 305[1117], contrary to the accepted view that the final years of the 3rd century A.D. and the early years of the 4th century are marked by economic pressure and inflation[1118]. This is significant for our understanding of the final years of the 3rd century since scholars like Hollard[1119] and Bagnall[1120] have argued that inflation trapped the peasant-classes into a cycle of debts which they were unable to pay-off. The results of the study, however, indicate that the wages paid for work continued to be agreed at traditional rates, that "official" wheat prices continued to have a close correlation with the number of days needed to work, These points together are not indicative of economic decline and this is consistent with the evidence not just in Egypt but also beyond[1121].

The results above suggest that interpretations of the economic changes can be enhanced by a close examination of the papyri record for this period. Indeed that there are several areas in which this research could be continued. One area is to consider other commodities than wheat. It would be possible to apply the same methodology to commodities like wine or oil since there are detailed tables of wine and other costs complied by Rathbone[1122], and these costs could be examined to determine if they too suggest that Aurelian's reforms of A.D. 274/5 saw only a doubling of the number of drachmas to each new post A.D. 274/5 tetradrachm. A further area of research would be the close examination of papyri like P. Wash. Univ. 1.18, dating to A.D. 286. This papyrus in particular dates to a crucial period of the 3rd century A.D. in terms of economic change. Parts of the papyrus are no longer legible but it is suggested that the closer examination of this papyrus by modern imagery techniques might reveal crucial evidence of day rates at the end of the 3rd century A.D. Taken together it is suggested that these approaches might help resolve one of the major controversies in the scholarship of the period, by demonstrating how these prices reacted to the changes in A.D. 274/5 and the debasement of the currency in c.A.D. 279.

[1117] This supports the views of Bagnall (1985 p.306 – 307) and Rowlandson (1992, p.495 – 499) that the continued use of short-term contracts indicates a large labour market at the end of the 3rd century; and that the countryside of Egypt is not purely dominated by large estates.
[1118] See Jones (1964, p.26 – 29) for the tradition assessment of the Late Roman Empire including inflation and move to money-in-kind (with its effect on trade), the coinage crisis of the 3rd century A.D. and debasement
[1119] Hollard (1995, p.1075).
[1120] Bagnall (2003b, p.85-96).
[1121] See Chapter 3, p.42 - 49 for the revisionist view of the 3rd century crisis.
[1122] Rathbone (1997, p.193 - 244).

One final area where this research could be developed would be to examine 3rd century prices from outside Egypt and test the theories of Estiot[1123] and Harl[1124] against statue prices. Duncan-Jones[1125] has already identified a sequence of statue costs and has identified a 3rd century "mean" in dedication costs. It would be possible to apply Estiot's theory that there were two denarii to each post-A.D. 274/5 reformed tetradrachm to determine if the increases that Duncan-Jones identified in these statue and dedication costs can be explained by a revaluation of currency, and whether such costs show the same stability until A.D. 286 that labour agreements in Egypt seem to demonstrate. In doing so this would provide direct evidence, rather than supposition, as to the economic conditions of the 3rd century A.D. and how people responded to the currency changes of the 3rd century both in Egypt and in the wider Roman Empire.

[1123] Estiot (2012, p.549 – 550).
[1124] Harl (1996a, p.151, 155).
[1125] Duncan-Jones (1974, p.78 – 79,126 – 129).

## Appendix 1: Non-Technical Glossary of Terms

| | |
|---|---|
| *aderatio* | Payment of sum of money in lieu of a tax payment in-kind, for example, wheat. |
| *agoranomion* | A type of contract that required six witnesses for legality. |
| *anabolikon* | A 3rd century tax that was perhaps a tax on linen or clothing |
| *annona* | The annual grain tax sent to Roman. This could include wine and other items, but it was always wheat. |
| *antoninianus* | A double denarius coin of the 3rd century |
| *apaitetes* | collector of tax for the district |
| *aroura* | Traditional Egyptian unit of land-measurement, about 100 cubits in area |
| *artaba* | Egyptian measure of grain, enough wheat for one man for a month. It was 38.808 litres[1126] |
| *as* | Small bronze coin in the Roman currency system. There were 16 asses to a *sestercus* |
| *assaria* | Bronze coins produced in Eastern cities that were the equivalent of the Roman *as* |
| *asses* | Plural of *as* |
| *aurelianus* | A coin introduced by Aurelian in A.D. 274/5 |
| *aureus* | The gold coin of the Roman Empire |
| *billon* | A coin that is largely copper but contains a small amount of silver, normally 5 – 10% |
| *boule* | A town council |
| *capitation* | Tax system introduced by Diocletian based upon the poll-tax |
| *ceramia* | A standard jar commonly used for wine. It corresponded to a *metre* and there were 12 *cotylae* in a *ceramion* |
| *chalkus* | 1/48 of a obol |
| *cheirographia* | A formulaic contract, and was the principal legal document of Oxyrhynchus during the 1st – 3rd centuries A.D. It did not require witnesses to be legal. |

[1126] Bagnall (2009, p.187).

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| *chou* | One unit of liquid measurement. Multiple units were called *choes.* |
| *choes* | A unit of liquid measurement. There were four *choes* to one *ceramion* jar. One unit was called a *chou.* |
| *choenix* | Fractional unit of measurement in Egypt, 48 *choenices* equated to 4 ½ modii or 1 artaba |
| *coloni* | Term for tenants on Imperial Estates, particularly in North Africa |
| *comarch/komarch* | Village-elder and administrator |
| *conductores* | Officials who oversaw the activity of *coloni* on Imperial Estates |
| *cotylae* | Unit of liquid measurement. There were 12 *cotylae* in *ceramion* or *metre* |
| *curatores* | Imperial officials for finances within towns; also liaised between *dekanoi* and *centurions* |
| *curia* | A town senate |
| *dekanos* | The *dekanoi* were in charge of a militia and liaised with military officers of centurion-rank through *curatores* |
| *denarius* | Silver coin of the Roman Empire, originally there were 25 *denarii* to one gold aureus. During the 3rd century A.D. the denarius was increasingly debased and replaced by the *antoninianus* |
| *denarius communis* | Term for the debased denarius of the late 3rd century |
| *domus* | Latin term for a house |
| *emphyteusis* | A type of 4th century contract that tied *coloni* to their estates |
| *epikephalion* | A late tax from Oxyrhynchus, the nature of which is not clear |
| *epistrategiae* | The four regions of Egypt |
| *epulum* | Provision of a public meal at public events |
| *ergates* | Greek term within papyri for a workman or labourer |
| *exegetes* | Senior officials in a towns of Roman Egypt |
| *gymnasium* | A privileged class of tax-payers in Roman Egypt who paid a discounted rate for the poll-tax |
| *hypographe* | A short note added to a *cheirographia* that describes the nature of the contract |
| *idios logos* | Administering Roman law, confiscations, property, the legal status of different citizen groups and inheritance matters |
| *iugatio* | Tax system introduced by Diocletian based upon theoretical units of |

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| | taxable land |
| *kephalaiotes* | Official in charge of supplying wheat to the state bakery |
| *laographia* | Term for the poll-tax, introduced to Egypt by the Roman government of Augustus |
| *logistes* | Finance officers who replaced the *curatores* of the 2nd century |
| *magister rei privatae* | The post of financial officer introduced by Diocletian, that replaced some of the responsibilities previously held by the *idios logos* |
| *metrematiaioi* | A type of tenant who is paid 4 – 60 drachmas per month, and one *artaba* of wheat. |
| *metres* | Standard unit of liquid measurement that corresponded to the contents of a *ceramion* |
| *metron* | Late Roman unit measurement of five artaba |
| *modius* | Unit of Roman dry measurement often used for seed |
| *munera* | Compulsory public service duties imposed by the Roman authorities on the populace of Egypt |
| *nome* | An administrative district within Roman Egypt |
| *obol* | 1/6 of a bronze drachma |
| *oiketai* | Tenants on an estate who are paid 4 – 12 drachmas, and 1 *artaba* of wheat per month |
| *pancration* | A type of wrestling or martial-art that was very popular in the Greek and Roman world |
| *pancratist* | Practitioner of *pancration* |
| *paramone* | Contracts in which a loan is advanced and the apprentice undertakes a fixed-term of service in lieu of interest on the loan, or repayment |
| *pediophylax* | Field guard |
| *polis* | Term for a town |
| *portoria* | Taxes due on cross a boundary into the Roman Empire, and at specific boundaries within it. |
| *praepositus pagi* | Tax officials in charge of a district |
| *prefect* | The Roman governor of Egypt |
| *procuratores privatae* | A financial officer introduced by Diocletian as part of the replacement of the *idios logus* |
| *procurators* | Roman government officials who were responsible for taxation within |

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| | a province, and income from Imperial Estates |
| *prytanis* | An office equivalent to that of a modern mayor. |
| *rabdouchos* | An official who was a sort of policemen, and carried a rod or staff as a symbol of authority |
| *rationalis katholikos* | A post introduced by Diocletian has head of the financial administration |
| *sestertius* | Bronze coin of transaction in the Roman Empire. There were four *sestercii* to one silver denarius |
| *sitologus* | Official in charge of the local state granaries |
| *sportula* | Payment of a small sum of money at public celebrations |
| *strategos* | Governor of each *nome* |
| *strategos exactor* | Tax officer, often known simply as *exactor* |
| *syndikos* | The post of legal officer, introduced by Diocletian |
| *tesserarius* | Official traditionally in charge of local guard units, but who also liaised with the authorities and carried out any orders |
| *tetradrachm* | A silver coin worth four drachmas |
| *tetradrachms* | The plural of tetradrachm |
| *tributum caputis* | The poll tax in Egypt that was replaced during Diocletian's reform of the taxation system in A.D. 287 |
| *tributum soli* | The property tax in Egypt that was replaced during Diocletian's reform of the taxation system in A.D. 287 |

## Appendix 2: The British Museum Tetradrachms, Analysis of Cope

To determine the quantity of silver exchanged in each wage payment the silver-coated content of the most recent circulating coin will be multiplied by the number of silver-coated coins. The answer will give the amount of silver that each wage was worth. To calculate this the chemical analysis of tetradrachms was undertaken by Cope at the British Museum will used[1127]. In each case Cope gives the weight (or mass) of each coin and the percentage of silver. To calculate the silver content of each coin the weight is multiplied by the percentage of silver. In each case the results must be treated cautiously. The results are from individual coins but they give some indication of the fabrication content of silver that the Roman financiers intended. Errors can caused by differential reactions in coins, wear, modern analysis and even differences caused by the smelting process[1128]. These errors mean that the certainty by which "specific" silver contents or fineness for coins are stated must be treated with caution. The results will always have been affected by other factors Cope preferred a +/- 10% error (though this too is arbitrary) when considering the silver-contents[1129]. Nevertheless, these values are a guide to the changes in the silver content of the tetradrachm over the course of the third century

Cope's work focused on the coinage of the mid-third century. His unpublished PhD thesis studied the chemical analysis of a small number of Alexandrian tetradrachms to determine the silver content. In his thesis Cope does not give the weights of the coins analysed. Without this it is not possible to convert the fineness into a gram-weight of silver. Nonetheless his fineness values correspond to the finenesses he found later. See Cope *et al.* (1997).

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[1127] Cope *et al* (1997, p. 1997a p.12); and see Appendix 2: The British Museum Tetradrachms, Analysis of Cope, p.235.

[1128] Non-destructive analysis can focus on very small areas of coin and Cope felt destructive analysis was always to be preferred, see Cope *et al.* (1997, p.70). Problems occur in leaching of silver/copper and silver/bronze with the surface enrichment; separation of different metals in the melting pot and even the pouring of the coins (experimental archaeology in casting methods has demonstrated a variation in the silver coin of reconstructed coins from 1.15% at the start of the casting, to 1.57% at the end. The percentage aimed at was 1.39%, see Cope *et al.* (1997, p.1 – 3). See also Cope (1972a, p.47) on silvering. See Cope and Warren (1972, p.237 – 247) on the different methods of electro-probe micro analysis. See Cope (1972b, p.263 – 274) on silver alloys. See also Butcher and Pointing (2012, p.64 – 65) noting the problems with Walker's (standard) interpretation of his results, see Walker (1978). For the reactions of the binary copper-silver alloys used and the effect of metal leaching on weight analysis, see Butcher and Pointing (2012, p.66 - 67), and finally the different interpretations possible of the evidence depending on the presentation of the data, see Butcher and Pointing (2012, p.69).

[1129] Cope *et al.* (1997, p.1-3, 70).

| Emperor | Issue | Date | Silver fineness (%) | Reference |
|---|---|---|---|---|
| Aurelian | 6 | 274/5 | 2.11 | Cope (1974, p.183) |
| Severina | 7 | 275 | 3.14 | Cope (1974, p.184) |
| Probus | 1 | 276/77 | 2.92 | Cope (1974, p.185) |
| Numerian | 2 | 284 | 0.35 | Cope (1974, p.186) |
| Diocletian | 2 | 285/6 | 1.07 | Cope (1974, p.187) |
| Maximain | 2 | 286/7 | 0.19 | Cope (1974, p.188) |
| Diocletian | 4 | 287/8 | 0.28 | Cope (1974, p.189) |
| Maximian | 5 | 289/90 | 0.2 | Cope (1974, p.190) |
| Maximian | 5 | 289/90 | 0.1 | Cope (1974, p.191) |

A more comprehensive has been published by Cope and the British Museum. All references in the following table are from Cope *et al.* (1997, p.12)[1130] unless otherwise noted.

**Table 67 The Silver Content of the Alexandria tetradrachms**

| Emperor | Regnal Year | Date (A.D.) | Weight | Fineness % | Silver (grams) |
|---|---|---|---|---|---|
| Nero | 13 | 66/7 | 12.2 | 18.09 | 2.21 |
| Galba | 1 | 68 | 10.3 | 16.83 | 1.73 |
| Vespasian | 2 | 69/70 | 9.7 | 17.62 | 1.71 |
| Hadrian | 5 | 120/1 | 12 | 15.62 | 1.87 |
| Hadrian | 9 | 124/5 | 10.9 | 16.32 | 1.78 |
| Antoninus Pius | 5 | 141/2 | 12.6 | 18.07 | 2.28 |
| Commodus | 22 | 180/1 | 13.1 | 7.58 | 0.99 |
| Commodus | 30 | 188/9 | 8.9 | 3.92 | 0.35 |
| Commodus | 30 | 188/9 | 12.2 | 11.21 | 1.35 |
| Severus Alexander | ? | 224 – 7 | ? | ? | 0.87[1131] |
| Maximinus | 4 | 237/8 | 11.9 | 6.88 | 0.82 |
| Gordian III | ? | 238 – 44 | ? | ? | 0.74[1132] |

[1130] Cope *et al.* (1997, p.12).
[1131] Lendon (1990, p.109).
[1132] Lendon (1990, p.109).

| | | | | | |
|---|---|---|---|---|---|
| Decius | ? | 249 – 50 | ? | ? | 0.88[1133] |
| Salonina | 11 | 263/4 | 9.85 | 6.84 | 0.67[1134] |
| Gallienus | 12 | 264/5 | 9.31 | 4.66 | 0.43 |
| Gallienus | 13 | 265/6 | 10.15 | 4.28 | 0.43 |
| Gallienus | 14 | 265/6 | 9.63 | 3.28 | 0.32 |
| Salonina | 13 | 265/6 | 9.71 | 3.25 | 0.32 |
| Gallienus | 13 | 265/6 | 9.6 | 4.22 | 0.41 |
| Gallienus | 14 | 266/7 | 8.68 | 2.96 | 0.26 |
| Salonina | 14 | 266/7 | 8.2 | 3.58 | 0.29 |
| Gallienus | 15 | 267/8 | 8.07 | 3.71 | 0.30 |
| Salonina | 15 | 267/8 | 10.67 | 3.61 | 0.39 |
| Claudius II | 1 | 268 | 9.28 | 2.20 | 0.20 |
| Claudius II | 2 | 268/9 | 11.25 | 1.90 | 0.21 |
| Claudius II | 3 | 269/70 | 10.74 | 1.88 | 0.20 |
| Aurelian | 4 | 270/71 | 9.81 | 2.30 | 0.22 |
| Aurelian | 4 | 270/71 | 7.2 | 1.37 | 0.10 |
| Aurelian | 4 | 270/71 | 9.9 | 1.43 | 0.14 |
| Severina | 6 | 274/5 | 8.14 | 2.11 | 0.17 |
| Aurelian | 7 | 275 | 7.71 | 2.56 | 0.19 |
| Aurelian | 7 | 275 | 8.22 | 2.38 | 0.20 |
| Severina | 7 | 275 | 7.67 | 3.14 | 0.24 |
| Tacitus | 1 | 275/6 | 10.34 | 1.80 | 0.19 |
| Probus | 1 | 276 | 7.22 | 2.92 | 0.21 |
| Probus | 2 | 276/7 | 8.06 | 2.04 | 0.16 |
| Probus | 3 | 277/8 | 7.38 | 2.01 | 0.15 |
| Probus | 3 | 277/8 | 9.59 | 2.22 | 0.21 |
| Probus | 5 | 279/80 | 6.86 | 1.00 | 0.07 |
| Probus | 5 | 279/80 | 8.59 | 0.56 | 0.05 |
| Probus | 7 | 281/2 | 8.63 | 0.15 | 0.01 |
| Numerian | 2 | 283/4 | 7.95 | 0.26 | 0.02 |
| Diocletian | 1 | 284/5 | 7.7 | 0.22 | 0.02 |

[1133] Lendon (1990, p.109).
[1134] Cope *et al.* (1997, p.12).

| | | | | | |
|---|---|---|---|---|---|
| Diocletian | 1 | 284/5 | 6.99 | 0.41 | 0.02 |
| Diocletian | 2 | 285/6 | 7.78 | 1.95 | 0.15 |
| Maximian | 2 | 285/6 | 7.88 | 0.26 | 0.02 |
| Diocletian | 4 | 287/8 | 6.61 | 0.28 | 0.01 |
| Maximian | 5 | 288/9 | 8.12 | 0.00 | n/a |
| Maximian | 5 | 288/9 | 5.59 | 0.1 | 0.005 |
| Diocletian | 7 | 290/1 | 6.64 | 0.1 | 0.006 |
| Maximian | 9 | 292/3 | 7.08 | 0.72 | 0.05 |

# Appendix 3: Papyrus P.Oxy.VI 895

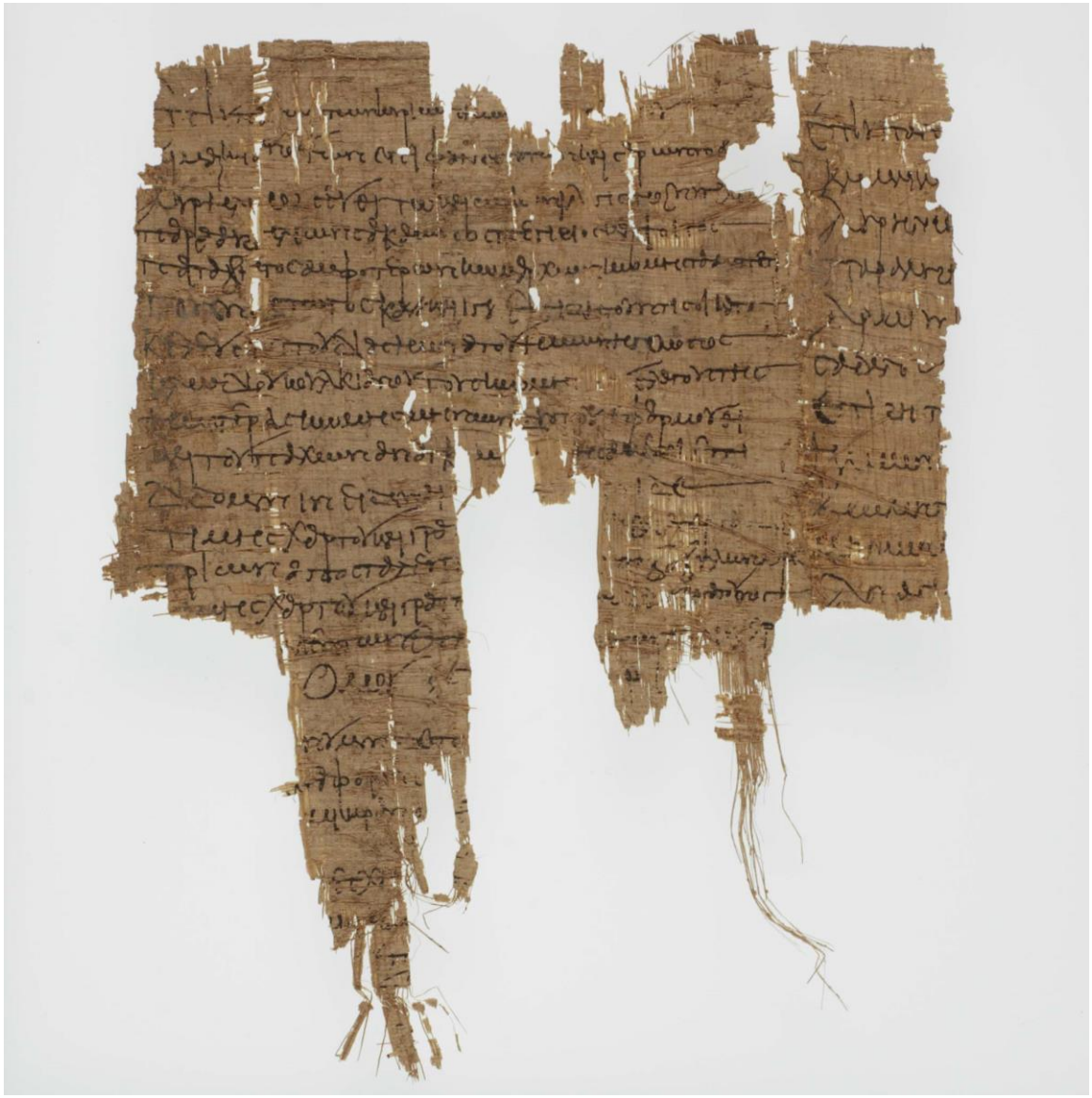


**Figure 25 Papyrus P.Oxy.VI 895**

**Hosted at: http://special.lib.gla.ac.uk/images/papyrus/0010rwf.jpg [Accessed 10/2/14]**

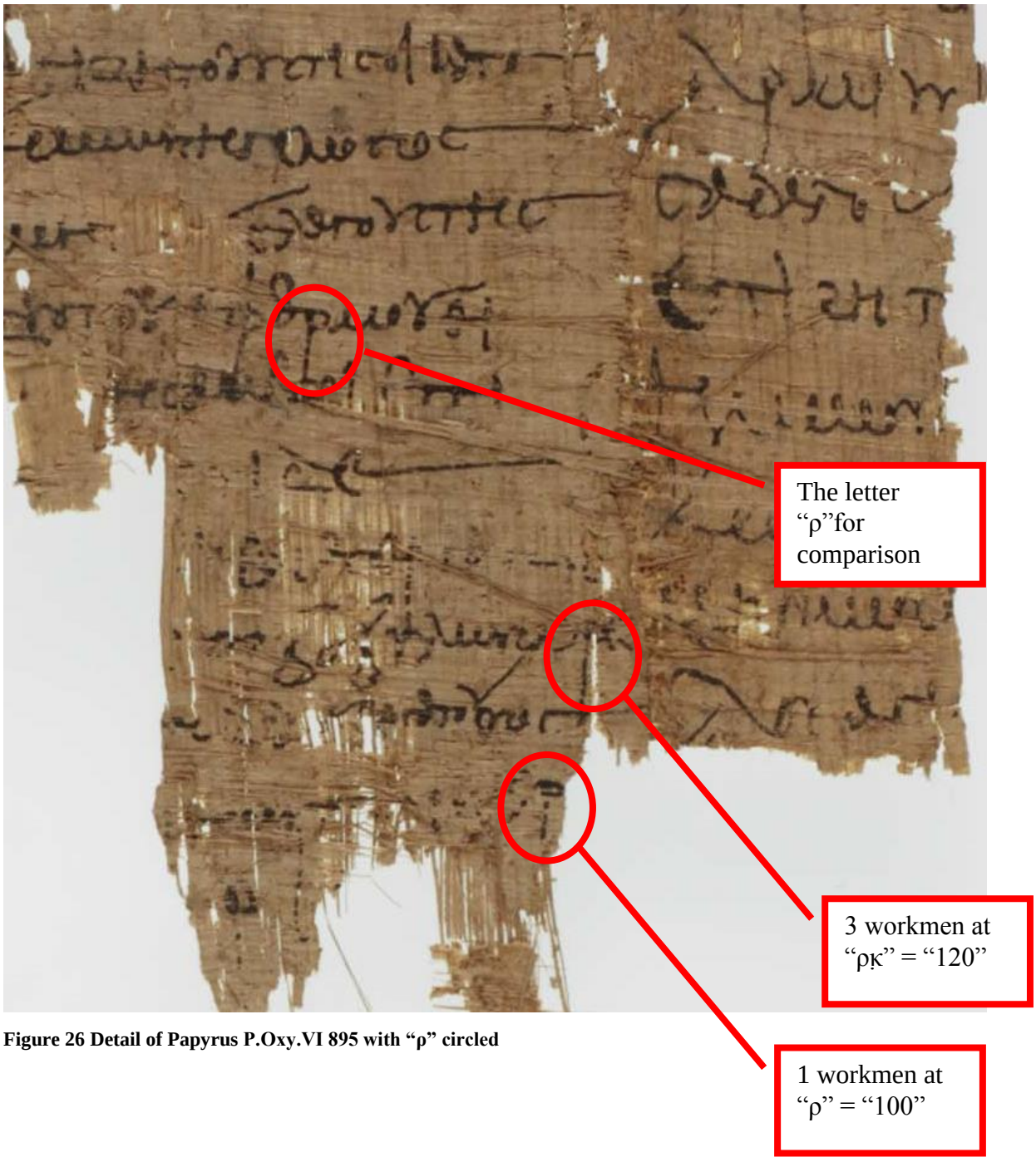
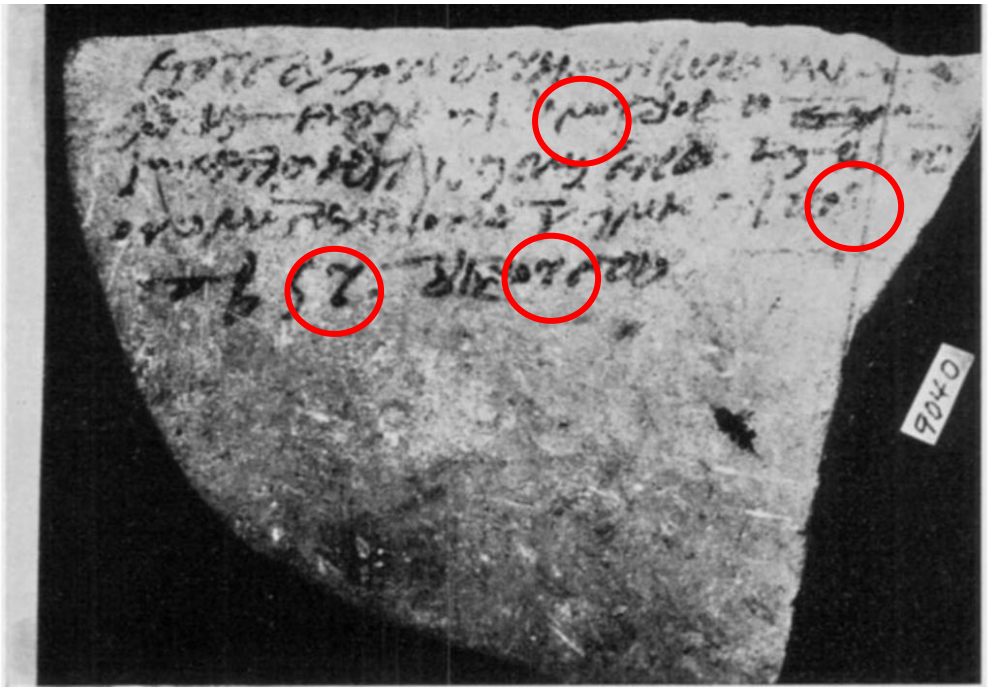



**Figure 26 Detail of Papyrus P.Oxy.VI 895 with “ρ” circled**

## Appendix 4: Ostracon O.Mich. 1.157

The dating of ostracon O.Mich 1.1.57 is crucial to understanding the impact of Aurelian's reforms on wheat prices. The date of O.Mich 1.1.57 is given as A.D. 257 but this is not without dispute. In 1992 Bagnall[1135] suggested that should be attributed not to A.D. 276 but to A.D. 281, and refers to a "forthcoming" work of Worp and Leisker. It has not been possible to locate this work, and in 1999 Bagnall[1136] restated that O. Mich. 1.157 dated to A.D. 276. This date has been followed by Duncan-Jones[1137] but the interpretation of Probus in the first line appears unclear. Regardless of the date itself, there is even some debate on the interpretation of 200 drachmas per artaba which is based on the similarity of the symbol for 200, and on the ῦ in ἐμοῦ[1138]. It must be pointed out that attributing this value on its similarity to a single letter is not entirely convincing since the ῦ not consistent




(a) O. Mich. I 157

**Figure 27 Ostracon O. Mich 1.157 with the symbol ῦ marked. Photograph from Youtie (1974, plate VIII a)**

[1135] See Bagnall (1992b, p.138, n.6).
[1136] See Bagnall (1999, p.330).
[1137] Duncan-Jones (2002, p.152).
[1138] Youtie (1945, p.144 – 147).

A transcription of the text O. Mich. 1.157 is as follows:

"Year 1 of our lord Probus Augustus. Aurelius Eudaimon (has delivered), through me, Diodoros, for the crop of the arithmesis of Aurelian, in the granary of the village of Karanis, in the name of Sarapion, for the price of 2 artabas of wheat, 400 drachmas. Through me, Syros."[1139]

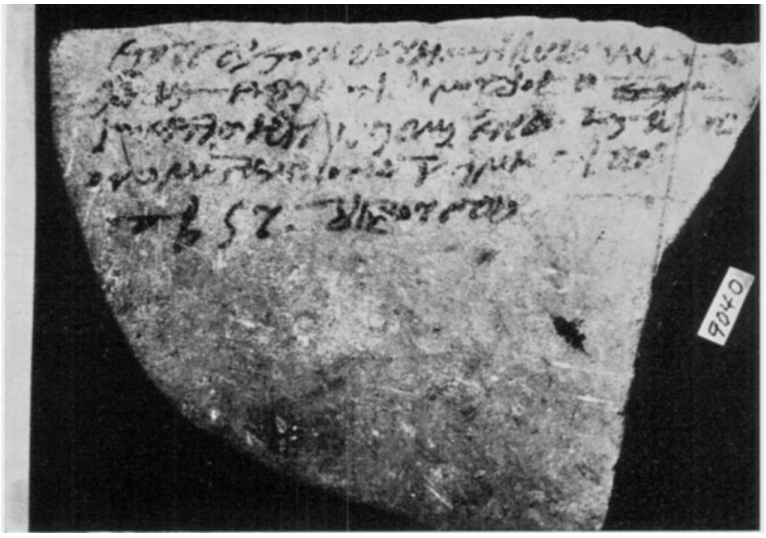
The Greek text is recorded as follows:

(ἔτους) α τοῦ κυρίου ἡμῶν Πρόβου Σεβαστοῦ
Αὐρήλ(ιος) Εὐδαίμων δι' ἐμοῦ Διοδώρου ⟦ε̣ν⟧
γενή(ματος) τῆς ἀρι(θμήσεως) Αὐρηλιανο̣ῦ ἐν θη(σαυρῷ) κώ(μης) Καρανί(δος)
ὀνόμα(τος) Σ̣αρ̣α̣πίονο̣ς ὑ(πὲρ) τιμῆς πυροῦ(*)
5(ἀρταβῶν)(*) β (δραχμὰς) υ(*) δι' ἐ̣μοῦ Σύρου(*).[1140]

Apparatus

3. της (l. τοῦ) η (l. ε ) (ἔτους) prev. ed.
4. οἴνου prev. ed.
5. (ἀρτάβας) prev. ed.
5. δ´ prev. ed.
5. Δ̣ι̣οδ̣ώ̣ρου prev. ed.

This can be compared with a photograph of the original ostracon:




(a) O. Mich. I 157

**Figure 28 Ostracon O. Mich.1.157, Photograph from Youtie (1974, plate VIII a)**

[1139] Greek text and translation hosted at http://www.papyri.info/hgv/41914 [last accessed 02/08/2015].
[1140] Greek text and translation hosted at http://www.papyri.info/hgv/41914 [last accessed 02/08/2015].

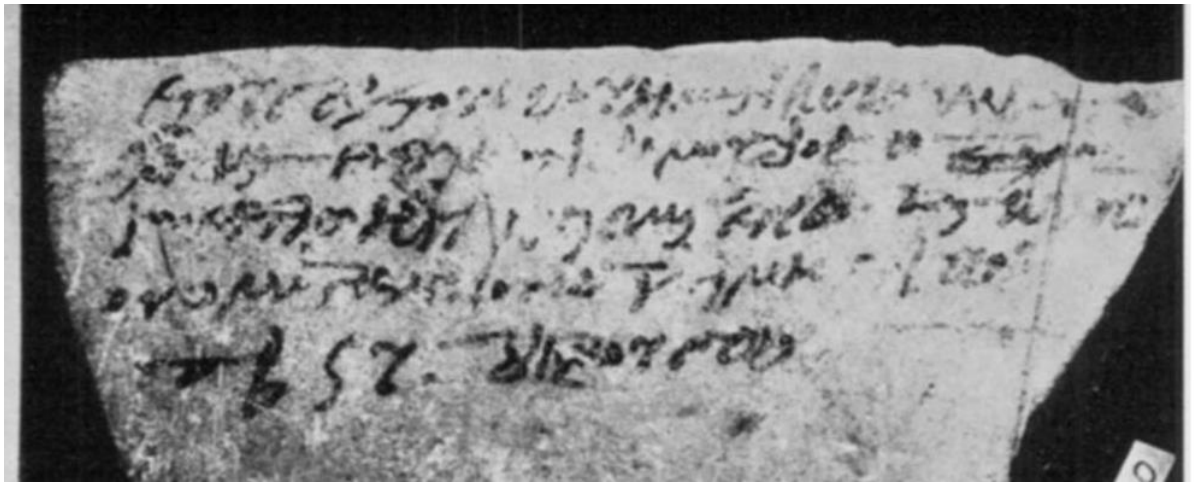
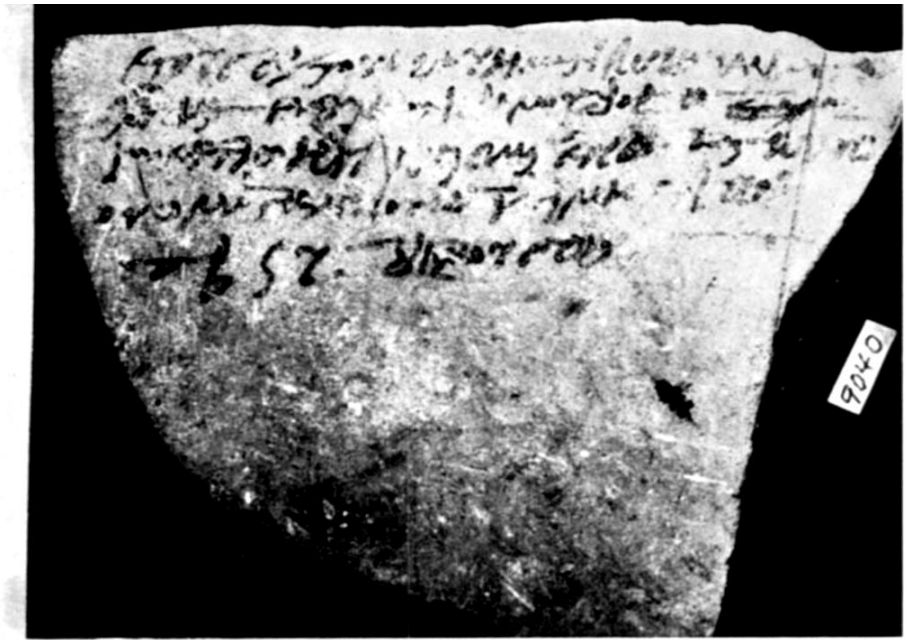


**Figure 29 Ostracon O. Mich.1.157 enlarged, Photograph from Youtie (1974, plate VIII a)**




(a) O. Mich. I 157

**Figure 30 Ostracon O.Mich. 1.157 enhanced contrast. Photograph from Youtie (1974, plate VIII a)**

## Appendix 5: Apprentice Papyri Analysed in Text

## P. Oxy. II, 275

Text and translation hosted at:
http://droitromain.upmf-grenoble.fr/Negotia/Oxy146_DDBDP.gr.html
[last accessed 17/07/14]

ὁ[μ]ο[λ]ογοῦσιν ἀλλή[λ]οις Τρύφων Διονυ[σίου] τοῦ Τρύφωνος μητρὸς [Θ]αμούν[ιο]ς τῆ[ς] Ὀννώφριος καὶ Πτολεμαῖο[ς] Παυσιρίωνος τοῦ Πτολεμαίου μητρὸς Ὠφελοῦτος τῆς Θέωνος γέρδιος, ἀμφότεροι τῶν ἀπ᾽ Ὀξυ-ρύγχων πόλεως, ὁ μὲν Τρύφων ἐγδεδόσ-θαι τῷ Πτολεμαίῳ τὸν ἑαυτοῦ υἱὸν Θοῶ-νιν μητρὸς Σαραεῦτος τῆς Ἀπίωνος οὐδέ-πω ὄντα τῶν ἐτῶν ἐπὶ χρόνον ἐνιαυτὸν ἕνα ἀπὸ τῆς ἐνεστώσης ἡμέρας, διακονο\ῦ/lativ)-τα καὶ ποιο[ῦ]ντα πάντα τὰ ἐπιτασσόμε-να αὐτῷ ὑπὸ τοῦ Πτολεμαίου κατὰ τὴν γερδιακὴν τέχνην πᾶσαν, <ὁ δὲ Πτολεμαῖος κατ᾽ αὐτὸν ἐκδιδάξειν τὸν παῖδα κατὰ τὴν γερδιακὴν τέχνην> ὧς καὶ αὐτὸς ἐπίστα<τα>ι, τοῦ παιδὸς τρεφομένου καὶ ἱμα-τιζομένου ἐπὶ τὸν ὅλον χρόνον ὑπὸ τοῦ πατρὸς Τρύφωνος πρὸς ὃν καὶ εἶναι τὰ δημόσια πάντα τοῦ παιδός, ἐφ᾽ ᾧ δώσει αὐτῷ κατὰ μῆνα ὁ Πτολεμαῖος εἰς λόγον διατροφῆς δραχμὰς πέντε καὶ ἐπὶ συνκλεισμῷ τοῦ ὅλου χρόνου εἰς λόγον ἱματισμοῦ δραχμὰς δέκα δύο , οὐκ ἐξόντος τῷ Τρύφωνι ἀποσπᾶν τὸν παῖδα ἀπὸ τοῦ Πτολεμαίου μέχρι τοῦ τὸν χρόνον πληρωθῆναι, ὅσας δ᾽ ἐὰν ἐν τούτῳ ἀτακτήσῃ ἡμέρας ἐπὶ τὰς ἴσας αὐτὸν παρέξεται [με]τὰ τὸν χρό-νον ἢ ἀ[πο]τεισάτω ἑκάσ[τ]ης ἡμέρας ἀργυρίου [δρ]αχμὴν μίαν , [τ]οῦ δ᾽ ἀποσπα<σ>-θῆναι ἐντὸς τοῦ χρόν[ου] ἐπίτιμον δραχμὰς ἑκατὸν καὶ εἰς τὸ δημόσιον τὰς ἴσας. ἐὰν δὲ καὶ αὐτὸ[ς ὁ] Πτολεμαῖος μὴ ἐγδιδάξῃ τὸν παῖ[δ]α ἔνοχος ἔστω τοῖς ἴσοις ἐπιτίμοις. κυρία ἡ διδασκαλική. (ἔτους) ιγ Νέ[ρ]ωνος Κλαυδίου Καίσαρος Σεβαστοῦ Γερμανικοῦ Αὐτοκράτορος, μηνὸς Σεβαστοῦ κα. (hand 2) Πτολεμαῖος [Πα]υσιρίωνος τοῦ Πτολεμαίου μητρὸς Ὠφε-λοῦτος τῆς Θέωνος ἔκαστα ποιήσω ἐν τῷ ἐνιαυτῷ ἐνί.
Ζωίλος Ὥρου τοῦ Ζωίλου μητρὸς Διεῦτος τῆς Σωκέως ἔγραψα ὑπὲρ αὐτοῦ μὴ εἰδότος γράμματα. ἔτους τρεισκαιδεκάτου Νέρωνος Κλαυδίου Καίσαρος Σεβαστοῦ Γερμανικοῦ Αὐτοκράτο[ρο]ς, μη(νὸς) Σεβαστοῦ κα.

## Translation

Agreement between Tryphon, son of Dionysius, the son of Tryphon, his mother being Thamounis the daughter of Onnophris, and Ptolemaeus, son of Pausirion, the son of Ptolemaeus, his mother being Ophelous, the daughter of Theon, weaver, both parties belonging to the city of Oxyrhynchus. Tryphon agrees to apprentice to Ptolemaeus his son Thoönis, his mother being Saraeus the daughter of Apion, who is not yet of age, for a period of one year from the present day, to serve and to do everything commanded him by Ptolemaeus in accordance with the whole weaving art, as also he himself knows it—the boy being supported and clothed during the whole time by his father Tryphon, on whom also all the public dues for the boy shall fall, on condition that Ptolemaeus shall give him monthly on account of his keep five drachmas, and at the expiry of the whole period on account of his clothing twelve drachmas, it not being permitted to Tryphon to remove the boy from Ptolemaeus until the time is completed ; and if there are any days during this period on which he [the boy] plays truant, he [Tryphon] will produce him for an equal number of days after the time, or let him pay back for each day one silver drachma, and the penalty for removing him within the period shall be a hundred drachmas and a like amount to the public treasury. But if Ptolemaeus himself does not teach the boy thoroughly, let him be liable to the like penalties. This contract of apprenticeship is valid. The 13th year of Nero Claudius Caesar Augustus Germanicus Emperor, the month Sebastus 21.

I, Ptolemaeus, son of Pausirion, the son of Ptolemaeus, my mother being Ophelous the daughter of Theon, will carry out each of these requirements in the one year.

I, Zoilus, son of Horus, the son of Zoilus, my mother being Dieus daughter of Soceus, write on his behalf seeing that he does not know letters. The 13th year of Nero Claudius Caesar Augustus Germanicus Emperor, the month Sebastus 21.

## P. Oxy. XLI, 2971

Text also hosted at:
http://droitromain.upmf-grenoble.fr/Negotia/Oxy90_DDBDP.gr.html [last accessed 17/07/14]

ὁμολογοῦσιν ἀ[λλήλ]οις Τασεῦς Ἡρ[α]-κλᾶτος μετὰ κυρίο[υ το]ῦ ἑαυτῆς ὁμογν[η]-σίου ἀδελφοῦ Ϛ.[..]. καὶ Σεύθης Διογέ(νους) τοῦ Διονυσίου γέ[ρ]διος ἡ μὲν Τασεῦς ἐκδεδόσθαι τῷ[ι Σε]ύθῃ τὸν ἑαυτῆς υ(ἱὸν) Ἡρακλᾶν Ἀπολλῳ..[.] οὐδέπω ὄντα τῶν ἐτῶν πρὸς μάθησιν τῆς γερδι-ακῆς τέχνης ἐπ᾽ ἔτη δύο καὶ μῆνας ἓξ ἀπὸ τῆς ἐνεστώσης ἡμέρας ποι-οῦντα πάντα τὰ ἐπιτασσόμενα αὐτῶι ὑπὸ τοῦ Σεύθου κατὰ τὴν γερδιακὴν τέ-χνην. ὁ δὲ Σεύθης καὶ αὐτὸς ἐκδιδάξει τοῦτον καθὼς ἐπίσταται, τοῦ παιδὸς τρεφομένου καὶ ἱματιζομένου ὑπὸ τοῦ διδασκάλου Σεύθου, ὁ δὲ αὐτὸς Σεύ-θης διορθώσεται τὸ ὑπὲρ τοῦ παιδὸς χειρωνάξιον σὺν κατακρίματι τῶν δύο ἡμίσους ἐτῶν. ἐὰν δὲ καὶ ἐν τῶι αὐτῶι χρόνωι ὁ παῖς ἀπαιτηθῇ λαο-γραφίαν ἢ χωματικὸν ἢ ὑικὴν ἔσται πρὸς τὸν ⳨αὐ̣τ̣[ὸ]ν [Σ]εύθην. ὁ δὲ αὐτὸς Σεύθης, ἐὰν μὴ βούληται ὁ παῖς ὑπ̣ὸ τοῦ διδασκάλου τρέφεσθαι, χωρηγή-σει τῇ Τα[σ]ε̣ῦτι ὑπὲρ τῶν τούτου τρο-φείων κατὰ μῆνα ἕκαστον ἀργυρίου δραχμὰς [π]έντε καὶ μετὰ τὸν χρόνον δ̣ώ̣σει τ[ῶ]ι παιδὶ ὑ̣πάγοντι χιτῶνα [ἄξι]ον δρ[αχ]μ̣ῶν δεκαδύο ἢ αὐτὰς τὰς [δραχμὰς δεκαδύο .] ἀργήσει δὲ ὁ παῖς -- -- -- -- -- -- -- -- -- -- [ - ca. 15 - ].... Ἀ̣[με]σ̣υ̣σ̣ί̣ο̣ι̣[ς] [ - ca. 11 - ]..... [ὅ]σας δ᾽ ἂ[ν] μ̣ε̣τ̣[ὰ] τ̣αύ̣-[τας ὁ παῖς ἀργ]ήσῃ, ἐπὶ τὰς ἴσας αὐτὸν παρ-[έξεται ἡ Τασε]ῦ̣ς μετὰ τὸν χρόνον ᾗ ἀ[πο]-[τεισάτω ἑκάστη]ς̣ ἡμέ[ρα]ς̣ δραχμὴν μία[ν] , [τοῦ δὲ ἀποσπ]α̣σθῆν[α]ι π̣ρὸ τοῦ χρόνο̣[υ] ἐπ[ί]τιμ[ο]ν [ἀρ]γ(υρίου) (δραχμὰς) ἑκατ[ὸ]ν καὶ εἰς τὸ δημόσιο(ν) τὰς ἴσας. ἐὰν δ̣ὲ καὶ αὐτὸς ὁ Σεύθης μὴ ἐκ-διδάξῃ τὸν παῖδα ἐνεχέσθω τῷ ἴσωι ἐπιτίμῳ. κυρία ἡ διδασκαλική. (ἔτους) ιβ Νέρωνος Κ[λαυ]δ[ίου] Κ[α]ίσαρος Σεβαστοῦ Γερμανικοῦ [Αὐ̣]τ̣[οκ]ράτορος, Φ[α]μεν[ὼ]θ ιε. (hand 2) Σεύθης Δ[ιο]γένους ἐκδιδάξω τὸν παῖδ[α] καὶ ποιήσω καθότι πρόκιτα[ι]. (ἔτους) ιβ Νέρωνος Κλαυδ̣ίο(υ) Καίσαρος Σεβα[σ]̣τοῦ Γερμανικοῦ Αὐτοκράτορο[ς], Φαμενὼθ̣ ιε.
ὁμολ( ) διδασκαλ

## Translation

Translation transcribed from Browne *et al.* (1972, p.59)

‘Taseus, daughter of Heraclas, with her full brother [ ] as guardian, and Seuthes son of Diogenes, son of Dionysius, weaver, acknowledge to one another, Taseus that she has handed over to Seuthes her son Heraclas, son of Apollo[ ], who is not yet of age, to learn the craft of weaving for a period of two years and six months from the present day, (the boy) carrying out all the instructions given to him by Seuthes pertaining to the craft of weaving. Seuthes for his part will teach him in accordance with his own knowledge, the boy being maintained and clothed by the teacher Seuthes, and Seuthes too is to pay the trade-tax due on the boy, together with the fine, for two and a half years; and if during that time the boy shall be required to pay poll-tax or dike-tax or pig-tax, these too shall be incumbent on the said Seuthes. If the boy does not wish to be maintained by the teacher, Seuthes is to pay to Taseus for his maintenance each month five silver drachmas, and after the period he is to give the boy on his departure a tunic worth twelve drachmas, of the twelve drachmas themselves. The boy will have holidays... at the Amesysia...; but for as many day as the boy is idle besides these, Taseus shall deliver him for an equal number of days after the period, or pay a penalty of a drachma for each day; but for withdrawing him before the period is up she shall pay a fine of a hundred silver drachmas and the same sum to the State. Should Seuthes for his part not teach the boy, he shall be liable to the same fine. This contract of apprenticeship is valid. The twelfth year of Nero Claudius Caesar Augustus Germanicus Imperator, Phamenoth 15’
[2nd hand] ‘I, Seuthes son of Diogenes, shall teach the boy and shall do as aforesaid. The 12th year of Nero Claudius Caesar Augustus Germanicus Imperator, Phamenoth 15.’

## P. Oxy IV 725

Text hosted at:
http://www.papyri.info/ddbdp/p.oxy;4;725 [last accessed 17/07/14]

[ὁμολογοῦσιν ἀλλήλοις Ἰσ]χυρίων Ἡραδίωνος
[μητρὸς - ca.10 - ἀπ᾽ Ὀξυ]ρύγχων πόλεως καὶ
[Ἡρακλᾶς Σαραπίωνος το]ῦ καὶ Λέοντος Ἡρακλεί-
δ[ο]υ μ[ητρὸς . . . . . ἀπὸ] τῆς αὐτῆς πόλεως
[γέρ]διο[ς ὁ μὲν Ἰσχυρίων ἐγ]δεδόσθαι τῷ Ἡρα-
[κλᾷ] τὸν το[ῦ μετηλλαχότος αὐτοῦ] ἀδελφοῦ
[υἱ(?)]ὸν(?)(*) Θῶν[ιν ἀ]φήλ[ικα π]ρὸς [μ]άθησιν τῆς δη-
λ[ο]υμένης [τέ]χνης ἀπὸ νεομη[νίας τοῦ] ἐξῆς
μ[η]νὸς Φαῶφ[ι] ἐπὶ χρόνον ἔτη πέ[ντε , κ]αὶ παρ-
ἐξει αὐτὸν προσεδρεύοντα τῷ διδασκάλῳ
ἐπὶ τὸν δηλο[ύμε]νον χρ[ό]νον καθ᾽ ἑκάστην
ἡμέραν ἀπὸ ἀν[ατολῆς] ἡ[λίου] μέχρι δύσεως,
ποιοῦντα πάντ[α τὰ ἐπιτραπ]ησόμενα (*) [α]ὐτῷ
ὑπὸ τοῦ αὐτοῦ δ[ιδασκάλ]ου ὡς ἐπὶ τῶν ὁμοί-
ων μαθητῶν, [τρεφόμ]ενον ὑπὸ τοῦ Ἰσχυ-
[ρί]ωνος. κ[αὶ τὰ μὲν] πρῶτα ἔτη (*) δύο
καὶ μῆνας ἑπτὰ τοῦ τρίτου ἐνιαυτοῦ
οὐδὲν δώσει ὑπὲρ μισθοῦ τοῦ παιδὸς ὁ Ἡρα-
κλᾶς, τοῖς δὲ λοιποῖς μησὶ πέντε τοῦ αὐ-
τοῦ τρίτου ἐνιαυτοῦ χορηγήσει ὁ Ἡρα-
κλᾶς ὑπὲρ μισθῶν τοῦ αὐτοῦ μαθητοῦ
κατὰ μῆνα δραχμὰς δεκαδύο κ[α]ὶ τῷ τε-
τάρτῳ ἐνιαυτῷ ὁμοίως κατὰ μῆνα
ὑπὲρ μισθῶν δραχμὰς δεκαὲξ καὶ τῷ
πέμπτῳ ἐνιαυτῷ ὁμοίως κατὰ μῆ-
να δραχμὰς εἴκοσι τέσσαρας , καὶ κατασκευ-
άσει ὁ Ἡρακλᾶς τῷ αὐτῷ μαθητῇ τῷ μὲν

ἐνεστῶτι τετάρτῳ καὶ εἰκοστῷ ἔτει
χ[ι]τῶνα ἄξιον δραχμῶν δεκαέξ , τῷ [δὲ]
30ὶ (*) σιόντι (*) κε (ἔτει) ἕτερον χιτῶνα ἄξιον δ[ρα-]
χμῶν εἴκοσι , καὶ [τ]ῷ κς (ἔτει) ὁμοίως ἄλλο[ν]
χιτῶ[ν]α ἄξιον δραχμῶν εἴ[κ]οσι τε[σσάρων] ,
κ[α]ὶ τῷ κζ (ἔτει) ἄλλον χιτῶνα [ἄ]ξιον δ[ραχμῶν]
εἴκοσι ὀκτώ , καὶ τῷ κη (ἔτει) ὁμοίως \ἄλλ[ον]/ χιτῶ-
35να ἄξιον (*)  δραχμῶν τριάκοντα δύο . ἀρ-
γήσει δὲ ὁ παῖς εἰς λόγον ἑορτῶν κατ᾽ ἔτος
ἡμέρας εἴκοσι , οὐδενὸς ἐκκρουομένου
τ̣[ῶ]ν̣ μισθῶν τ̣ο̣ύτων ἀφ᾽ οὗ χρόνου ἐὰν
χορηγηθῇ μισ̣θ̣ός, ἐὰν δὲ πλείονας τού-
40των ἀργήσῃ [ἢ ἀσ]θενήσῃ ἢ ἀτακτήσῃ ἢ
δι᾽ ἄλλην τι̣ν̣[ὰ αἰ]τίαν ἡμέρας ἐπὶ τὰς
[ἴσ]α̣ς ἐπάναγκε̣[ς] παρέξει αὐτὸν ὁ Ἰσχυρί-
ων τῷ διδασκά[λ]ῳ ἡμέρας παραμένον-
τα καὶ ποιοῦντ[α] πάντα καθὼς πρόκειται
45χωρὶς μισθοῦ, τρεφόμενον ὑπὸ τοῦ αὐτοῦ
Ἰσχυρίωνος, διὰ τὸ ἐπὶ τούτοις ἑστάσθαι.
ὁ [δ]ὲ Ἡρακλᾶς εὐδοκῶν τούτοις πᾶσι καὶ ἐκ-
δειδάξειν (*)  τὸν μαθητὴν τὴν δηλουμέ-
νην τέχνην ἐν τῷ πενταετῖ (*)  χρόνῳ
50καθὼς καὶ αὐτὸς ἐπίσταται καὶ χορηγήσει̣ν
τοὺς μηνιαίους μισθοὺς καθὼς πρόκει-
τα[ι] ἀπὸ τοῦ ὀγδόου μηνὸς τοῦ τρίτου ἐνιαυ-
τοῦ. καὶ μὴ ἐξεῖναι μηδενὶ αὐτῶν παρα-
βαίνειν τι τῶν προκειμένων ἢ ὁ παραβὰς
55ἐκτείσι (*) τῷ ἐνμένοντι ἐπιτείμου (*)  δραχμὰς
ἑκατὸν καὶ εἰς τὸ δημόσιον τὰς ἴ (*) σας. κύριον
τὸ ὁμολόγημα. (ἔτους) κδ Αὐτοκράτορος Καίσαρος
Μάρκου Αὐρηλίου Κομμόδου Ἀντωνίνου
Σεβαστοῦ Ἀρμενιακοῦ Μηδικοῦ Παρθικοῦ
60Σαρματικοῦ Γερμανικοῦ Μεγίστου Θὼθ κε.

———

(hand 2) Ἡρακλᾶς Σαραπ(ίωνος) τοῦ κ(αὶ) Λέοντος τέθειμαι τὸ
ὁμολόγημα καὶ εὐδοκῶ πᾶσι τοῖς προκ(ειμένοις).
Θῶνις ὁ κ(αὶ) Μῶρ̣ο̣ς ἀ̣π̣ε̣λ(εύθερος) (*) Ἀρθώνιος ἔγραψ[α]
ὑπὲρ αὐ(τοῦ) μὴ εἰδ(ότος) γράμμ(ατα).

## Apparatus

6-7. BL 3.132 : το[ῦ - ca.12 -]. . [. . . ]
ἀδελφ̣ο̣ῦ . [. ]. ον prev. ed.
13. BL 1.327 : [ἐπιταχθ]ησόμενα prev. ed.
16. corr. ex εξη
30. l. εἰσιόντι : ϊσιοντι papyrus
35. corr. ex αδοον
47-48. l. ἐκ|διδάξειν
49. l. πενταετεῖ
55. l. ἐκτίσει
55. l. ἐπιτίμου
56. ϊσασ. papyrus
63. BL 12.136 : Μωροῦς prev. ed.

## Translation

Translation transcribed from Grenfell and Hunt (1904, p.208 - 9)

'Ischyrion son of Heradion and ...., of Oxyrhynchus, and Heraclas son of Sarapion also called Leon, son of Heraclides, his mother being... of the said city, weaver, agree with each other as follows: - Ischyrion on the one part that he has apprenticed to Heraclas.... Thonis, a minor, to be taught the art of weaving for a period of five years starting from the 1st of next month, Phaophi, and will produce him to attend the teacher from the stipulated period every day from sunrise to sunset, performing all the orders that may be given to him by the said teacher on the same terms as the other apprentices, and being fed by Ischyrion. For the first 2 years and 7 months of the 3rd year Heraclas shall pay nothing for the boy's wages, but in the remaining 5 months of the said 3rd year Heraclas shall pay for the wages of the said apprentice 12 drachmas a month, and in the 4th year likewise for wages 16 drachmas a month, and in the 5th year likewise 24 drachmas a month; and Heraclas shall furnish for the said apprentice in the present 24th year a tunic worth 16 drachmas a month, and in the coming 25th year a second tunic worth 20 drachmas, and likewise in the 26th year another tunic worth 24 drachmas, and in the 27th year another tunic worth 28 drachmas, and likewise in the 28th year another tunic worth 32 drachmas. The boy shall have 20 holidays in the year on account of festivals without any deduction from his wages after the payment of the wages begins; but if he exceeds this number of days from idleness or ill-health or disobedience or any other reason, Ischyrion must produce him for the teacher during an equivalent number of days, during which he shall remain and perform all his duties, as aforesaid, without wages, being fed by the said Ischyrion, because the contract has been made on these terms. Heraclas on the other part consents to all these provisions, and agrees to instruct the apprentice in the aforesaid art within the period of 5 years as thoroughly as he knows himself, and to pay the monthly wages as above, beginning with the 8th month of the 3rd year. Neither party is permitted to violate any of the aforesaid provisions, the penalty for such violation being a fine of 100 drachmas to the part abiding by the contract and the to the Treasury and equal sum. This agreement is valid. The 24th year of the Emperor Caesar Marcus Aurelius Commodus Antoninus Augustus Armeniacus Medicus Parthicus Sarmaticus Germanicus Maximus, Thoth 25. I, Heraclas son of Sarapion also called Leon, have made this contract and consent

to all the aforesaid provisions. I, Thonis also called Morous, so of Harthonis, wrote for him as he was illiterate.'

## P. Oxy XIV, 1647

Text hosted at:
http://papyri.info/hgv/29011/[last accessed 17/07/14]

ὁμολογοῦ[σιν ἀ]λ̣λ[ήλ]ο̣[ι]ς [Πλα-]
τωνὶς ἡ καὶ Ὠφε̣[λί]α Ὡρείω[νος]
ἀπ' Ὀξυρύγχων πόλεως μετὰ [κυ-]
ρίου τοῦ ὁμογνησίου ἀδελφ[οῦ]
5Πλάτωνος καὶ [Λ]ο̣ύ̣κ̣ι[ος] Ἰσ̣ίω̣-
νος μητρὸς Τισάσιος ἀπ[ὸ]
τοῦ Ἀφροδεισίου τῆς Μεικρᾶ[ς](*)
Ὀάσεως γέρδιος, ἡ μὲν Πλ[α-]
τωνὶς ἡ καὶ Ὠφελία ἐκδ[εδό-]
10σθαι τῷ Λουκίῳ ἣν ἔχει ἀφή-
λικα δούλην Θερμούθιον
πρ[ὸ]ς μάθησιν τῆς γερδι[α-]
κῆς τέχνης ἐ[πὶ] χρόνον ἔ-
τη τέσσαρα ἀπὸ γ̣ε̣ο̣μ̣η̣ν̣ί̣α̣[ς]
15τοῦ ἐξῆς μηνὸς Τῦβι τοῦ
ἐνεστῶτος [ἔτου]ς, ἐφ' ᾧ θρέψ[ειν]
καὶ ἰ(*)ματειῖν(*) τὴν παῖδα
καὶ παρέξεσθαι αὐτὴν τῷ
διδασκάλῳ καθ' ἡμέραν
20ἀπὸ ἀνατολῆς ἡλίου μέ-
χρι δύσεως ἐκτελοῦσαν
πάντα τὰ ἐπιτραπησόμε-
να αὐτῇ ὑπ' αὐτοῦ ἀνήκον-
τα τῇ [π]ροκειμένῃ τέ-
25χνῃ, μισθοῦ ἐπὶ μὲν τὸν

πρῶτον ἐνιαυτὸν κατὰ
μῆνα δραχμῶν ὀκτώ ,
ἐπὶ δὲ τὸν δε[ύτ]ε[ρο]ν ὁ-
μοίως κατὰ [μ]ῆν[α] δ[ρα-]
30χμῶν δεκάδυ[ο] , καὶ ἐ-
πὶ τὸν τρίτον ὁμ[ο]ί[ως]
κατὰ μῆνα δραχμῶν
δεκάεξ , καὶ ἐπὶ τὸν [τ]έτ[αρ-]
τον ἐνιαυτὸν ὁμοίω[ς]
35κατὰ μῆνα δραχμ[ῶν]
εἴκοσι , λήμψεσ̣[θαι δ]ὲ̣
τὴν παῖδα κατ᾽ ἔτ[ος εἰς]
ἑορτῶν λόγον ἀργίας ἡμ[έ-]
ρας δεκαόκτω , ἐὰν δ[ὲ ἡ-]
40μέ̣ρ̣α̣ς τι̣ν̣[ὰς] ἀργήσῃ ἢ ἀσθ[ε-]
νήσ[ῃ, το]ύτων ἐπ[ὶ] τ̣[ὰς ἴ-]
σας πα[ραμ]ενεῖ τῷ̣ διδ[α-]
σκάλ[ῳ] μετὰ τὸν χρ[όνον,]
τ[ῶ]ν τ̣ῆ̣ς τέχνης χ[ειρω-]
45ναξίων κα[ὶ] ἐκδόσεων τ̣[ελεσ-]
μάτων ὄντων πρὸς
[τὸ]γ̣ δ̣ι̣δ̣άσκαλον. ὁ δὲ̣ [ -ca.?- ]

## Apparatus

7. l. Μικρᾶ[ς]

17. l. ἱματιεῖν : ϊματειιν papyrus

## Translation

Translation transcribed from Grenfell and Hunt (1920, p.80)

Platonis also called Ophelia, daughter of Horion, of Oxyrhynchus, with her guardian who is her full brother, Plato, and Lucius son of Ision and Tisasis, of Aphrodisium in the Small Oasis, weaver, mutually acknowledge, Platonis also called Ophelia that she has apprenticed to Lucius her slave Thermuthion, who is under age, to learn the trade of weaving for a period of 4 years dating from the 1st of the coming month Tubi of the present year, for which period she is to feed and clothe the girl and produce her to her instructor daily from sunrise to sunset in the performance of all the duties to be imposed on her by him, her pay being for the first year at the rate of 8 drachmas a month, for the second year 12 drachmas, for the third year 16 drachmas a month, and for the fourth year 20 drachmas a month, and that the girl is to be allowed annually 18 days' holiday on account of festivals, while, if there are any days on which she does not work or is ill, she shall remain with her instructor for a number equal to these at the end of the period, the taxes upon the trade and imposts upon apprenticeship being chargeable to the instructor; and Lucius on his part...

## SB 18.13305

http://www.papyri.info/ddbdp/sb;18;13305 [last accessed 17/07/14]

ἐξ[έ]δετ[ο Αὐρήλιος Ἰσίων]
Νειλάμμῳ[νο]ς τῶ[ν] ἀπὸ κώ-
μης [Κα]ρ[ανί]δος Αὐρη[λί]ᾳ Λι-
βυκ[ῇ . . ]. αδίων[ος ἀπ᾽ ἀμ-]
φόδου Βιθυνῶν ἄλλων τόπων
χωρὶς κυρ[ίου χ]ρη(ματιζούσῃ) τέκνων δι-
καίῳ γερδιαίνῃ τὴν τοῦ αὐτοῦ
Ἰσίωνος [παιδίσκη]ν [π]αρὰ
Α[ὐρ]ηλί[ᾳ Λιβου]κῇ . . . . πρὸ[ς]
μ[άθ]ησιν [τῆς δη]λουμένης
τέ[χ]νη[ς] ἐ[πὶ χρόν]ον ἐν[ι]αυτὸν
ἕ[ν]α ἀπ[ὸ τῆς ἐξῆς ν]εομην[ί]ας
τ[οῦ εἰ]σιόν[τος μηνὸς Μεχεὶρ]
τ[ῆς] πα[ιδὸς τρ]εφομ[ένης] καὶ
[ἱμα]τιζομ[ένης ὑ]π᾽ αὐ[τῆς(?). ]ατα
. [. . ]εκ. [. . . ]ματῳ[. . ]. ω
. [. . ]νησου[. . . . . παρ]αλάβῃ
[πα]ρὰ τῆ[ς Λιβουκῆς . ]. . .
[. . ]λαλ[. . . ὅσας ἡ]μέρας ἐὰν
[ἀργ]ήσῃ [δι᾽ ἀσθέ]νιαν (*) ἢ δι᾽ ἄλ-
λ[ην] τινὰ [αἰτίαν ἀν]τ[ι]πα-
ραμενῖν (*) [μετὰ τὸν] χρόνον· [τ]οῦ
χρόνου πληρωθέντος καὶ πα-
ραμινάσης τῆς παιδὸς ἀμέμ-
πτως, παραδωσιν (*) αὐτὴν ἡ δεσ-
καλος (*) μεμαθηκυῖαν τὴν τέχ-
νην ἐντελῶς καθ᾽ ὁμοιότη-
τα τῶν ὁμηλίκων αὐτῆς,

οὐκ οὔσης ἐξουσίας ὁποτέ-
ρῳ αὐτῶν ἀλλάξαι τὸν ἕτερον
ἢ παραβῆναί τι τῶν ἐγγεγραμ-
μένων· ὃς δ’ ἂν παραβῇ, δώσι (*)
[σι] τῷ ἐμμένοντι ὑπὲρ ἐπιτί-
μου ἀργυρίου δραχμὰς διακοσίας .
ἡ διδασκαλικὴ κυρία καὶ ἐπε-
ρωτηθέντες ἀλλήλοις ὡμο-
λόγησαν / /
Αὐ(ρηλία) Λιβουκὴ ὡς (ἐτῶν) νη οὐλ(ὴ)
ἀντικνημίῳ ἀριστερῷ
λαμβανούσης τῆς παιδὸς ἐπὶ πᾶ-
ν τοῦ χρόνου εἰς λόγον Ἰσίωνος
δραχμὰς ἑξήκοντα .
(ἔτους) α Λουκίου Δομιτίου Αὐρηλιανοῦ
καὶ Σεπτιμίου Οὐαβαλλάθου Ἀθηνοδώρο\υ/
Τῦβι κς.

## Apparatus

20. l. [ἀσθέ]νειαν

21-22. l. [ἀν]τ[ι]παραμενεῖν

25. l. παραδώσει

25-26. l. διδάσκαλος

32. l. δώσει

## Translation

Translation hosted on: http://www.papyri.info/ddbdp/sb;18;13305 [last accessed 17/07/14]

Aurelius Ision, son of Nilammon, a resident of Karanis(?), has given over to Aurelia Libouke, a resident of the quarter of the Bithynians and other areas, a weaver, acting without guardian by right of her children, the slave child of the same Ision, to learn with Aurelia Libouke <OR: the daughter(?) [of the brother(?)] of the same Ision, Aurelia . . ., to learn> the indicated craft in the period of one year from the first of the ensuing month Mecheir, the child being fed and clothed by her . . . (several lines too damaged to be translated) . . . may receive from the weaver(?) . . . . . as many day as she is idle because of sickness or any other cause she is to remain available an equal number of days as compensation after the end of the period. When the slave child has completed the agreed time without fault, the teacher shall return her after she has learned the craft with skill equal to those of her own age. Neither party shall have authority to alter either one or another stipulation nor to transgress any part of the written agreement, but let whosoever does transgress give to the one abiding by it, as penalty, two hundred silver drachmas. The apprentice contract is valid, and when questioned, they reciprocally agreed. Aurelia Libouke, about 58 years of age, with a scar on her left shin: the slave child is receiving at the end of the time, to the account of Ision, sixty drachmas. Year one of Lucius Domitius Aurelianus and Septimius Vaballathus Athenodorus, Tybi 26.

## P.Oxy. LXIII, 4353

Text hosted at: http://www.papyri.info/ddbdp/p.oxy;63;4353 [last accessed: 10/07/14]

ἐπὶ ὑ(*)πάτων τῶν κυρίων ἡμῶ̣[ν]
Αὐτοκρατόρων Διοκλητιανο̣ῦ τὸ [θ]
καὶ Μαξιμιαν̣[ο]ῦ τὸ η Σεβαστῶν. [ -ca.?- ]
Αὐρήλιος Ἡρακλᾶς Ζωϊ(*)λᾶτος μ[η(τρὸς) Τα-]
5αφύγχιος ἀπὸ τῆς λαμ(πρᾶς) καὶ λαμ(προτάτης) Ὀ[ξυρυγ]χ[ε]ι̣[των](*)
πόλεως, ταπητο̣ύ(*)φος τὴν τέχ[νην,]
Αὐρηλίῳ Κεφάλωνι Ἀμμωνίου . [. . . . . ]
τος ἀπὸ τῆς αὐτῆς πόλεως, ἐπιστάτῃ ἐργ[α-]
στηρίου τῆς αὐτῆς τέχνης, χ̣αίρ̣ει[ν.]
10ὁμ[ο]λ̣ο̣γῶ ἐσχηκέναι παρὰ <σοῦ> ἐν π̣ροχρείᾳ
ἀργυρίου τάλαντα δ̣ύο, (γίνονται) (τάλαντα) β, ἐφ᾽ ᾧτ᾽ ἐμὲ
συνεργάσασθαί σοι ἐν ᾧ ἔχεις ἐργαστηρίῳ
ταπητου(*)φεικῷ(*) ἐν τῇ αὐτῇ πόλει λαμβά-
νοντα παρὰ σοῦ ἡμερησίως ὑ(*)πὲρ μισθοῦ
15ἀργυρίου δραχμὰς ἑκατὸν εἴκοσι , καὶ μὴ ἐξεῖ-
ναί μοι ἐνκαταλίπ̣ιν(*) τὸ ἐργαστήριον. ἐὰν
δὲ ἐνκαταλίψω(*), πάραυτα ἐκτίσω(*) σοι τὰ
προκίμενα(*) τ̣ο̣ῦ ἀ̣[ρ]γυρίο[υ] τ̣[ά]λ̣αντα δύο
ἄνευ τόκο̣υ̣ καὶ ἄν̣ευ πάσης ὑ(*)περθέσεως
20καὶ εὑρησιλογεία[ς](*), γεινομένης(*) σοι τῆς
πράξεως παρά τε ἐμοῦ καὶ ἐκ τῶν ὑ(*)παρ-
χόντων μοι πάν̣των. κύριον τὸ τῆς προ-
χρείας χειρόγραφον ἁπλοῦν γραφὲν παν-
ταχῇ ἐπιφερόμενον καὶ παντὶ τῷ ὑ(*)πὲρ
25σοῦ ἐπιφέροντι καὶ ἐπερωτηθ[εὶ]ς ὡμολόγησα.
(ἔτους) κ καὶ (ἔτους) ιβ τῶν κυρίων ἡμῶν Διοκλητιανοῦ καὶ
Μαξιμιανοῦ Σεβαστῶν καὶ Κωνσταντίου καὶ Μ̣α̣ξ̣ιμιανοῦ
τῶν ἐπιφανεστάτων Καισάρων, Φαρμοῦθι ιθ.

———

(hand 2) Αὐρήλιος Ἡρακλᾶς ἔσχον τὰ τῆς πρ[οχ]ρείας τά-
30λαντα δύο καὶ ἀποδώσω ὡς πρόκιτ[α]ι(*) καὶ ἐπερω-
τηθεὶς ὡμολόγησα. Αὐρήλιος Ἀγαθὸς Δαί-
μων Διονυσίου ἔγραψα ὑ(πὲρ) αὐτοῦ ἀξιωθ̣ὲ̣ὶς
φαμένου μὴ εἰδέναι γράμματα.

## Apparatus

1. ϋπατων papyrus
4. ζωΐλατοσ papyrus
5. l. Ὀ[ξυρυγ]χι[των]
6. ο̣ϋφοσ papyrus
13. l. ταπητουφικῷ : ταπητοϋφεικω papyrus
14. ϋπερ papyrus
16. l. ἐγκαταλείπειν
17. l. ἐγκαταλείψω
17. l. ἐκτείσω
18. l. προκείμενα
19. ϋπερθεσεωσ papyrus
20. l. εὑρησιλογία[ς]
20. l. γινομένης
21. ϋπαρ papyrus
24. ϋπερ papyrus
30. l. πρόκειτ[α]ι

## Translation

Translation from Rea (1996, p.18 - 21).

'Under the consuls our lords emperors Diocletian for the 9th time and Maximian for the 8th time, the Augusti.'

'Aurelius Heraclas son of Zoilas mother Taaphynchis from the glorious and most glorious city of the Oxyrhynchites, tapestry-weaver by trade, to Aurelius Cephalon son of Ammonius (mother?) ... from the same city, master of a workshop of the same trade, greeting.'

'I acknowledge that I have received from you by way of advance two talents of money, total tal. 2, upon condition that I work with you in the tapestry-weaving workshop which you hold, receiving from you daily in respect of wages one hundred and twenty drachmas of money and that it be illegal for me to leave the workshop. If I do leave, I shall thereupon pay to you the aforesaid two talents of money without interest and without any delay or excuse, the right of exaction belonging to you both from me personally and from all my possessions. The chirograph of the advance, written in a single copy, is binding wherever it is produced in evidence and for any person who produces it on your behalf, and in answer to the formal question I gave my assent .'

'Year 20 and year 12 of our lords Diocletian and Maximian the Augusti, and of Constantius and Galerius the most noble Caesars, Pharmuthi 19.' (and hand) 'I. Aurelius Heraclas, received the two talents of the advance and I shall return (them) as aforesaid and in answer to the formal question I gave my assent. I, Aurelius Agathus Daemon son of Dionysius, wrote on his behalf on request, since he said that he did not know letters.'

## Appendix 6: Viticulture and labour papyri analysed in text

## P.Oxy. IV. 729

Text hosted at: http://papyri.info/ddbdp/p.oxy;4;729 [accessed 13/05/2014]

1[- ca.67 -] ου κ̣α̣ι[- ca.15 -]ην δ̣ε̣ [.... ].. [..... ]ανω̣θε[- ca.18 -].. [ -ca.?- ]
[- ca.40 -] ἀρταβ̣ε̣ι[- ca.11 - τοῦ εἰσι]ό̣ντος ἔτους̣... α̣γρα[... ]ο̣μενα̣... κατὰ̣.. ἥμισυ μ[- ca.9 - ἀπε]ργασίας κα̣[..... ] ρ [. ] ονται ε̣ισ̣. ν̣ [..... ]
[- ca.39 -]ε̣ν ἔτι πά[λαι (?)- ca.12 -] ν(*) ενχρη̣. οντο οἱ μεμισθωμένοι τὸ ἥμ[ι]συ καὶ ὁ μεμισθωκὼς τὸ [ἕ]τερον ἥμισυ̣ τὴν δὲ κ[ο]πὴν τ[ ] π̣ρὸ̣[ς] καλαμείᾳ̣ν οἱ αὐτοὶ μεμ[ι-]
[σθωμένοι - ca.32 -]ινικων ἀπ[ὸ τοῦ εἰσιόντος] ἔ̣τ̣ους ἐπὶ τὴν λοιπὴν τριετίαν ἐάνπερ χρεία [ἦ]ν εἰς τὴν καλαμουργίαν ἑτέρου καλάμου παρέξονται ἑαυτοῖς οἱ μεμισθωμένοι τὸν δέοντ[α]
5[- ca.37 -]ε̣τει ὑπὸ τοῦ μ[εμ]ισθωκό[τος] Σαραπίωνος εἰσάξουσι εἰς τὸ [κτ]ῆμα ὅ τε [ο] μεμισθωκὼς καὶ οἱ μεμισθωμένοι κοιν[ῶ]ς κατὰ τὸ ἥμισυ τῷ δέοντι καιρῷ καὶ ἐπὶ τὴν λοιπὴν τριετί-
[αν - ca.29 - οἵ τε με]μισθωμένοι καὶ ὁ μεμισθω[κ]ὼς κ̣ο̣ι̣νῶς κατὰ τὸ ἥμισυ ἀργυρί[ο]υ δραχμὰς τριακοσίας , ὅνπερ χοῦν εἰσοίσουσι εἰς τὸ κτῆμα κατ᾽ ἔτος κοινῶς, ὑπολείψουσι δὲ τὸν ἀναβεβλημένον χοῦν
[- ca.36 - δ]ραχμῶν τριακοσίων , τὴν δ̣ὲ ἀν[α]βολὴν ποιήσονται ἀπὸ τῶν ἐθίμων ἀναβολῶν. τὴν δὲ τοῦ ἀπὸ βορρᾶ τοῦ ἀρχαίου κτήματος χώματος ὑδροφυλακίαν μέχρι τοῦ ὄρους
[- ca.37 -] τῷ τοῦ ἀρχαίου κτήματος μισθωτῇ, τῆς κατ᾽ ἔτος ἀπεργασίας τοῦ αὐτοῦ χώματος ἐάνπερ χρεία ἦν ἐ̣σ̣ται(*) πρὸς μόνον τὸν μεμισθωκότα, τῶν τοῦ αὐτοῦ νεωφύτου(*) χω-
[μάτων - ca.32 -] πρὸς\ς/(*) \μόνους/ τοὺς(*) μεμισθωμένους(*), ὁμοίως καὶ τοῦ νοτίνου χώματος μέχρι τοῦ ὄρους, τοῦ μεμισθωκότος Σαραπίωνος παρέχοντος αὐτοῖς κατ᾽ ἔτος ἀμισθεὶ(*) ὄνους δεκαπέντε
10[- ca.11 -, ἀπὸ δὲ τοῦ εἰσιόντος τρίτου καὶ] εἰκοστοῦ ἔτους ἐπὶ τὴν λοιπὴν τριετίαν δώσουσι τῷ μεμισθωκότι κατ᾽ ἔτος τυροὺς ὀβολιαίους ἑκατόν . τὴν δὲ αὐταρκίαν(*) κοπρον(*) περιστερῶν πρὸς κοπρισμὸν τοῦ κτή-
[ματος δώσουσιν οἱ μεμισθωμένοι κατὰ τὸ ἥμισυ] καὶ ὁ μεμισθωκὼς κατὰ τὸ ἕτ[ερο]ν ἥμισυ. ὃν δὲ ἐὰν βούληται ὁ Σαραπίων ὀπωροφύλακα φυλλασι(*) τῷ τῆς ὀπώρας καιρῷ φύλακα

πέμψει, τοῦ ὀψωνίου ὄντος πρὸς αὐτὸν
[- ca.37 -] μηχανῆς καὶ τῆς ταύτης κ[... ]ας ἔσται τὰ μὲν ξύλα πρὸς τὸν Σαραπίωνα, οἱ δὲ τεκτονικοὶ μισθοὶ καὶ ἡ τοῦ τέκτονος σύνταξις ἔσται πρὸς τοὺς μεμισθωμένους. ἐὰν δὲ καινοῦ
[τροχοῦ - ca.31 -] καὶ δώσει τοῖς αὐτοῖς μεμισθωμέν[ο]ις εἰς λόγον προχρείας ἀργυρίου δραχμὰς τρισχειλίας(*) , ἐξ ὧν ὑπολογιθήσονται(*) αἱ διδόμεναι(*) τοῖς ὑδροπαρόχοις(*) ὑπὲρ ποτισμῶν τοῦ αὐ-
[τοῦ κτήματος ἀπὸ Φαῶφι εἰκάδος τοῦ ἐνεστῶ]τος δευτέρου καὶ εἰκοστοῦ ἔτους ἕως Φαῶφι εἰκάδος τοῦ εἰσιόντος τρίτου(*) καὶ εἰκοστοῦ ἔτους ἀκολούθως ᾗ ἔχει ὁ Σαραπίων μισθώσει ἣν καὶ εἶναι κυρίαν δραχμὰς(*) δισχειλιας(*)
15[- ca.36 - ἃ]ς ἀποδώσει αὐτοῖς τῷ μὲν Ἀθὺρ μηνὶ δ[ρ]αχμὰς διακοσίας Τῦβι <διακοσίας> καὶ Μεχεὶρ τὰς λοιπὰς δραχμὰς ἑξακοσίας , τὰς δὲ ἐπὶ τὸ αὐτὸ δραχμὰς τρισχειλίας(*) ἀποδώσουσι ἐξενίαυ-
[τα - ca.35 -]τουσι οἶνον ἀτόκους. τὰ <δὲ> [δέο]ντα κτήνη παρὰ τῷ ὑδροπαρόχῳ(*) βόας πέντε καὶ μόσχους τρεῖς παραλήμψονται οἱ αὐτοὶ μεμισθωμένοι ἐν συντιμήσει τῇ εἰκάδι τοῦ [Φαῶφι τοῦ τρίτου καὶ εἰκοστοῦ ἔτους, καὶ συ]γγράψονται τῆς συντιμ[ήσ]εως ἀπόδοσιν τοῦ λήγοντος χρόνου. ἐὰν δὲ χρεία γένητε(*) ἑτέρας προχρήσεος(*) δώσει(*) αὐτοῖς ὁ μεμισθωκώς, λαβόντες καὶ τάξονται δρα-
[χμ - ca.31 - ἐπάν]αγκον οὖν οἱ αὐτοὶ μεμ[ι]σθωμένοι ἕκαστα ἐπιτελείτωσαν ὡς πρόκιται ἀμέμπτως μηδὲν ἔκκαιρον ἐῶντος(*) γείνεσθαι πρὸς τὸ μὴ καταβλάπτεσθαι τὴν ἄμπελον μηδὲ
[- ca.35 - ἀπ]οδότωσαν τῷ μεμισθ[ω]κότι τὸν μὲν οἶνον παρὰ ληνὸν νέον ἄδολον ἑκατέρου μέρους παρέχοντος παρὰ ληνὸν τὸν αὐτάρκη κέραμον, οὗ δὲ ἐὰν μὴ κατὰ καιρὸν ἐρ-
20[γάζωνται - ca.29 -]ομένου φυτοῦ τὸ βλάβος διπλοῦν, τοῦ δὲ καταλιπεῖν τὴν μίσθωσιν ἐντὸς τοῦ χρόνου ἐπιτίμου ἀργυρίου δραχμὰς πεντακοσίας καὶ εἰς τὸ δημόσιον τὰς ἴσας χωρὶς
[τοῦ τὴν μίσθωσιν μένειν κυρίαν καὶ βεβαία]ν(*), καὶ ἡ πρᾶξις ἔστω [τ]ῷ μ[εμι]σθωκότι ἔκ τε τῶν μεμισθωμένων ἀλληλεγγύων ὄντων εἰς ἔκτισιν καὶ ἐξ οὗ ἐὰν αὐτῶν αἱρῆται καὶ ἐκ τῶν ὑπαρχόντων αὐτοῖς πάν-
[των καθάπερ ἐγ(*) δίκης. καὶ μετὰ τὸν χρόνον παραδότ]ωσαν οἱ μεμισθωμένοι τ[ὸ κτ]ῆμα καὶ τὴν καλαμείαν σύνφυτα καὶ ἐπιμεμελημένα καὶ(*) καθαρὰ ἀπό τε θρύου καὶ βοτάνης καὶ δείσης πάσης καὶ τὰ φυτὰ εὐθαλοῦντα καὶ
[- ca.37 -]τι κεχαρακωμένας καὶ τὰ [το]ῦ κτήματος χώματα ἐστεγασμένα καὶ ὑδροπεφυλακημένα καὶ ἃς ἂν παραλάβωσι θύρας καὶ κλεῖς καὶ τὴν μηχανὴν υἱῆ(*) πλὴν

[τρίψεως (?)- ca.27 -](*)[ ποι]ήσονται τοὺς ποτισμοὺς τοῦ [κτή]ματος καὶ τῆς καλαμ[είας](*) πεμπταίους πρὸς ἀρεσκί[αν](*) τοῦ Σαραπίωνος καὶ τὴν τοῦ κατὰ τὸν Σαραπίωνα οἴνου μεταφορὰν ἀπὸ τῆς
25[- ca.39 -κ]είνησιν κ[αὶ παραφυλακὴν](*) ἐφ᾽ ὅσον ἐν ἡλιαστῇ[ρίῳ ἀπόκει]νται(*), ἔτι δὲ καὶ οἱ αὐτοὶ μ[εμι]σθωμένοι ὑπολείψουσι μ[ετ]ὰ τὸν χρόνον τὸν τότε τῆς καλαμείας κάλαμον
[- ca.40 -]ν τῷ ἐξῆ[ς - ca.12 -]ετι διὰ τὸ καὶ [- ca.10 -]να ἑτέρῳ μισ[θ - ca.11 -] ει ἐπικείμενον τῆς κ[α]λαμείας κάλαμον ὃν π[ ]ρ[ ]ης τοῦ διελθόντος ἔτους
[- ca.38 - Σα]ραπιων [- ca.16 -]οκειμ[ε]ν[ ]ον οἶνον [- ca.15 -]ον φ... μέτρῳ π[. ]. ι... οινικον τοῦ Σαραπίωνος
[- ca.36 - τ]ῷ μέσῳ τοῦ κ[τήματος τὴν δὲ μη]χανὴν ἀναβαλεῖ ὁ με[μι]σθωκὼς ἰδίαις δαπάναις ἀπὸ μηνὸς Παχών, την(*) δὲ σκαφην(*) τῆς πλακάδος τοῦ ὑποδοχίου ἔσται ὑπό
[τε τῶν μεμισθωμένων κατὰ τὸ ἥμισυ καὶ] ὑπὸ τοῦ μεμισθωκότος κατὰ τὸ ἕτερον ἥμισυ. τὴν δὲ κατ᾽ ἔτος ξυλοτομίαν καὶ ἕκαστον τῶν κατὰ και[ρ]ὸν ἔργων ποιήσουσι οἱ μεμισθωμένοι ἐπακολουθοῦν-
30[τος τοῦ Σαραπίωνος - ca.20 -]ως αὐτῷ πάντα γενέσθαι. μισθώσει(*) δὲ ὁ μεμισθωκὼς τοῖς μεμισθωμένοις ἀπὸ τοῦ εἰσιόντος τρίτου καὶ εἰκ[ο]στοῦ ἔτους ἐπὶ χρόνον ἔτη τρία τὴν ἐντὸς πλαστῶν χερσάμπε-
[λον - ca.24 - ὅσου ἐστὶν(*) ἀ]ρουρηδοῦ ὥστε κατ᾽ ἔτος σπεῖραι καὶ ξυλαμῆσαι οἷς ἐὰν αἱρῶνται γένεσι χωρὶς εἰσάτεος(*) καὶ ἐχομενίου(*) φόρου ἀποτάκτου κατ᾽ ἔτος δραχμῶν ἑξήκοντα καὶ ἥμισυ μέρος τῶν
[- ca.37 -] ἐν αἷς ἐστιν τροχὸς ὡς ἐὰν κατ᾽ ἔτος κοινότερον συνφωνήσωσι τὸν φόρον. τὸν δὲ ἐν τῷ κτήματι ῥοδῶνα κατ᾽ ἔτος ὄντος τοῦ καρποῦ τοῦ Σαραπίωνος τῶν μεμι-
[σθωμένων - ca.29 -]τα[ ] παρὲξ τῆς ξυλολογείας, τῶν κατ᾽ ἔτος πάντων τῶν αὐτῶν ἀρουρῶν καὶ τοῦ ἀμπελῶνος ὄντων πρὸς τὸν Σαραπίωνα δημοσίων, ὃς καὶ ἕξει ὁ αὐτὸς Σαραπίων
[- ca.28 - καὶ παρέξει] ὁ αὐτὸς Σαραπίων τοῖς μεμισθωμένοις πρὸς ἐνοίκησιν χωρὶς ἐνοικίου ἐν τῷ ἐποικίῳ καμάρας δύο . κυρία ἡ μίσθωσις. (ἔτους) δευτέρου καὶ εἰκοστοῦ Αὐτοκράτορος
35[Καίσαρος Τραιανοῦ Ἁδριανοῦ Σεβαστοῦ Φαῶ]φι ιε. (hand 2) Ἀμμωνις(*) Ἀπολλωνίδου καὶ Πτολλᾶς Λουκίου μεμισθώμετα(*) τὸν ἀνπελῶνα(*) ἐπὶ τὰ τέσσαρα ἔτη
[φόρου τῆς ἡμισείας τοῦ ἐκ]βησομένου οἰνικοῦ γενήματος καὶ ἀπὸ τῆς ἡμω(*) ἡμησίας(*) ἄλλα οἴνου κεράμια πεντήκον-
[τα -ca.?- ]α καὶ ἕκατα(*) ποιήσομεν ὁς(*) πρόκειτε(*). Πτολεμαις(*) Ζωίλου ἔγραψα ὑπὲρ αὐτῶν μὴ εἰδότον(*)
[γράμματα. ἔτους δευτ]έρου καὶ εἰκοστοῦ Αὐτοκράτορος Καίσαρος Τραειανοῦ(*) Ἁδριανοῦ

Σεβαστοῦ Φαῶφι ιε. (hand 3) Ἀμμωνις(*)
[Ἀπολλωνίδου καὶ Πτολλᾶς Λουκίου ἔσ]χομεν \παρὰ τοῦ αὐ(τοῦ) Σαραπίω(νος)/ καὶ τῇ κ τοῦ Φαῶφι τοῦ δευτέρου ἔτους Τίτου Αἰλίου Ἀδριανοῦ Ἀντωνείνου Καίσαρος τοῦ κυρίου βοεικὰ(*) κτήνη μόσχους μὲν τελείους
40[- ca.22 - βόας δὲ τε]λείας τρεῖς πάντα ἐν συντειμήσει(*) ἀργυρίου δραχμῶν δισχειλίων(*) πεντακοσίων , ἅπερ κτήνη θρέψομεν τῆς κατ᾽ ἔτος γο-
[νῆς - ca.27 -]ῳν, μετὰ δὲ τὸν χρόνον τῆς μισθώσεως αἱρέσεως καὶ ἐγλογῆς οὔσης σοι τῷ Σαραπίωνι ἐὰν μὲν αἱρῇ τὴν συντείμησιν(*) τῶν κτηνῶν λαβεῖν
[- ca.31 -]ῠ τῆς τότε ἐσομένης α[ὐ]τῶν συντειμήσεως(*), κἂν(*) μὲν ἐλάσσονες(*) συντειμηθῇ(*) ἀποδώσομεν τὸν ἰς(*) συνπλήρωσιν τῆς προκει-
[μένης συντειμήσεως(*), ἐὰν δὲ καὶ μείζο]νος ἀποδώσεις ἡμεῖν(*) ϛ[ὺ ὁ] Σαραπ[ί]ων τὸ τ̣ο̣ῦ.. ῠ [ἴ]σον, ἐὰν δὲ αἱρώμεθα ἀλλάσσειν κτήνη ἢ πωλεῖν ἔξεσται ἡμεῖν(*) μετὰ γνώμης
[- ca.30 - τὰ ἴ]σα. ἔτ[ι δ]ὲ καὶ ἔσχ[ομεν ἐν]εχυρούμ[ε]να ἀλ̣[- ca.9 -]μενα ἑκα̣τ̣[ὸν̣... ]κ̣οντα ἃ μετὰ τ̣[ὸν χρό]νο̣ν παραδόσωμεν(*) τὰ ἴ(*)σα σειτίνου(*) α̣ῠ̣.
45[- ca.35 -]α̣τ̣[... ].. [- ca.10 -].. [. ].. [..... ἔτου]ς δ̣ε̣υ̣τ̣έ̣ρ[ου Αὐτοκράτ]ο̣ρ̣ος Κ̣αί̣σ̣[αρος Τίτου Αἰ]λίου Ἀδριανοῦ [Ἀντ]ωνείνου Σε[βαστοῦ]
[Εὐσεβοῦς Φαῶφι κ ][ -ca.?- ].

## Apparatus

3. BL 1.327 : πα[- ca.15 -] ν prev. ed.
8. l. οὔσης
. l. νεοφύτου
9. l. πρὸς
9. corr. ex τον
9. corr. ex μεμισθωκοταους
9. l. ἀμισθὶ
10. l. αὐταρκείαν
10. l. κόπρου
11. l. φυλάσσει<ν>
13. l. τρισχιλίας
13. l. ὑπολογι<σ>θήσονται
13. corr. ex διδομενοι
13. corr. ex υδροσαροχοις
14. corr. ex δριτου
14. l. δραχμαὶ, corr. ex δραχσας
14. l. δισχίλιαι
15. l. τρισχιλίας
16. corr. ex υδροφυροχω
17. l. γένηται, corr. ex νενητε
17. l. προχρήσεως
17. corr. ex δωσοι
18. l. ἐῶντες
21. BL 1.327 : [- ca.9 -]ῠ prev. ed.
22. l. ἐκ
22. corr. ex επιμεμελημεν..
23. l. ὑ<γ>ιῆ
24. BL 3.132 : [] prev. ed.
24. corr. ex κ̣... [ειας]
24. l. ἀρεσκεί[αν]

25. l. [κ]ίνησιν, BL 1.327 : [- ca.40 - ]εινησιν κ[- ca.12 -] prev. ed.
25. BL 1.327 : ἐνηῃ ε̣. [..... ]νται prev. ed.
28. l. ἡ
28. l. σκαφὴ
30. corr. ex μισθωσεαν
31. BL 1.327 : - ca.33 - prev. ed.
31. l. ἰσάτεως
31. l. ὀχομενίου
35. l. Ἀμμώνι\ο/ς
35. l. μεμισθώμεθα
35. l. ἀμπελῶνα
36. l. ἡμῶ<ν>
36. l. ἡμισείας
37. l. ἕκα<σ>τα
37. l. ὡς
37. l. πρόκειται, corr. ex προ.. ται
37. l. Πτολεμαῖος
37. l. εἰδότων
38. l. Τραιανοῦ
38. l. Ἀμμώνι\ο/ς
39. l. βοικὰ
40. l. συντιμήσει
40. l. δισχιλίων
41. l. συντίμησιν
42. l. συντιμήσεως
42. l. καὶ ἂν
42. l. ἐλάσσονος
42. l. συντιμηθῇ
42. l. εἰς
43. l. συντιμήσεως
43. l. ἡμῖν
43. l. ἡμῖν
44. l. παραδώσομεν
44. ϊσα papyrus
44. l. σιτίνου

## Translation

Translation transcribed from Kloppenborg (2006, p.508 – 510)

…*artaba*e… of the coming year... half...

the lessees shall (pay? provide?) half and the lessor the other hand, but the lessees shall be responsible for the work in the reed plantation. The same lessees… from the coming year for the remainder of the three years. If there is need for reed-work in other reeds, the lessees shall supply themselves what is needed…

5 …by Sarapion the lessor. They - both the lessor and the lessees - shall pay jointly on the basis of half-shares at the appropriate time and for the remaining three years… Both the lessees and the lessor. shall pay jointly on the basis of half-shares 300 silver dr. for fertilizer, which they shall jointly bring to the property yearly, and they shall leave (on the property) the fertilizer that has been piled up… (They shall pay?) 300 silver dr, and they shall make a mound from the usual piles. Regarding (he guarding of the dike from the north of the old vineyard up to the hills. . . (the expense for) the lessee of the old vineyard. The yearly work on the same dike, if there is need, shall be solely the responsibility of the lessor, but the dikes in the newly-planted vineyard. . . will be solely the responsibility of the lessees. Likewise, for the dike which extends from the south to the hills, the lessor Sarapion shall supply them yearly, without charge, fifteen donkeys

10 …from the coming 23rd year for the remainder of the three year (lease period), (the lessees) shall give to the lessor yearly 100 cheeses each worth an obol (?). Regarding the supply of pigeon dung for fertilizing the vineyard, the lessees shall provide half and the lessor shall provide the other half. Sarapion may send anyone he wishes as the late-summer guard to watch during the time of late summer and the (guard's) salary will be his responsibility... . (Regarding the costs?) of the (irrigation) machine and this.. the (cost of the) wood will be Sarapion's, and the carpenters' wages and the fee of the builder will be the responsibility of the lessees. If. . . a new water wheel. . . (Sarapion) shall provide the lessees with an advance payment of 3000 silver dr. from which they shall deduct what is paid out to the supplier of water for the irrigation water for the same vineyard, from Phaophi 20 of the current 22nd year until Phaophi 20 of the coming 23rd year, in accordance with the lease which Sarapion holds

and which is valid. Two thousand dr. . . (the remaining 1000 dr.?) which he will pay them as follows: in the month of Hathyr, 200 dr.; in Tybi, 200 dr.; and in Mecheir the remaining 600. And they will repay the whole 3000 dr. within a year. . . wine without interest (charge). Regarding the herds of necessary farm animals - five oxen and three calves - which are with the water-provider, the same lessees shall make a valuation on the 20th of Phaophi of the 23rd year, and shall write a receipt of the estimate (and) hand it back at the expiration of the (lease) period.

17 If there is need for any other advance (of money) the lessor shall give it to them. After having received it, they shall pay… drachmas… Therefore the same lessees shall perform each (of these tasks) as set forth, blamelessly, and leaving nothing undone at the right time, so that no damage is done to the vineyard. . . . They shall pay the lessor his wine at the vat, new wine without adulteration, each party providing a sufficient number of jars. For any failure to perform the work at the appropriate time. . . (pay) twice for damage to the vine shoots. (If they) abandon the lease during the lease period, they shall pay a fine of 500 silver dr. and to the Public Treasury the same amount, without affecting the validity of the lease.

21 The lessor shall have the right of execution (πραξις) on the lessees who are surety for one another for repayment, and on which of them he chooses, and on all of their possessions, as if in accordance with a legal decision.

At the expiration of the lease period, the lessees shall hand back the vineyard and the reed plantation, fully cultivated and well cared for, free from rushes, weeds and grass of nil kinds, and the plants healthy… and the (plants) staked, the embankments of the vineyard firm and watertight, and also any doors and keys they may have received, and the water wheel in good repair except for wear and tear… And they shall irrigate the vineyard and reed plantation every fifth day to the satisfaction of Sarapion, and shall transfer Sarapion's share of the wine from the…

25 . . . they shall move (the jars) and guard them for as long as they remain in the drying room. And the same lessees are to leave after the period of the lease, the reeds that arc then in the reed plantation… sixth…

….the lessor shall put up a water machine in the middle of the vineyard at his own expense from the month of Pachons, The digging of the flat portion of the reservoir shall be shared

between the lessees, paying half, and the lessor, paying the other half. Regarding the yearly pruning and each of the tasks to be accomplished at the proper time, the lessees shall perform these in accord with Sarapion's commands. . . everything will be (to his satisfaction?).

30 The lessor shall (also) lease to the lessees, from the coming 23rd year and for a three year period, the dry vineyard that is enclosed by a mud wall . . . (or? *arourae*) or however many *arourae* there may be, so that they can seed it and plant it yearly with whatever crop they choose, except for woad and coriander, for a fixed yearly rent of 60dr. and one half part of (the crop?),

…in which there is a water wheel. .. they shall yearly jointly agree on a rent. Regarding the rose plantation, the yearly crop which belongs to Sarapion: the lessees… except for gathering the wood, the yearly public charges on all of the aforesaid *arourae* and on the vineyard being the responsibility of Sarapion, which same Sarapion shall have... The same Sarapion shall supply the lessees with a dwelling place rent-free with two rooms in the farmstead.

34 The lease is authoritative. Twenty second year of Imperator Caesar Traianus Hadrianus, Augustus, Phaophi 15. <2nd hand> We, Ammonios son of Apollonides and Ptollas son of Lucius, have leased the vineyard for four years. For a rent of one-half of the wine produced and from our half share, an additional 50 keramia of wine. . . and we shall perform all the (work) as set forth (here). Ptolemaios son of Zoilos wrote (this lease) for them, because they are illiterate. Twenty-second year of Imperator Caesar Traianus Hadrianus, Augustus, Phaophi 15.

39 <3rd hand> We, Anunonios son of Apollonides and Ptollas son of Lucius, have received on the 20th of Phaophi of the twenty-second year of Titus Aelius Hadrianus Antoninus Caesar the lord from the same Sarapion livestock, ? oxen in good condition and 3 calves in good condition, valued at 2500 dr., for which livestock we shall (also) raise the yearly offspring. . . . After the expiration of the lease there Sarapion will have the choice and selection (of the livestock); if he should choose to receive (in money) the value of the livestock (he will receive) the current value of (the cattle), and if they are valued at less (than 2500 dr.) we shall pay the difference to bring the price up to the prescribed valuation, but if it is higher, you Sarapion shall pay us the (difference between 2500 dr. and the current value), and if we choose to exchange or to sell the cattle, it shall be permissible with (Sarapion's) consent…

…we shall have… after the time of the lease we shall hand back the wheat growing land…

45 …twenty-second year of Emperor Caesar Titus Aclius Hadrianus Antoninus Augustus Euscbius, Phaophi ?

## P.Oxy. XLVII, 3354

Text hosted at: http://papyri.info/ddbdp/p.oxy;47;3354 [accessed 13/05/2014]

Αὐρηλίᾳ Σαραποῦτι θυγατρὶ Θέωνος Θέωνος ἐξηγητεύσαντος τῆς Ὀξυρυγχειτῶν
πόλεως χωρὶς κυρίου χρηματιζούσῃ τέκνων δικαίῳ
παρὰ Αὐρηλίων... Σαραπάμμωνος μητρὸς Τααφύγχιος καὶ τοῦ υἱοῦ Ἰ(*)ερέως μητ[ρὸς Τα-]
αφύγχιος ἀμφοτέρων ἀπὸ τοῦ Νόμου ἐποικίου. ἐκουσίως ἐπιδεχόμεθα μισθώσασθαι παρὰ
σ[οῦ ἐπὶ χρό-]
5νον ἔτη δύο ἀπὸ α τοῦ ὄντος μηνὸς Ἀθὺρ τοῦ ἐνεστῶτος ε (ἔτους) τὰ χερικὰ ἀμπελουργικὰ
ἔργα ἅπα[ντα]
καὶ τὴν ἐπάρδευσιν τοῦ ὑπάρχοντός σοι περὶ Σενέπτα ἀμπελικοῦ κτήματος Θαα ὐτ᾽ λε[γο-]
μένου ἀρουρῶν ἓξ ἢ ὅσων ἐὰν ᾖ καὶ τῆς προσούσης καλαμείας ὅσου ἐστὶν ἀρουρηδοῦ,
[ἅπερ]
ἔργα ἐστὶν τῆς μὲν ἀμπέλου τιλμὸς καλάμου, δ. συλλογὴ αὐτοῦ καὶ μεταφορά, ξυλοτομ[ία
δικαία],
ἀγκαλισμὸς καὶ δέσις ἀγκαλῶν καὶ μεταφορά, σάρωσις φύλλων καὶ ἐκβολὴ ἐκτὸς πλαστ[ῶν,
σκα-]
10φητός, παραγραφή, ἀπωρυγισμὸς ὅσων δῖ(*) ἀπωρύγων· καὶ στησόμεθα ἐν τῇ καλαμ[είᾳ]
[καλαμείᾳ] πρὸ τῶν ὄνων κωφορούντων(*) πρὸς τὸ ὅπου δεῖ τὸν χοῦν βάλλεσθα[ι] καθὼς
ἂ[ν δεή-]
σωμεν τούτων· διτομὴ καλάμου, καλαμουγιαν(*), σκαλμός, βλαστολογία, Φαρμουθιακὴ
ἐργα[σί-]
α, διάστασις, ἀνάλημψις, φυλλολογίαι ἑ(*) ἐνχρήζουσαι, ἐπάρδευσις καὶ βοτανισμὸς διηνε-
κής, ἢ καὶ τὰ ἄλλα τὰ κατὰ καιρὸν τῆς ἀμπέλου ἔργα πάντα· καὶ τῆς καλαμείας ἐπάρδευσις
κα[ὶ]
15παραγραφὴ καὶ σκορπισμὸς κόπρου· καὶ ποιησόμεθα τῆς ληνοῦ καὶ θίου(*) τὰ ἐνχρήζον-
τα χαλάτρια καὶ τοῦ ὀργάνου τὰς κυλτίδας καὶ τὴν τῶν χωρούντων εἰ(*) τὸν κατ᾽ ἔτος οἶνον
κούφων κομπασίαν ἀφ᾽ οὗ τόπου μεταφέρεται· ἄμπερ(*) λαβόντα τὸν οἶνον συνθήσομεν
ἐν τῷ ἡλιαστηρίῳ καὶ ἐπαλίψομεν(*) καὶ κεινήσομεν(*) καὶ καὶ παραφυλάξωμεν(*) ἐφ᾽ ὅσον
ἐκ[εῖ]
ἀπόκειται· ἔτι δὲ καὶ κυμηθήσεται(*) ὁ τερος(*) ἡμῶν Ἰ(*)ερεὺς ἀδιαλίπτως(*) ἐν τῷ

ἐποικί[ῳ],
μισθοῦ τῶν ἔργων πάντων τῆς ἀμπέλου κατ᾽ ἄρουραν ἀργυρίου δραχμῶν τριακοσίων [ἑξ-]
ήκοντα · τοὺς δὲ συναγομένους μισθοὺς ἀπολημψόμεθα κατ᾽ ἔτος Ἀθὺρ Χοίακ τιλ-
μοῦ καλάμου δραχμὰς διακοσίας , Τῦβι ξυλοτομίας δραχμὰς τετρακοσίας , Μεχεὶρ
καλαμου[ργι-]
α (*) δραχμὰ[ς] τετρακοσίας , Φαμενὼθ δραχμὰς ἑκατὸν ὀγδοήκοντα , Φαρμοῦθ\ι/ δραχμὰς
διακο-
σίας τεσσεράκοντα , Παχὼν δραχμὰς ἑκατὸν , Παῦ (*) νι φυλλογια (*) δραχμὰς διακοσίας
τεσσερά-
κοντα , Ἐπεὶφ Μεσορὴ ἐξενίαυτα Θὼθ Φαῶφι κατ᾽ ἔτος τὰς αἱρούσας κατὰ μῆνα δραχμὰς
ἑκατὸν ·
λημψόμεθα δὲ κατ᾽ ἔτος τῆς μὲν ξυλοτομίας ὄξους κεράμιον ἓν καὶ τῷ καιρῷ τοῦ θερισ-
μοῦ ὑπὲρ τοῦ μὴ ἀπολιφθῆναι (*) ἡμᾶς τῆς ἐπαρδείας καὶ τῆς φυλλολογίας κατ᾽ ἔτος πυρο[ῦ]
ἀρτάβας τρῖς (*) καὶ τῇ τρύγῃ κατ᾽ ἔτος οἴνου νέου κεράμια δύο · καὶ... [ἐπ]ιδεχόμεθα
καρπωνήσασθαι ἥμισυ μέρους (*) τοῦ καρποῦ τῶν ἐν τῷ κτήματι φοινίκων τοῦ ἐστ[αμέ-]
νου φόρου καὶ ἐκτάκτων κατ᾽ ἔτος· ἔτι δὲ καὶ μισθώσασθαι πρὸς μόνον τὸ ἐνε[στ]ὸς ἔτος
ἀπὸ τῶν ὑπαρχόντων σοι περὶ τὴν αὐτὴν [αὐτὴν] Σενέπτα ἐκ τοῦ Διονυσοφάν[.. ]
κλήρου ἀρούρας δύο ὥστε σπεῖραι πυρῷ ἄρουραν μίαν κριθῇ ἄρουραν μίαν , ἐκφορίου τῆς
μ[ὲν]
ἐν πυρῷ πυροῦ ἀρταβῶν τεσσάρων , τῆς δὲ ἐν κριθῇ κριθῆς ἀρουρῶν (*) πέντε ἀκινδύνω[ν]
πάντων παντὸς κινδύνου, τῶν τῆς γῆς δημοσίων ὄντων πρὸς σὲ τὴν γ[εοῦ]χον,
ὸν (*) καὶ κυριεύειν τῶν καρπῶν ἕως τὰ κατ᾽ ἔτος ὀφειλόμενα ἀπολάβῃς· βεβαιο[υ]μένης
δὲ μῖν (*) τῆς ἐπιδοχῆς ἐπάναγκον ποιησόμεθα τῆς ἀμπέλου καὶ καλαμε[ίας] τὰ κατὰ
καιρὸν ἔργα πάντα ὡς ἐπάνω δεδήλωται καὶ τῶν φοινίκων καὶ (*) φυτῶν [τὴν] ὀχίαν (*)
καὶ ἐπιμέλειαν πᾶσαν, τῶν ὧν (*) ἐπακολουθούντων πᾶσι τοῖς ἔργοις πρὸ[ς τὸ μ]ὴ καται-
βλάπτεσθαι τὴν ἄμπελον· καὶ ἀποδώσομεν τὰ μὲν τῶν ἐδαφῶν ἐ[κ]φό[ρια] τῷ ἐνε-
στῶτι ἔτει ἐφ᾽ ἅλῳ τοῦ χωρίου γένη νέα καθαρὰ ἄδολα ἄβωλα καικοσ[κ]ι[ν]ευμένα (*) ,
το (*) μὲν πυρὸν ἄκριθον ὡς εἰς δημόσιον μετρούμενον, τὴν δὲ κριθὴν [καλῶ]ς πεπα-
τημενη (*) χωρὶς αἴρης καὶ θέρος (*) μέτρῳ παραλημπτικῷ σοῦ τῆς γεούχου, τῷ[ν σῶν με-]
τρούντων καὶ προσμετρούντων ἑκάστῃ ἀρτάβῃ χοίνικας δύο , τὸν δὲ τῶν φ[οι]νίκων
φανησόμενον φόρον καὶ τὰ ἔκτακτα ἐξενίαυτα κατ᾽ ἔτος Θὼθ Φαῶ[φι] ἀνυπερ-
θέτως· καὶ ἐπὶ τέλει τοῦ χρόνου παραδώσωμεν (*) τὴν ἄμπελον καὶ κα[λα]μείαν
μεμελημένην τοῖς ἔργοις, τὴν δὲ ἄμπελον καθαρὰν ἀπὸ θρύου καὶ β[οτ]άνης δεί-
σης πάσης, τῆς πλαστ[ῆ]ς ἐπιπλαστη. καὶ τὰ φυτὰ ζωγονοῦντα καὶ εὐθ[αλο]ῦντα· καὶ ἀ-

ποτίσομεν ο̣ῦ ἐ̣ὰν μὴ ἐπιτελέσομεν (*) ἔργου ἢ τοῦ δι᾽ ἀμέλειαν ξηρα̣ν[θέ]ν̣τ̣ος
φυτοῦ τὸ βλάβος διπλο̣ῦν̣, τῆς πράξεώς σοι οὔσης παρά τε ἡμῶν ἀλλ̣[ηλε]γγύω̣ν ὄν-
50των εἰς ἔκτισιν καὶ ἐξ οὗ ἐὰν αἱρῇ καὶ ἐκ τῶν ὑ (*) παρχόντων \ἡ/μ̣ῖν (*) [πάν]τ̣ω̣ν. κ̣υ̣ρ̣ὶα
ἡ ἐπ̣ιδοχὴ καὶ ἐπερωτηθέντες ὡμολογήσαμεν. (ἔτους) ε
Αὐτοκρατόρων Καισάρων Πουβλίου Λικιννίου [Οὐαλε]ρ[ι]α̣ν̣ο̣ῦ καὶ Π[ουβλίου]

v
μ Traces

## Apparatus

3. ïερεωσ papyrus
10. l. δεῖ
11. l. χωφορούντων
12. l. καλαμου<ρ>γία
13. l. αἱ
15. l. θυείου
16. l. εἰ<ς>
17. l. ἅπερ
18. l. ἐπαλείψομεν
18. l. κινήσομεν
18. l. παραφυλάξομεν
19. l. κοιμηθήσεται, cor ex κυμηθησομεθα
19. l. <ἕ>τερος
19. ïερευσ papyrus
19. l. ἀδιαλείπτως
22-23. l. καλαμου[ργί]|α<ς>
24. παϋνι papyrus
24. l. φυλλο<λο>γία<ς>
27. l. ἀπολειφθῆναι
28. l. τρεῖς
29. l. μέρος
33. l. ἀρταβῶν
35. l. ἦν
36. l. <ἡ>μῖν
37. cor ex ται
37. l. ὀχείαν
38. l. <σ>ῶν
40. l. κεκοσκινευμένα
41. l. τὸ<ν>
41-42. l. πεπα|τημένη<ν>
42. l. <ἀ>θέρος
45. l. παραδώσομεν
48. l. ἐπιτελέσωμεν
50. ϋπαρχοντων papyrus
50. l. ἡμῖν

## Translation

Translation transcribed from Johnston (1940, p.111 – 112); and also Kloppenborg (2006, p.539-541)

'To Aurelia Sarapus, daughter of Theon son of Theon, formally exegetes of the city of Oxyrhynchus, acting without a guardian in accordance with the *ius liberorum* from Aurelius…, son of Sarapammon and Taaphynchis, and his son Aurelius Hiereus , whose mother is Taaphynchis, both from the Nomou Epoikion.

'We willingly undertake to lease from you for the period of two years, from the 1st of the present month Hathyr of the present year5, all the manual vinetending operations and the irrigation of the vineyard of six *arouras*, or however many it may be, which is called Thaaut(?) and belongs to you near Senepta, and of the nearby reed- plantation, whatever its area in *aroura* may be. These operations are, for the vines, the pulling up of reeds and their collection and transport; proper pruning; making (the cut-off shoots) into bundles and binding and transport of the bundles; sweeping up of leaves and their disposal outside the mud-walls; hoeing, trenching round, planting of as many shoots as are necessary. And we shall stand in front of the asses carrying earth in the reed-plantation so that the earth may be thrown where proper according as we may require these. (Further operations are) splitting of reeds, reedwork, second hoeing, pinching off shoots, the "work of Pharmouthi", thinning of leaves, trimming of top-growth, the necessary degree of defoliation, watering, and constant weeding, as well as all the other work for the vines in due season; and for the reed-plantation, watering, trenching round, and spreading of manure. We shall make the necessary matting for the treading-vat and the press, and the *kyltides* for the water wheel. We shall test the jars for the wine each year in the place from which they are transported and when these have been filled with wine we shall place them in the sunning-area, oil them, move them, and guard them for as long as they stay there; and further one of us, Hiereus, will sleep in the farm building each night. Our wages for all the vine operations shall be three hundred and sixty silver drachmas per aroura. We, shall receive our total wages each year (as follows): in Hathyr and Choiak, for pulling up reeds, two hundred drachmas; in Tybi, for pruning, four hundred drachmas; in Mecheir, for reed work, four hundred drachmas; Phamenoth, one-hundred and eighty

drachmas; in Pharmouthi, two hundred and forty drachmas; in Pachon, one hundred drachmas; in Payni, for defoliation, two hundred and forty drachms; in Epeiph and Mesore, to be paid annually in Thoth and Phaophi of the following year, the one hundred drachmas due each month. And we shall receive each year for the pruning one ceramion of sour wine; and at harvest time each year, in consideration of our not getting behind in the irrigating and the defoliation, three *artaba*s of wheat, and at the vintage each year two *ceramia* of new wine.

"And we… undertake to purchase half the produce of the date-palms in the vineyard for the established rate and extra gifts each year; and further, to lease for only the present year, from you property near the same Senepta out of the lot named after Dionysophan…, two *arouras*, one *aroura* to be sown in wheat, one *aroura* to be sown in barley The rent is free from all risk. The public dues being paid by you, the landlady, who shall control the crops till you receive what is due you each year. The undertaking being guaranteed us, we shall of necessity perform all the operations for the vines and reed-plantations at the proper times as set forth above, and carry out the fertilization of the date-palms and grape-vines, and take every care of them; and your representatives shall supervise the work so that no harm come to the vines. We shall pay the rental in kind for the land in the present year on the threshing floor of the farm in new, clean, unadulterated produce free of clods and sieved, the wheat free of barley just as if it were being paid into the public granary, the barley well trodden and free of darnel and chaff, by the receiving measure which belongs to you , the landlady. The measuring shall be done by your representatives, and they shall add two choinices per *artaba*. And for the date-palms we shall pay the rental which shall be agreed upon and the extra gifts each year in Thoth and Phaophi of the following year without delay. At the completion of the time we shall return the vineyard and the reed-plantation cared for with our labour, the vineyard free from rushes and weeds and all filth, the mud-walls… the plants living and flourishing. We shall pay double the loss for any operation which we fail to perform of for any plant which withers through our carelessness. You shall have right of execution against us, who are mutual sureties for the payment, and against whichever of us you choose, and against all our property. The undertaking is valued, and in reply to the formal question we have so declared. Year 5 of Imperatores Caesars Publius Licinnius Valerianus and Publius…"

## P.Col. 10 280

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1[ -ca.?- ] ο̣ [... ]τα. ἐὰ̣[ν] δὲ χρείᾳ̣ν̣... [ -ca.?- ]
[ -ca.?- ἐξέστω τοῖς μ]ε̣μισθωμένοις ποτίζειν ἐκ τῶν αὐτῶν μηχανῶν εἰς φυ̣τ̣.. [- ca.24 -]
[ -ca.?- δρα]χμὰς ὀγδοήκο̣ντα ὅνπερ χοῦν ὁμοίως εἰσοίσουσι οἱ μεμισθωμένοι ἰδίαις δαπάναις ἐν το[ῖ̣ς. ]
[ -ca.?- τῶ]ν αὐτῶν δραχμῶν ὀγδοήκοντα ἢ ἀποδώσουσι τὰς δραχμὰς ὀγδοήκοντα τῷ̣ μεμισθ̣ω̣κότι
5[ -ca.?- πα]ραμενόντων σ̣ὺν ταῖς τροφαῖ̣ς, ἀπὸ δὲ τῶν συμπεφωνημένων δοθῆναι τοῖς μ̣εμ̣ι̣σ̣θ̣ω̣μ̣έ̣νοις
[ -ca.?- καὶ οἱ μεμισθω]μένοι ὁμολο̣γ̣ο̣ῦσι ἔχειν παρὰ [το]ῦ̣ μεμισθωκότος ἐπὶ λόγῳ̣ δραχμὰς χιλίας διακοσίας [καὶ τὰς] λοιπὰς
[δώσειν αὐτοῖς κατὰ μῆνα Θὼθ δραχμὰ]ς̣ ἑκατόν, Μεχ[εὶ]ρ Φαμενὼθ [κατὰ] μῆνα δραχμὰς διακοσίας, κ̣αὶ ἀπὸ Φαρμοῦθι ἕως Με̣σ̣ο̣ρὴ̣ κ̣αὶ αὐτοῦ
[Μεσορὴ κατὰ μῆνα δραχμὰς (?)..... ] ἀπὸ τῆς προχρείας πρὸς ὑπηρ[εσία]ν̣ τῶν τοῦ κτήματος ποτ[ισμῶ]ν̣, τὴν δὲ τῶν βοικῷ̣[ν] ζευγῶν
[τὴν συντίμησιν ἀποδότωσαν ἀπὸ μὲν γεν]ήματος τοῦ ἐνεστῶτος ἔτους δ[ρ]αχμὰς ἑξακοσίας(*), ἀπὸ δὲ γενήματος τοῦ ἰσιόντος(*) ἔτο[υς δραχμὰς ἑ]ξ̣α-
10[κοσίας -ca.?- ] τὴν δὲ τρύγην ποιήσονται [ο]ἱ μεμισθωμένοι ἀρξάμενοι(*) ἀπὸ πεντεκαιδεκάτης τ̣[οῦ Μεσορὴ]. ἵ̣να τ̣ε-
[λειώσονται τὰ ἄλλα τὰ κα]τὰ καιρὸν τῆς ἀμπέλου ἔργα π̣άντα τῷ̣ δέοντι(*) καιρῷ̣ ἀνεγκλήτως ἐν οὐδενὶ ἀμελοῦντες
[τῶν μεμισθωμένων χορηγούντων παρ’] ἑαυτοῖς πάντα τὰ ἐνχρῄζοντα καὶ τὸν βοτανισμὸν διηνε̣κ̣ῆ καὶ τὸν ἀπωρυ̣γισμὸν τῶν ἐν
[τόπῳ̣ δεομένων καὶ ἀπωρύγων ὅσον ἐὰ]ν̣ ἀπ’ αὐτῶν βούλωνται πρὸ̣ς τὸ εὐαρέστως ταῦτα γείνεσθαι(*), καὶ ἀποδότωσαν τῷ̣ μεμισθωκότι τὸν μὲν
[οἶνον ἀπὸ γλεύκους νέον ἄδολον παρ]ὰ̣ ληνὸν εἰς ὃν [π]α̣ρέξει ὁ μεμισ̣θωκὼς κενώματα μέτρῳ̣ οἰνικῷ̣ κοτυλῶν δεκαεννέα
15[ἅπερ λαβόντα τὸν οἶνον συνθήσουσι] μετακεινή[σουσ]ι(*) καὶ παραφυλάξουσι ἄχρι ἐ̣γ̣κλεισμοῦ. καὶ μετὰ τὸν χρόνον παραδότωσ̣αν τὸν —

[ἀμπελῶνα καθαρὸν ἀπὸ θρύου καὶ βοτάνης] δ̣είσης πάσης κ̣[αὶ ἀπὸ] κ̣ορ[μ]οῦ ἐπὶ κορμὸν καὶ τὰ φυτὰ ζωγονοῦ̣ντα καὶ εὐθαλο̣ῦντα καὶ τὰς μηχανὰς —
[ὑγιεῖς(*) πλὴν τρίψεως καὶ τὰς(*) ἐπικειμέ]̣νας θύρας καὶ κ̣[λεῖδας ἢ ἀποτει]σ̣άτωσαν τῶν(*) μ̣ὲ̣ν̣ ἄλλω̣ν ὧν ἐὰν μὴ παραδῶσι τὴν ἀξίαν
[τιμὴν ἢ τοῦ δι᾽ ἀμέλειαν ἐξηραμμένο]υ̣ φυτοῦ τὸ βλ[άβος διπλοῦν· οὐκ] ἐξέσται ἐνκαταλι[πεῖν τὴ]̣ν μίσθωσ\ι/ν ἐντὸς τοῦ χρόνου
[τοῖς μεμισθωμένοις ἀλλὰ καὶ ὁμ]ο̣ίως παραδότ̣ω̣[σαν ἐν τῷ̣ ἐσχάτ]ῳ ἐνιαυτῷ̣ τὰ χ̣ώ̣[ματα πάντ]α ἐστεγνωμέ̣να ἐ̣ν̣ τῇ τριακάδι τοῦ Φαῶφι.
20[ἡ πρᾶξις ἔστω αὐτῷ̣ ἔκ τε αὐτῶν ἀλληλεγ]γύων ὄντω̣ν̣ [εἰ]ς ἔκτεισι̣ν̣ κ̣[αὶ] ἐ̣ξ̣ ἑνὸς καὶ ἐξ οὗ ἐὰν̣ ᾳ̣ὐ̣[τῶν αἱ]ρῆται καὶ ἐξ ὧν ἔχουσι πρὸς ὑπηρεσίαν
[καὶ ἐκ τῶν αὐτῶν ἐγγυητῶν καὶ ἐκ τῶν ὑπαρ]χ̣όντων αὐτ[οῖς] π̣άντων καθάπερ(*) ἐκ δίκης. κ̣υρία ἡ μίσθ̣ω̣[σι]ς. (ἔτους) β Αὐτοκράτορος Καίσαρος Μάρκου Αὐρηλ(ίου)
[- ca.10 - Εὐσεβοῦς Εὐτυχοῦς Σεβαστοῦ -ca.?- (hand 2) -29-31- ] νίου ἐπίτρ[οπο]ς τ̣οῦ προγεγρα(μμένου) Ἡρακλᾶ μεμίσθωκα(*) καὶ δέδωκα ἀπὸ τ̣ε̣τ̣ρ̣ακισχιλί(ας)

## Apparatus

9. ἑξακοσίας,εξακοσιασ corr. ex εξ̣ κοσιασ
9. εἰσιόντος
10. corr. ex αρξομενοι
11. corr. ex δεοντκαι
13. γίγνεσθαι (or γενέσθαι)
15. μετακινήσουσι
17. N. Gonis (via PN) : ὑγιείας prev. ed.
17. N. Gonis (via PN) : prev. ed.
17. corr. ex̣ ων
21. corr. ex καθᾳ̣..
22. corr. ex̣ εμισθωκα

## Translation

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http://wwwapp.cc.columbia.edu/ldpd/apis/item?mode=item&key=columbia.apis.p313
[accessed: 20/04/14]

. . . whatever is necessary . . . it shall be the responsibility of the lessees to irrigate . . . from the same machines for . . . (3) . . . eighty drachmas, which chous the lessees will bring in at their own expense for the . . . (4) the same eighty drachmas, or they will pay eighty drachmas to the lessor . . . (5) . . . of those together with their maintenance according to the things [purchased? which were] agreed upon to be given to the lessees . . .(6) . . . and the lessees agree they have from the lessor one thousand two hundred drachmas on account and the rest (7) of which they will receive one hundred drachmas in Thoth, two hundred drachmas in Mecheir and Phamenoth and from Pharmouthi until (8) Mesore including Mesore (?) drachmas per month; . . . from the advance loan for (our) service of the irrigating of the farm and for the valuation of the pairs of oxen they shall deliver (9) from the produce of the present year six hundred drachmas, from the produce of the coming year six hundred drachmas, (10) . . . The lessees shall carry out the vintage beginning from the 15th of Mesore so that they may complete (11) the other work for the vines in due season, in exemplary fashion, being negligent in nothing and (12) the lessees providing everything necessary for themselves, and the constant weeding and the planting of as many shoots as are necessary (13) in the parts (of the garden) needing it, and let them plant however many as they may wish at their own expense (as long as) satisfactorily carried out and they shall give to the lessor (14) the wine from unfermented, new and unadulterated [vintage] at the vat, for which the lessor will furnish empty wine jars measuring nine cotylas (15) and when they are filled with wine they (the lessees) shall place them [in the sunning area] and they shall move and guard them until they are locked up. And at the end of the period they shall deliver (16) the vineland free of dirt of every kind and filth from post to post and the plants living and flourishing and the machines (17) in working order except for wear and tear and the doors and keys attached or shall forfeit the proper value of whatever is not returned, (18) or for any plant which withers through carelessness twice the amount of damage. And it shall not be in the power of the lessees to give up the lease before the end of the period (19) but they shall

also similarly return all the embankments watertight in the last year on the 30th day of Phaophi. (20) He (the lessor) shall have the right of execution against them (the lessees), who are mutual sureties for the payment, and singly, and against whichever of them he chooses, and against all that they have acquired in consequence of their service, (21) and against their sureties, and against all their property as one does when bringing a dike. The lease is normative. Year 2 of Emperor Caesar Marcus Aurelius [. . . Pius Felix Augustus . . .] (2 H.) I [. . .] son of [. . .]nios, steward for the aformentioned Heraklas have leased and have given of four thousand [as written above.]

## P. Oxy. XIV, 1631

Text hosted at http://www.papyri.info/hgv/21943 [accessed 13/05/2014]

Αὐ[ρηλίῳ Σερήνῳ τῷ καὶ] Σαραπίων[ι Ἀγα]θείνου μητρὸς Ταποσειριάδο[ς] ἀπὸ τῆς λαμπρᾶς καὶ λαμ-
[προτάτης Ὀξυρυγχιτῶν] πόλεω[ς -ca.?- ]
π[αρὰ Αὐρηλίων Κτιστ]οῦ Ῥ[ο]ύφου [μητρ]ὸς Διονυσίας καὶ τοῦ υἱ(*)οῦ Πτολεμαίου μητρὸς Ταύριος ἀμφοτέρω(ν)
ἀπὸ [τῆς λαμπρᾶς καὶ λ]αμπροτά[της] Ὀξυρυ[γ]χ[ιτ]ῶν πόλεως καὶ Πελωΐ (*)ου Ἡρακλήου(*) μη(τρὸς) Ταπονθεῦτος
5ἀπὸ κ[ώμης Τανάεως(?)] ἐκου[σί]ω[ς ἐπι]δεχόμεθα μισθώσασθαι \ἐφ᾽ ἐνιαυτὸν ἕνα/ ⟦ Traces ⟧ ἔτι ἀπὸ α Ἀθὺρ τοῦ
ἐνεσ[τῶτος ἕκτου ἔτους(?)] τὰ ἀμπελουργ[ι]κὰ ἔργα πάντα το[ῦ] ὑπάρχοντός σοι περὶ κώμην Τανάειν
ἀμπε[λικοῦ κτήματος κα]ὶ τῆς πρ[ο]σ[ούσ]ης [καλ]αμείας ὅσ[ο]υ ἕκαστ[ό]ν ἐστιν ἀρουρηδοῦ, ἡμεῖς μὲν οἱ πε-
ρὶ τὸν [Αὐρήλιον Κτιστὸν] κατὰ τὸ ἥμ[ισυ,] ἐγὼ δὲ ὁ Πελώϊ(*)ος κατὰ τὸ λοιπὸν ἥμισυ, ἅπερ ἔργα ἐστὶν
τῆς ἀ[μπέλου τ]ιλμὸς καλάμου, συλλο[γὴ] καὶ μεταφ[ο]ρὰ τούτου, ξυλοτομία δικαία, ἀνκαλισμὸς καὶ δέσις,
10ἀγκα[λῶν](*) [ καὶ πρ(?)]οσφ[ορὰ] φύλλων καὶ ἐκβολὴ(*) ἐκτὸ[ς] πλαστῶν, ἀπωρυγισμὸς ὅσων δεῖ ἀπωρύγων, σκαφη-
τὸς, γ[ύ]ρ[ω]σις κ[αὶ π]αρα[γρ]αφή, τῆς δὲ καλ[α]μουργίας οὔσης πρὸς σὲ τὸν γεοῦχον, τῆς δὲ ταύτης ὑπουργίας
οὔσης πρ[ὸ]ς ἡμᾶς, τῶν δὲ λοιπῶν ἔργω[ν] μετὰ τὰ προκείμενα ὄντων πρὸς ἡμᾶς, ἅπερ ἐστὶν σκαλ-
μός, βλαστολογία, Φαρμουθιακὴ (*) ἐργασία, διάστασις, ἀνάλημψις, φυλλολογίαι αἱ ἐνχρήζουσαι, τῶν δὲ
καλαμίων διτομὴ (*) καλαμίου ἑκατέρου, ἐπάρδευσις καὶ βοτανισμὸς διηνεκής, ἔτι δὲ καὶ στῆναι ἡμᾶς
15π[αρ]ὰ σοὶ ἐ[ν τῷ] κτήματι καὶ ἐν τῇ καλαμείᾳ πρὸ τῶν ὄνων χωφορούντων πρὸς τὸ ὅπου

δεῖ τὸν χοῦν βάλλε-
σθαι, καὶ πο[ι]ησόμεθα τὴν τῶν χωρούντων εἰς τὸν οἶνον κ[ο]ύφων κομπασίαν, καὶ ταῦτα λαβόντα (*) τὸν
οἶνον [σ]υνθήσομεν ἐν τῷ ἡλιαστηρίῳ καὶ ἐπαλείψομεν καὶ κεινήσομεν (*) καὶ μεταδιαιράσομεν (*) καὶ πα-
ραφυλάξομεν ἐς ὅσον ἐν ἡλιαστηρίῳ ἀπόκ[ε]ιται, μισθοῦ τῶν προκειμένων ἔργων πάντων ἀργυρίου δρα-
χμῶν τετρακισχειλίων (*) πεντακοσίων καὶ πυροῦ ἀρταβῶν δέκα καὶ οἴνου παρὰ ληνὸν κεραμίων
20τεσσάρ[ω]ν , οὕσπερ μισθοὺς ἀπολημψόμεθα κατὰ μέρος κατὰ προκοπὴν τῶν ἔργων. καὶ ὡσαύτως ἐπι-
δ[ε]χόμεθα μισ[θώ]σασθαι ἐφ’ ἑνιαυτὸν [ἕνα καρποὺς] τῶν ὄντων ἐν τῇ παλ[α]ι[ᾷ ἀ]μ[πέ]λῳ φοινείκων (*) καὶ ἀκρο-
δρύων πάντων, ὑπὲρ ὧν τελέσομεν ἐκ[φόρια] ἕκτακτα φοίνικος χλωρο[ῦ ἀ]ρτάβην μίαν ἥμισυ , πατητοῦ
ἀρτάβην μίαν ἥμισυ , καρ[υ]ωτοῦ ἀρτάβην μίαν ἥμισυ , ἐλαι[ῶ]ν μελαινῶν ἀρτάβης ἥμισυ , περσικῶν
ἐκλε[κτ]ῶν πεντακοσίων , κιτρίων δεκα[πέ]ντε , σύκων θερινῶν μέχρι ἀναβάσεως τετρακοσίω(ν) ,
25χειμερινῶν πε[ν]τακ[οσί]ων , [σικύ(?)]διᾳ λευκοπε[ίο]να (*) μεγάλα τέ[σσ]αρα . ἔτι δὲ κ[α]ὶ τὸ προσὸν πωμάρι-
ον ἐξ (*) νότου τοῦ [χ]ωρίου [ὁμοίως(?) ἐπὶ] τοῖ[ς ἐ]πάνω μ[ι]σθοῖς ἀρῷ[σο]μεν [καὶ] ποιήσομε[ν] τὴν ἐπάρδε[υσιν,] βοτα-
νολογ[ία]ν καὶ τὰ ἄλλα [τὰ κατὰ] καιρὸν ἔρ[γ]α πάντα, τῆς τοῦ[του] καλαμουργίας μόνης καὶ τῆς στρώσεως
τοῦ χοῦ ὄντων πρὸς σὲ τ[ὸ]ν [γεοῦ]χον, ἀκινδύνων παντὸς κινδύνου. βεβαιουμένης δὲ ἡμῖν ἐπιδο-
χῆς ποιήσομεν τὰ τῆς ἀμπέλου καὶ πωμαρίου καὶ καλαμείας κατὰ καιρὸν ἔργα πάντα εὐκαίρως καὶ εὐ-
30αρέστως, τῶν σῶν ἐπακολουθούντων ἅπασι, καὶ ἀποδώσομεν τὰ ἕκτακτα τῷ δέοντι καιρῷ ἀνυπερθέτως, καὶ μετὰ τὸν χρόνον παραδώσομεν τὰ μισθούμενα σύμφυτα, ἐπιμεμελημέ-
να τοῖς ἔργοις καὶ ἀπὸ θρύων καὶ βοτάνης καὶ ἀγρώστεως πάσης, γεινομένης σοὶ τῆς πράξεως
παρὰ ⟦λλ⟧ ἡμῶν ἀλληλ[εγ]γύων [ὄ]ντ[ων] εἰς ἔκτεισιν, ὡς καθήκει (*) . κυρία ἡ ἐπιδοχή, καὶ

ἐπερωτη-
θέντες ὡμολο[γ]ήσαμεν. [(ἔτους) ἕκ(?)]τ̣ο̣υ̣ Ἀ[ὐτ]ο̣κράτορος Καίσαρος Μάρκου Αὐρηλίου Πρόβου Περσικοῦ Μεγίστ[ο]υ
Γοθθικοῦ (*) Μεγίσ[το]υ Εὐσεβοῦς Εὐτυχοῦς Σεβαστοῦ Χοίακ κε. (hand 2) Αὐρήλ(ιοι) Κτιστὸς καὶ ὁ υ(*)ἱ(*)ὸς

——

Πτολεμα[ῖος] κ̣[αὶ] Πελώϊ (*) ος ἐπεδεξάμεθα (*) εἰς μίσθωσιν τὰ
ἀμπελου[ργικὰ ἔ]ργ[α] πά[ν]τα ἐπὶ τοῖς ἐπάνω μισθοῖς, καὶ ἀποδώ-
σομεν τὰ [ἔκτακ]τ̣α ὡς π[ρ]όκειται, [κ]αὶ ἐπερωτηθέν[τες] ὡ-
μολογή[σαμεν. Τιβ]έριος Κλαύδιος Ὡρίων ἔγρα(ψα) ὑπὲρ [α]ὐτῶν
μὴ ἰ (*) δότ[ων] (*) [ γρά]μματα.

v

(hand 1?) [ἐπ]ι̣δ̣[οχ]ῆ̣ [Α(ὐρηλίου) Κτισ]τ̣ο̣ῦ̣ ἀλλαγεῖσα. / /

## Apparatus

3. υϊου papyrus
4. πελωϊοῦ papyrus
4. cor ex ηρακ.ηου
8. πελωϊοσ papyrus
10. ἀ[π]ο̣κ̣[οπὴ] prev. ed.
10. ἐμβολὴ prev. ed.
13. [π]αραμυθιακὴ prev. ed.
14. διτομίᾳ prev. ed.
16. cor ex λᾳ οντα
17. l. κινήσομεν
17. l. μεταδιεράσομεν
19. l. τετρακισχιλίων
21. l. φοινίκων
25. l. λευκοπίονα
26. l. ἐκ
33. cor ex καθηθει
35. l. Γοθικοῦ
35. ϋϊοσ papyrus
35. ϋϊοσ papyrus
36. πελωϊοσ papyrus
36. cor ex επεδεξαμετα
40. l. εἰδότ[ων] : ϊδοτ[ων] papyrus

## Translation

Transcribed from: Johnston (1940, p.144-145) and Kloppenborg (2006, p.539-541)

To Aurelius Serenus also called Sarapion son of Agathinos, and whose mother is Taposirias, of the illustrious and most illustrious city of the Oxyrhynchites… from the Aurelii Ctestus son of Rufus and whose mother is Dionysia, and his son Ptolemaios, whose mother is Tauris, both of the illustrious and most illustrious city of the Oxyrhynchites, and Peloios son of Herakles, whose mother is Tapontheus of the village of Tanais.

5 We willingly agree to lease for one additional year from Hathyr 1 of the current 6th year all the viticulture labour of the vineyard land owned by you near the village of Tanais, and the adjoining reed plantation, of however many *arourae* there may be, we, the associates of Aurelius Ctistus, undertaking half and I, Peloios the remaining half. The tasks of the vineyard include: cutting of the reeds; collection and transport of them; proper pruning: tying (the cuttings) into bundles and binding (them); stripping and transport of leaves and throwing them outside the mud walls; layering as many vine-shoots as are necessary; digging; and loosening (the soil around the vines) and trenching. You, the landlord, are responsible for the arrangement of the reeds and we for assisting you in the work, we being responsible for the remaining operations after those mentioned, namely: hoeing; thinning the shoots; the work of Pharmouthi; separating [the leaves] (to provide room for the growth); elevating [the shoots]; thinning the foliage as needed.

And concerning the reed plantation, the second cutting of reeds in each of the two (plantations), irrigation and continuous weeding; and further, we agree to assist you in the vineyard and the reed plantation in superintending the donkeys that bring fertilizer so 'that it might be thrown in the proper places; and we will test the empty jars intended for the wine when they have been filled with wine, place them in the drying room, and seal them, and move the wine, and strain it from one jar to another, and watch over them as long as they are stored in the drying room. The wages for all the aforesaid tasks will be 4500 silver drachmas, 10 *artaba*e of wheat, and 4 keramia of wine at the press, which wages we are to receive in instalments according to the progress of the work.

20 And we also undertake to lease for one year the produce of all the date palms and fruit trees which are in the old vineyard, for which we will pay as a special rent 1 ½ *artaba*e of fresh dates, 1 ½ *artaba*e of pressed dates, 1 ½ *artaba*e of *pateta* dates, 1 ½ *artaba*e of *koryotos* dates, 1 ½ *artaba* of black olives, 500 selected peaches, 15 citrons, 400 summer figs before the inundation, 500 winter figs, 4 large white fat melons. Moreover, in consideration of the above wages we will likewise plough the adjoining fruit garden to the south of the vineyard and will do the irrigating, weeding, and all the other seasonal tasks, with only the reed work of the vineyard and the spreading of fertilizer being left to you, the landlord. The rent is secured against all risks. If our undertaking is guaranteed to us, we will perform all the seasonal tasks of the vineyard and fruit orchard and reed plantation at the proper times and to your satisfaction, your agents (supervising) everything, and we will pay the special rent at the required time without delay, and at the end of the period we will hand back the objects of the lease, fully cultivated, well cared for by our labour, and free from rushes, weeks, and all coarse grass. You have the right of execution upon us, who are mutual securities for the payment of rent, as is fitting. This undertaking is valid, and when the formal question was put, we gave our consent. The 6th year of Emperor Caesar Marcus Aurelius Probus Persicus Maximus Gothicus Maximus Pius Felix Augustus, Choiak 25.

*<2nd hand> I,* Ctistus and my son Ptolemaios and Peloios, both Aurelii, undertake to lease all vineyard labour for the above stated payments and we shall pay the special rent as stipulated. And the question being put, we have acknowledged. I, Tiberius Claudius Horion, wrote this for them since they are illiterate.

<verso>

Undertaking of Aurelius Ctistus, substituted(?).

## P.Laur.4.166

Text hosted on: http://papyri.info/hgv/21268/ [accessed 26/04/14]

FrA

1[. ]. [.... ] [ -ca.?- ]
ἀ[ν]άλημψις [φυλλολογίαι α]ἳ [ἐν]χρησσ[ουσαι](*) [ἐπάρδευσις καὶ βοτανισμὸς διηνεκὴς ἔτι δὲ]
καὶ στῆναι μ[ε παρά σοι ἐν τῷ] κτήματι καὶ [ἐν τῇ καλαμείᾳ πρὸ τῶν ὄνων χωφορούντων πρὸς τὸ ὅπου]
δεῖ τὸν χοῦν [βάλλεσθα]ι καὶ π[οι]ήσομ[αι τὴν τῶν χωρούντων εἰς τὸν οἶνον κούφων κομπα-]
5σία[ν] καὶ ταῦτ[α λαβόντα τ]ὸν οἶον.. [ἐν τῷ ἡλιαστηρίῳ καὶ ἐπαλείψω καὶ κει-]
[ν]ή[σ]ω καὶ με[- ca.10 -] καὶ [πα]ραφ[υλάξω ἐς ὅσον ἐκεῖ ἀπόκειται καὶ τελέσω σοι ὑπὲρ τῶν]
ἀμπελουργικ[ῶν] ἔργων πάντων ἑ[κάστης ἀρούρης ἐκ γεομετρίας ἀργυρίου δραχμὰς]
τετράκις χειλία[ς](*) τὸν δὲ... [. ] [ -ca.?- ]
[. ]ων ἀκίνδυνα ἀπὸ παντὸς κινδύ[νου -ca.?- ]
10[ὅν]τῶν πρ[ὸς] σὲ τὸν [γεοῦχ]ον βεβ[αι]ου[μένης δέ μοι τῆς ἐπιδοχῆς]

FrB

-- -- -- -- -- -- -- -- -- --
1ὑπαρχ[ό]ντων [μο]ι πάντ[ω]ν κυρία ἡ [ἐπιδοχὴ καὶ ἐπερωτηθεὶς ὡμολόγησα]
(ἔτους) ς τοῦ κυρίου ἡμῶν Διοκλη[τιανοῦ Σεβαστοῦ]
———
(hand 2) Αὐρήλιο[ς] Ἄγαθος ἐπεδεξάμ[ην εἰς μίσθωσιν τὰ ἀμπελουργικὰ ἔργα]
πά[ν]τα τῶν βορι[ν]ῶν ἀρου[ρῶν -ca.?- καὶ ἐπε-]
5ρωτηθεὶς ὡμολόγησα Α[ὐρήλιος -ca.?- ἔγραψα ὑπὲρ]
αὐτοῦ φαμένου μὴ εἰδέναι [γράμματα -ca.?- ]

## Apparatus

FrA.2. l. [ἐγ]χρήζ[ουσαι]

FrA.8. l. χιλία[ς]

## Translation

Author's translation

…lifting thinning the foliage the ones needing irrigation and continuous weeding and to superintend with you in the vineyard and in the reed plantation in front of the assess bearing dung, for the soil to be thrown to the places needed, and to undertake the ringing of the jars to be used for wine, and to have taken the wine into the open shed, and oil the jars, and taking all the wine. And I will watch over them being stored there and I pay you all the viticulture tasks of each *aroura* from a survey 4,000 silver drachmas the…

the landowner  having agreed the lease with me

The lease is valid and when the formal question was asked I acknowledged it

In the rule of Lord Diocletian…

Aurelius Agathos has received for a wage for all viticulture tasks of the

of the [? Northern quarter?] of aroura

the questions asked…. signed on account of

his declaration not  knowing [how to] write

## BGU 2.624

Text hosted on http://www.papyri.info/hgv/9271 [accessed 05/05/2014]

Ạ[. . . ]ος Ἀπολλωνίωι τῶι φιλ[τάτ]ωι
χαίρειν.
[. . . . . ]ε ἐπιμελῶς τὰ . . [. . ]. ι.
[. . . . ]ως καὶ ὡς ἐνετιλάμην(*) . . . .
5[. . . . ]. ς ποίησον· ἐὰν ᾖ πεποιη[μένον . . . . ]
[. . . . ]λωνιδίου, ταρίχευσον Χαιρήμον[ος]
ἡμια[ρ]τάβιον ἐλέας(*) τ[. . ]. . . .
ἣν ἔχεις ἐγχ[. . . . . ]. . . .
χυς, ἐὰν σὺν τῶι [. . . . . ]. . . .
10σον ἐλάδιον Σαράπ[ι]ε . . . .
ἐρωτηθ[. . ]. επ [ἀ]νὰ [μ]έσον . . . .
[ἀπ]οφάσει τῆς πιστῆς μὴ ἀμελήσῃς,
τοῦ κοπρίου τοῦ εἰς τὸ πέρα μὴ ἀμε-
λήσῃς· δὸς τῷ ὀνηλάτῃ ἄλλην φακ[ῆν,(?)]
15πολλὰ γάρ με ἠρώτησε, λέγων, ὅτι δου-
λεύσω ἀξίως ἡμῶν τῆς γεωργίας
τοῦ κλήρου Ἀντήνορος· μὴ ἀμέλει,
ἐὰν εὕρῃς χρήσιμον γεωργὸν μισθ[ω]τ(ήν),
τοῦ γεωργοῦ ἱ(*)ερᾶς μὴ ἀμέλει ὀφιλῆ[ς] (*)
20(πυροῦ) ς καὶ (δραχμὰς) μδ (τριώβολον) π[αρὰ Κ]απίτω(νος) αἴτησον
(δραχμὰς) κ, παρέσει ἐπ᾽ αὐτό(ν), ὑπὲρ ναύλ(ου) αἴτησο(ν) (δραχμὰς) ι,
παρὰ ζευγηλάτο(υ) ταυρικ(οῦ) αἴτη(σον) (δραχμὰς) ις,
παρὰ υἱοῦ Τχανασις(*) (δραχμὰς) ς, τὰ ἐνοίκια
τῶν οἰκηδομ(*) ἀπαίτησον· τὰ δὲ ἄλλα
25συ(*) μελήσει. ἔρρωσο. ἀσπάζον [τοὺς]
σοὺς πάντες(*).
27,ms (ἔτους) . [Αὐτοκρά]τορος Καίσαρος Διοκλητιανοῦ Σεβαστοῦ Χοιὰχ ια.

## Apparatus

4. l. ἐνετειλάμην

7. l. ἐλαίας

19. ϊερασ papyrus

19. l. ὀφειλῆς

23. l. Τχανάσιος

24. l. οἰκοδομ(ημάτων(?))

26. l. πάντας

## Translation

Author’s translation (section translated from line 14)

Give the donkey-driver another (helping of) lentils.
For he asked me many (questions), saying that I
would work (in a manner) worthy of our cultivation of
Antenor's estate. Take care,
if you find a serviceable paid farmworker,
for the field [(??ieras)*] Don’t be forgetful of the debt
of corn: 6 [?] and drachmas 44 (3 obols), demand of Kapito 20 drachmas, [?]You will present
to him, on account of transport demand 10 drachmas,
From the teammaster of the Ox demand 16 drachmas
From the son of Tkhanasios 6 drachmas, demand from the inhabitants
of the accommodation…

*[(??ieras)] The meaning is obscure

## P.Wash. Univ. 1 18

Text hosted on: http://www.papyri.info/ddbdp/p.wash.univ;1;18 [accessed 20/04/2014]

[ -ca.?- ] σιῳ [- ca.13 -] ἐκ τοῦ μ̣ζ
[ -ca.?- ] κε ἕ̣ως [- ca.11 -] ιδμ̣αις
[ -ca.?- ἀ]πὸ β Χοι[ὰ]κ [- ca.9 - ἀ]πὸ διε̣λ̣ου-
[ -ca.?- ] ο̣υ̣ ὁμοίως τ̣[..... ][ β (ἔτους)] κ̣αὶ α (ἔτους)
5[ -ca.?- ] υτου τῷ̣ δι̣ε[λθόντι μηνὶ Ἐπεὶ]φ
[ -ca.?- ἑκ]ατοσταῖς [ -ca.?- ] [ Π]α̣χὼν τοῦ
[ -ca.?- ] ἀ̣ν̣έλωται(*) εἰς ο̣[.. ]δοσ[.. ]του ⟦καὶ⟧ καὶ
[ -ca.?- ]ει̣ου καὶ κέλη[τ]ο̣ς [π]λησίο̣ν [τῆ]ς αὐλῆς πα
[ -ca.?- ]υς α̣ὐ̣λὴ τ̣αυρι[κ]ὴ καὶ̣... ος
10[ -ca.?- ] καὶ Παμουνίο̣υ [ ]. ωνος
[ -ca.?- ]ι̣. ε̣ν̣ος
vac.? γ (ἔτους) καὶ β (ἔτους)
[ -ca.?- ]α̣ ὄνων ὁμοίως... [ ]τος
[ -ca.?- ][ α] ἕως β ἤργ̣η̣σ̣αν ἐργ̣ά̣τ̣α̣ι̣. ἀ̣π̣᾽ Ἀμοῦ
15[ -ca.?- ] γ ἕως δ ἠργ̣ά̣σ̣αντο το[ίν]υν ἐν τῷ̣ χωρι(δίῳ)
[ -ca.?- ] κ̣[α]ὶ Ἰ̣ατεῖς οἱ τοῦ μισθωτο[ῦ τ]ὸ̣ αὐτὸ ἔργον
[ -ca.?- ] ε̣ ἕως ς ἠργάσαντο μεδι̣ [.. ] ἀπὸ Τνήεως
[ -ca.?- ] ζ ἕως θ ἠργάσ̣α̣ντ̣ο μεδ̣[ι.... ]υνις
[ -ca.?- ][ θ ἕω]ς ι μετὰ Σ̣αγίω̣ν̣ο̣[ς τοῦ κο]ινωνοῦ
20[ -ca.?- ]ια[ ια ἕως ι]β μετὰ Ὀννῶ[φ -ca.?- ]
[ -ca.?- ἕως]̣.ι̣ε ἠργ̣ά̣σ̣α̣[ντο -ca.?- ]
2
Traces 22 lines
3
Traces 2 lines
25[ -ca.?- ]... ετο εἰς̣.. [ -ca.?- ]
[ -ca.?- ] μ̣ετὰ τῶν ἀπὸ Πε̣ [ -ca.?- ]
[ -ca.?- ] μετὰ τῶν αὐτῶν τ̣ὸ̣ α̣ὐ̣τ̣ὸ̣ ἔργον

κ̣α εἰς μερίδα Ὥρου Φ̣.. ν̣ιο̣ς
κβ τὸ αὐτὸ ἔργον
30κγ εἰς τὴν αὐτουργίαν
κδ μετὰ Σαρᾶ μισθωτοῦ μισ(θοῦ) (δραχμαὶ) ρκ
κε ἔσυραν ξύλα ἐπὶ τὸ ἐποίκειον(*)
κς τὰ σκεύη ἔσυραν ἐπὶ τὸν ἀγρὸν
ἀπὸ τοῦ χωρίου
35κζ ἔσυρ̣αν ξύλα ἐπὶ τὸ ἐποίκ̣ε̣ι[ο]ν̣(*)
κη μετὰ Ὀ̣ννῶφρις(*) πρεσβύτο̣υ
κθ μετὰ κληρονόμων Ἀγάθου
λ μετὰ Ὀννῶφρις(*) ἀμπελουργοῦ (δραχμαὶ) ρκ
Χοιὰ(κ) α ἔσυραν ξύλα ἀπὸ τοῦ Π̣ε̣ρμο(ύθιος)
40β τὸ αὐτὸ ἔργον ἕως γ
δ μ̣ε̣τ̣ὰ̣ Ναροῦ ζευηλάτου(*)
ε τὰ ξ̣ύ̣λ̣α μέτηξαν ἐπὶ τὴν χ̣ορτοθή(κην)
ς μετ[ὰ ]σ̣ιε̣γ̣ο̣υ̣ μισθῳ̣[τοῦ -ca.?- ]
ζ [μετὰ] Ἠδ̣ησί[ο]υ̣ [ -ca.?- ]
45Traces

## Apparatus

1.7. l. ἀνήλωται
3.32. l. ἐποίκιον
3.35. l. ἐποίκιον
3.36. l. Ὀννώφριος
3.38. l. Ὀννώφριος
3.41. l. ζευ<γ>ηλάτου

## Translation:

Translation hosted http://library.wustl.edu/units/spec/manuscripts/papyri/26505.t.html [accessed 20/04/2014].

The author has amended "24" to read "with Saras" rather than "together with Saras" since the word "μετὰ" is used throughout the papyri and translated as "with". There is no good reason to translate the phrase "μετὰ" any differently to the other entries in entries "28", "29", "30" and choiak "6" and "7". The author has also translated the entry "28" that reads "with of Onnophris" to read "Onnophris the old man" as per the Greek as follows:

19] – with those from Pe. [
20] – with the same, the same work
21 – into the portion belonging to Horos, some of Ph . . .nis
22 – the same work
23 – personal work
24 –with Saras, tenant, pay 120 drachmas
25 – they dragged wooden beams to the farm
26 – they dragged the implements from their place to the field
27 – they dragged wooden beams to the farm
28 – with of Onnophris the old man
29 – with heirs of Agathus
30 – with Onnophris, vinedresser, 120 drachmas
Choiak 1 – They dragged wooden beams from Permouthis'
2 – the same work until the 3rd
4 – the Narous, teamster
5 – they transferred the wooden planks to the barn
6 – with [ ]siegos(?) tenant
7 – with Hedesios

## P. Oxy LXVII 4597

Text hosted at:
http://www.papyri.info/ddbdp/p.oxy;67;4597 [last accessed 17/07/14]

ὑπ̣α̣[τ]ε̣[ίας τῶν κυρίων ἡμῶν Κων]σ̣[τα]ν̣τίου καὶ Μαξιμιανοῦ τῶν [ἐπιφανεστάτ]ων Και[σάρ]ων.
Αὐρήλιοι Π̣[τολεμῖνος ὁ καὶ Σαρ]μάτης ἐξηγη[τὴ]ς βουλ(ευτὴς) τῆς λαμ(πρᾶς) καὶ λαμ(προτάτης) Ὀξυρυγχ(ιτῶν)
πόλεως κ̣α̣ὶ [Δημητράμμω]ν̣ Πατερμουθ[ίο]υ μη(τρὸς) Ἀριστοῦτος ἀπὸ τῆς αὐτῆς πόλεως ὁ[μ<ολογοῦσιν ἀλλήλοις ὁ μ>ὲν Πτολεμῖνος] ὁ καὶ Σαρμάτη̣ς ἀναπομπὸ̣ς ἀχύρου ἅμα ττέρῳ(*)
5συνηλλα[χέναι τὴν κατ᾽ αὐ]τ̣ὸν χώραν [τ]ῷ̣ Δημητράμμωνι τῆς τοῦ ἀχύρου παραλήμ[ψεως καὶ ἀνακομι]δ̣ῆς ἐπὶ τὴν [Θ]ηβαΐδα καὶ διαδοσιν εκεισαι(*) τοῖς τῶν γεν[ναιοτάτων στρατι]ω̣τῶν ἵππο[ις, ὁ] δὲ Δημητράμμων ἀποπληρώ-
σιν(*) ἀμ̣έ[μπτως τὴν ὑπὲρ τοῦ] Πτολεμίν[ου τ]οῦ καὶ Σαρμάτου χώραν τῆς δεδηλωμέ̣ν[ης παραλήμψεως καὶ] ἀνακομι̣δ̣[ῆς κ]α̣ὶ διαδόσεως τοῦ ἀχοίρου(*) μετὰ πά-
10σης πίσ[τεως καὶ ἐπιμελεία]ς̣ ὀψωνί[ο]υ̣ μ[ηνι]α̣ίου τῶν συμπεφωνημένων πρὸς ἀλ[λήλους κατὰ μῆ]ν̣α ἕκ̣α̣σ̣τ̣ο̣ν̣ ἀ̣[ργ]υρίου δραχμῶν τετρακισχειλίων(*)·
ἐντεῦ[θ]ε̣[ν δ]ὲ ὁμ̣ο̣λ̣ο̣[γεῖ ὁ] Δ̣η̣μητράμμων ἐσχηκέναι καὶ πεπληρῶ-
σθαι παρὰ τ̣ο̣ῦ̣ Πτολεμίν[ου τοῦ] καὶ Σαρμάτ̣[ο]υ̣ μηνὸς ἑνὸς ἀργυρίου δραχμῶν τετρακισ[χ]ιλίων κ̣[αὶ τῶ]ν λοιπῶν ἐ[σομ]ένων μηνῶν ἄχρει(*)τῆς παρα-
15δόσεως ἀ̣π̣ολήμψεσθ[α]ι σαλάρια ὡς [ἐπὶ] ἑκάστῳ μηνὶ δεδήλωται, ἔτε τε καὶ ὑπὲρ ὅ̣λ̣[ο]υ̣ τ̣[ο]ῦ χρόνου ἐ̣κ̣τάκτων οἴνο̣[υ κε]ράμια τρία καὶ ὄξους κεράμιον ἓν καὶ ἄρτων ἀ̣ρτάβας δύο, ἅ[π]ερ καὶ αὐτὰ ὁμ[ολο]γεῖ ἀπεσχηκέναι· ἀμφότεροι δὲ εὐδοκεῖν ἐπὶ τούτοις καὶ ὁ μὲν Πτολ̣[εμῖ]νος ὁ καὶ Σαρμάτης ἀποδώσιν(*) τῶ(ν) ἐσομένων μηνῶν τὰ λοιπὰ σαλάρι[α, ὁ δ]ὲ Δημητράμμων ἀποπληρώ-
σιν(*)
20τὴν χρείαν καὶ ἄποχα γραμμάτια ἐποίσι[ν] (*) [ τῆς] παραδόσεω[ς], τῶν ἐσομ[έ]ν̣[ων] ἐνδεημ[ά]των ὄντων πρὸς τὸν Π̣[τολεμῖνον τὸν] καὶ Σαρ[μάτην].
κύριον τὸ ὁμολόγημ̣α̣ δισσὸν γραφὲν [πρὸς τὸ ἑκάτερον] μέρος ἔχειν μονα-
χὸν καὶ ἐπερωτήσαντ̣ε̣ς ἀλλήλους ἀλλ[ήλοις ὡμολόγ]ησαν.

(ἔτους) ια ((s-etous )) καὶ ι [τ]ῶν κυρίω[ν] ἡμῶν Διοκ[λητιανο]ῦ καὶ Μαξιμιανοῦ Σεβαστῶν
25καὶ (ἔτους) γ τῶν κυρί[ων] ἡμῶν Κων[σταντ]ίου καὶ Μαξιμιανοῦ τῶν
ἐπιφανεστάτων [Κ]αισάρων Σε[βαστ]ῶν, Ἀθὺρ κγ.
(hand 2) Αὐρή[λ]ιος [Π]τολεμεῖ[νος] (*) [ ὁ] καὶ Σαρμάτ[ης εὐδ]οκῶ πᾶσει(*) τοῖς
προκιμένοις(*)
καὶ [. ]. ε[. . . . ]. σομ[. . . . ]. [. ]. [. . . . . ] τῆς δ[ι]α[δόσεω]ς ἐπὶ τὴν Θη-
βαΐ[δα -ca.?- ]

## Apparatus

4. l. ἑτέρῳ
6. l. διαδόσεως ἐκεῖσε
7-8. l. ἀποπληρώ|σειν
9. l. ἀχύρου
11. l. τετρακισχιλίων
14. l. ἄχρι
18. l. ἀποδώσειν
19-8. l. ἀποπληρώσειν
20. l. ἐποίσει[ν]
27. l. Πτολεμῖ[νος]
27. l. πᾶσι
27. l. προκειμένοις

## Translation

In the consulship of our lords Constantius and Maximianus the most noble Caesars. "Aurelius Ptoleminus alias Sarmates, exegets, councillor of the illustrious and most illustrious city of the Oxyrhynchites, and Aurelius Demetrammon son of Patermuthius, his mother being Aristous, from the same city [acknowledge to each other], Ptoleminus alias Sarmates, conveyor of chaff, with another person, that he has contracted to Demetrammon for the collection of the chaff and its conveyance up to the Thebaid and its distribution there to the horses of the most noble soldiers, and Demetrammon that he will blamelessly fulfill the post for Ptoleminus alias Sarmates for the aforesaid collection and conveyance and distribution of the chaff with all good faith and diligence [?] at a monthly salary of the mutually agreed four thousand drachmas of silver each month; from this (sum) Demetrammon acknowledges that he has received and been paid in full by Ptoleminus alias Sarmates for one month (the salary) of four thousand drachmas of silver, and that for the remaining future months up till the delivery he will receive his salary as has been stated for each month, and further and as special payments for the whole period three ceramia of wine and one ceramion of vinegar and two artabas of bread, which also he acknowledges he has received. Both parties (acknowledge that they) consent on these terms, and Ptoleminus alias Sarmates that he will pay the remaining salary for the future months, and Demetrammon that he will fulfill the charge and bring back written receipts for the delivery; and deficits that there shall be being the responsibility of Ptoleminus alias Sarmates. The agreement is normative, written in duplicate so that each party may have one copy, and having asked each other the formal question they so declared to each other."

"Year 11 and 10 of our lords Diocletianus and Maximianus Augusti and year 3 of our lords Constantius and Maximianus the most noble Caesars Augusti, Hathyr 23."
(2nd hand) "I, Aurelius Ptoleminus alias Sarmates, consent to all the aforesaid, and… the distribution(?) to the Thebaid…"

## P.Cair.Isid. 81

Text hosted at http://papyri.info/ddbdp/p.cair.isid;;81 [last accessed: 10/07/14]

ὑπατε̣ί[α]ς τῶν κυρίω[ν ἡ]μῶν Μ[α]ξιμιανοῦ Σεβ[ασ]τοῦ τὸ ε καὶ
[Μ]αξιμιανοῦ [τοῦ ἐ]πιφανεστάτου Καίσαρο[ς] τ[ὸ] β.
Αὐρ[ήλιοι] Πωλίων [Π]έτρου μ[η]τρὸς Ἀ̣ [ ]ε̣. ἀ̣[π]ὸ̣ ἐποικίου Φανοῦ ὡς (ἐτῶν) λ
οὐλὴ [μ]ετώπῳ μέσῳ καὶ ἀντικνημίῳ ἀριστ[ερ]ῷ καὶ Ἰσίδωρος Πτολε-
5μαίο[υ] μη(τρὸς) Ἡρωείδος [ἀ]πὸ κώμης Καραν[ί]δ[ο]ς ὡς (ἐτῶν) λε οὐλὴ ἀντικνημίῳ
δεξιῷ ἀλλήλοις χαίρειν. ἐπιδὴ(*) ὁ ἐ[μοῦ] τοῦ Ἰσιδώρου ἀδελφὸς Αὐρήλιος
Περᾶς ἀνεδόθη ὑπὸ τῶν ἀπὸ τῆ[ς πρ]οκειμ[έ]νης κώμης Καρανίδος
ἀποδημήσιν(*)ἐν τῷ Τραιανῷ ποταμῷ καὶ τοῦ ἀδελφοῦ μου Περᾶ
ἀπασχολουμένου περὶ τὰ διαφέροντα αὐτῷ ὑπάρχοντα, προετρε-
10ψάμεθά σαι(*) τὸν Πωλίωνα ὥστ[ε] ἀποδημήσιν(*) ἀντ᾽ αὐτοῦ
ἐν τῷ αὐτῷ Τραιανῷ ποταμῷ καὶ ἐκῖσαι(*)ἀπεργάσασθαι καὶ τὴν χρί-
αν(*) τὴν ὑπὲρ αὐτοῦ ἀμέμπτως ἀποπληρώσιν(*), λαμβάνοντός
σου τοῦ Πωλίωνος παρ᾽ ἐμοῦ τοῦ Ἰσιδώρου ὑπὲρ μισθοῦ καὶ ἐκ-
πίσματος(*) λόγου τὰ σταθέντα μετοξὺ(*) ἡμῶν ἀργυρίου τάλαν-
15τα δύ[ο] καὶ τροφὰς μηνῶν δύο καθ᾽ ὁμοιότητα ἁπάντων τῶν
ἀπὸ τοῦ νομοῦ ἀποστελλομένων ἀνδ[ρ]ῶν, ἀφ᾽ ὧν ἐντεῦθεν
ἐγὼ Πωλίων ἀπέσχον παρὰ σοῦ τοῦ Ἰ[σιδ]ώρου ἐπὶ λόγου ἀργυ-
ρίου τάλαντον ἓν καὶ τὰς τροφὰς τῶν [αὐ]τῶν μηνῶν δύο , τὸ δὲ
λοιπὸν τοῦ ἀργυρ[ίο]υ τάλαντον ἓν ἀπολήμψομαι παρὰ σοῦ τοῦ
20Ἰσιδώρου μηνὶ Παῦνι τοῦ ἐνεστῶτος ἔτ[ο]υς, ἐνλογουμένων μοι
τῶν μηνῶν δύο ἀφ᾽ ἧς ἡμέρας ἐὰν ἀπ[ο]δημήσω ἀπὸ τοῦ Ἀρσι-
νοίτου. ἐὰν δὲ καὶ σοι(*) ὁ Πωλίων πλείω τῶν ἡμερῶν ἑξήκοντα
παρακατασκεθῶ(*) ἐκῖσαι(*) ἡμέρας ἐν τῷ αὐ[τ]ῷ Τ[ρ]αι[α]νῷ ποτ[αμ]ῷ
λήμψομαι παρὰ σοῦ τοῦ Ἰσιδώρου ὑπὲρ μισθοῦ κ[αθ᾽ ἑκάσ]τη[ν ἡ]μέρα(ν)
25ἀργυρίου δραχμὰς διακοσίας , καὶ οὐκ οὔσης δὲ ἐ[ξ]ουσίας ὁποτέρῳ ἡμῶν
ἀλλάξε(*) τι τούτων ἢ παραβῆνέ(*) τ[ι] τῶν ἐν[γε]γραμμ[ένω]ν κα[τὰ] μηδέ-
να τρόπον διὰ τὸ ἐπὶ τούτοις ἡμᾶς ἑκουσίῳ κ[αὶ α]ὐθερέτ[ῳ] (*)γνώμῃ τὰ
πρὸς ἀλλήλους συντεθῖσται(*). καὶ ἐπερωτηθ[έ]ντες ὡ[μο]λογήσαμεν.

(ἔτους) ιγ ((s-etous )) καὶ ιβ ((s-etous )) καὶ ε ((s-etous )) τῶν κυρίων ἡμῶν Διοκλητιανο[ῦ κ]αὶ Μαξιμ[ια]νοῦ Σεβαστῶν
καὶ Κωνσταντίου καὶ Μαξιμιανοῦ τῶν ἐπιφανεσ[τά]των Καισ[άρων], Φαρμοῦθι ιδ.
(hand 2) Αὐρήλιος Πωλίων Πέτρου σ[υ]νεθέμη[ν] πᾶσι τ[οῖ]ς προκιμέ-
νοις καὶ ἔσχον ἐπὶ λόγου ἀργυ[ρί]ου τάλαν[το]ν ἕν , τὸ δὲ λοιπὸν
τοῦ ἀ[ρ]γυρίου τάλα[ν]τον ἓν ἀπ[ολ]ήμψομαι τῇ προθεσμίᾳ
ὡς πρ[ό]κ(ειται). Ἀρήλιος(*) Σιλβανὸ[ς] ὁ καὶ Ἥρων ἔγραψα ὑπὲρ ἀτοῦ(*)
ἀξιωθ(εὶς) ἀγραμμάτου.

## Apparatus

6. l. ἐπειδὴ
8. l. ἀποδημήσειν
10. l. σε
10. l. ἀποδημήσειν
11. l. ἐκεῖσε
11-12. l. χρεί|αν
12. l. ἀποπληρώσειν
13-14. l. ἐκ|πείσματος
14. l. μεταξὺ
22. l. ἐγὼ
23. l. παρακατασχεθῶ
23. l. ἐκεῖσε
26. l. ἀλλάξαι
26. l. παραβῆναί
27. l. [α]ὐθαιρέτῳ
28. l. συντεθεῖσθαι
34. l. A<ὐ>ρήλιος
34. l. α<ὐ>τοῦ

## Translation

Transcribed from Boak and Youtie (1960, p.316 – 317)

The 5th consulship of our lord Maximian Augustus and the 2nd of our lord Maximian the most noble Caesar. Aurelius Polion, son of Petrus and ..., of the hamlet of Phanes, about 30 years old, with scars in the middle of the forehead and on the left shin, and Aurelius Isidorus, son of Ptolemaeus and Herois, of the village of Karanis, about 35 years old, with a scar on the right shin, do herewith exchange greetings.

Inasmuch as Aurelius Peras, brother to me, Isidorus, was appointed by the people of the aforesaid village of Karanis to leave for Trajan's River, and since my brother Peras is kept busy by the property which he possesses, we have persuaded you, Polion, to leave for the said Trajan's River in his place, to work there, and to perform in blameless fashion the service due on his behalf. You, Polion, are to receive from me, Isidorus, on account of wages and inducement the two talents in silver agreed on between us and rations for two months, in conformity with the treatment accorded all the men who are sent from the nome. Of these allowances, I, Polion, have herewith received from you, Isidorus, one talent in silver on account and the rations for the two months as specified, and I shall obtain from you, Isidorus, the remaining one talent in silver in the month of Pauni of the current year. The two months shall be reckoned for me from the day that I leave the Arsinoite nome; and if I, Pelion, am kept there, at the said Trajan's River, beyond the sixty days, I shall receive from you, Isidorus, as wages two hundred drachmas in silver each day. And it is not permissible for either of us to after any of these stipulations or to transgress any of the terms herein written in any way, because on these terms we have willingly and of our own choice come to an agreement with each other. In response to the formal question, we have so declared.

## P.Sakaon. 58

Hosted at: http://papyri.info/ddbdp/psi;8;873 [accessed 13/05/2014]

[συν]έθεντο πρὸς ἀλλήλους [Αὐρήλιος Οὐενά-]
[φρ]ις μητρὸς Σουήλεως [μετ᾽ ἐγγύου τοῦ αὐ-]
[το]ῦ πατρὸς Αὐρηλίου Ακι[.. ως..... ]
[μητρ]ὸς Ἀροῦτος ἀπὸ κώμης [Θ]εοξενίδος
5[Αὐρη]λίοις Μέλᾳ Ἡρ[ακλείδου καὶ Π]αησίῳ Σατα-
[βοῦ]τος, ἀμφοτεροι(*) κωμαρχοι(*)κώμης Θεαδελφίας,
ἐπὶ τῷ με τὸν Ο[ὐ]ενάφριν ἐπαν[ι]έναι ἐν Βα-
βυλῶνι καὶ ἐργάσασ[θ]αι ὑπὲρ κώμης Θεαδελφίας
ἐπὶ χρόνον μῆνα ἕ[να ἀ]πὸ τῆς αὔριον ἡμέρας,
10ἥτις ἐστὶν Ἐπὶφ δ[ωδ]εκάτη τοῦ ἐνεστῶτος
ιε (ἔτους) καὶ ιδ (ἔτους) καὶ ζ (ἔτους), λ[αμ]βάνοντος αὐτοῦ ὑπὲρ μισ-
θοῦ ἡμερησίως ἀρ[γ]υρίου δραχμὰς διακοσίας
τεσσεράκοντα · ἐντ[εῦθεν] δὲ ἔσχον ὑπὲρ τοῦ
μηνὸς ἀργυρίου τά[λαντον ἓν ] καὶ δραχμὰς χιλίας
15διακοσ[ίας - ca.13 -] [- ca.15 -]
[- ca.10 -]. α.  παρ᾽ αὐ[τ]ο[ῦ] πληρ[ο]υμένου
τῶν ἡμερῶν τριάκοντα ἀποστῖλε(*) τὸν ἴσον
ἐργάτην ὑπὲρ τοῦ π[ρ]οειρημένου· ἐπὰ[ν] δὲ
μὴ ἀποστίλωσιν(*) τ[ὸ]ν ἴσον ὑπὲρ αὐτο[ῦ] ἐν-
20τὸς τοῦ ὁρισθέντος χρόνου, χορη[γ]ῆσε(*)
αὐτῷ τόν τε Μέλαν καὶ Παῆσιν ὑπὲρ τ[ο]ῦ ἐκπί-
πτοντος χρόνου <ἡμερησίως> [ἀρ]γυρίου δραχμὰς διακοσίας
τεσσεράκοντ[α καθὼ]ς συνέθεντο πρὸς ἀλλήλους·
καὶ ἐπερωτηθέντες [ὡ]μολόγησαν. (hand 2) Αὐρήλ[ιο]ς Οὐ-
25ενάφρις μετ᾽ ἐνγύ[ου] τοῦ ἡμετέρου πα[τρὸς Ἀ-]
κι.. ως συνεθέμε[θ]α ἐπὶ τοῖς π[ροκειμέ-]
νοις πᾶσι ὡς πρόκιτα[ι. Αὐρήλ]ιος Σώφρ[ων ἔγρα-]
ψα ὑπὲρ αὐτοῦ ἀγραμ[μάτου]. [ -ca.?- ]

(hand 1) ιε (ἔτους) καὶ ιδ (ἔτους) καὶ ζ (ἔτους) τῶν κ[υρίων] ἡμῶν Διοκ[λητιανοῦ]
30καὶ Μαξιμιανοῦ Σ̣εβαστῶν καὶ [Κωνσταντίου] καὶ Μαξιμιαν̣[οῦ τῶν]
ἐπιφαν̣[εστ]άτων Καισάρων, [Ἐπὶφ ια].

## Apparatus

6. l. ἀμφοτέροις
6. l. κωμάρχοις
17. l. ἀποστεῖλαι
19. l. ἀποστείλωσιν
20. l. χορη[γ]ῆσαι

## Translation

Translation transcribed from Parássoglou (1978, p.140)

Aurelius Venaphris, his mother being Souelis, having as surety his father Aureliu … son of… and Arous, from the village of Theoxenis, and the Aurelii Melas son of Herakleides and Paesios son of Satabous, both komarchs of the village of Theadelphia, have come to a mutual agreement to the effect that I, Venaphris, shall return to Babylon and work for the account of the village of Theadelphia for a period of 'one month beginning tomorrow, which is the twelfth of Epeiph of the current 15th, 14th, and 7th year, receiving as my wages two hundred and forty drachmas of silver per diem; and I have herewith received one talent and one thousand drachmas of silver for the month; …at the expiration of the thirty day period they will dispatch another worker to relieve the aforementioned; and should they not dispatch another worker to relieve him within the determined time, Melas and Paesios will render to him two hundred and forty drachmas of silver per day for the over time, as they have agreed with each other; and on formal interrogation they so acknowledge.

I, Aurelius Venaphris, having as my surety my father… have agreed to all the aforementioned terms as stated above. I, Aurelius Sophron, wrote for him since he is illiterate. In the 15th, 14th, and 7th year of our lords Diocletianus and Maximianus, Augusti, and Constantius and Maximianus, the most noble Caesars, Epeiph 11th. .:

## P.S.I. 13. 1338

Hosted at: http://www.papyri.info/hgv/17254 [accessed 13/05/2014]

ἐπὶ ὑπάτων τῶν κυρίων Αὐτοκρατόρων Διοκλητιανοῦ [καὶ Μαξιμιανοῦ] σ̣ε̣β[αστῶν]
Αὐρηλίᾳ Διογενίδι τῇ καὶ Τουρβιαίνῃ ματρώνᾳ στ[ο]λ̣ά̣τ[ᾳ]
παρὰ Αὐρηλίου Θέωνος Θέωνος μ(ητρὸς) Ἡλένης ἀπὸ τῆ[ς] λ̣α̣μ[π]ρ[ᾶς Ὀ]ξ[υ]ρ[υγχι]τῶν πόλεως.
ἑκουσίως ἐπιδέχομε(*) μισθώσα̣σ̣θ̣α̣ι ἐφ᾽ ἐν[ιαυτὸν ἕνα ἀπὸ (?)ν]ευμηνίας(*)
5τοῦ ἐξῆς μηνὸς Ἀθὺρ τοῦ ἐνεστο῀τος(*)ις (ἔτους) καὶ ιε (ἔτους) [τὰ ἔργα πάντα] καὶ ἐπαρδίαν
καὶ βοτανολογίαν τῆς καταθ̣ιθεμένης(*) νέας ἀ̣μπ[έλου ἐν ἀμπελι]κῷ̣ σου χωρίῳ
π̣[ερ]ὶ κώμη[ν - ca.11 -] [ ] [ ]α̣νο̣[ ]καλουμ[ε]ν[- ca.15 -] κ̣[λ]ή̣ρου ἐφ᾽ ᾧ̣ τε με
[- ca.18 -] διὰ μ̣ὲν χειμ[ῶ]νος λάχανα αἰδ[ώδιμα] (*) [δ]ιὰ \δὲ/ θέρους σι-
κύρ[α]τα καὶ κ[ολοκυ]ν̣θ̣ῶνας τ̣ῷ̣ν̣ [- ca.15 -]. [. ] νους τῆς ἀμ-
10πέλου ποθισμ̣ο̣ύ̣[ς] (*) [- ca.40 -] ἀπὸ δὲ νεομη-
νίας Φαρμοῦθι ἧως(*) εβ̣...ιᾳ Φαῶφι.. [..... ] τε̣τ̣αρ̣πι καὶ τελέσε(*) μοι
ὑπὲρ φ̣ώ̣ρ̣ο̣υ(*) ἑ̣κ̣ά̣στης ἀρούρης ἐ(*) γεωμε̣τ̣ρ̣ίᾳ[ς] ἀ̣ργυρίου δραχμὰς χιλίας
διακοσίας ποιοῦ̣ν̣τός μου καὶ τὴν ὑπερησίαν(*) τῶν κατὰ κερὼν(*) καταθιθεμένων(*)
ἀφ᾽ οὗ ἐὰν γένεται(*) ἀχεις(*) οὗ ἐκλίπῃ. βεβαιωμένης τῆς ἐπιδοχῆς ἐπάναγκες ἐπι-
15τελέσω τὰ τῆς ἀμπέλου κατὰ κερὼν(*)ἔργα πά̣ν̣τα καὶ τὴν ἐπαρδίαν καὶ βοτανολο-
γίαν καὶ ἀποδώσω τὰ μὲν τῆς ἐργασίας ἕ̣κ̣α̣στα τ[ῷ̣] δέωντι(*) καιρῷ̣ των(*) τε φώρον(*)
τῷ̣ Παοῖνι μηνὶ καὶ μετὰ των(*) χρόνον παραδ̣ώσω τ̣ὴ[ν] ἄ̣μπελων(*) ἐπιμεμελημενη(*) πά-
σῃ ἀμπελουργικῇ̣ ἐπιμελίᾳ(*) καὶ εὐθαλουσα(*) καὶ ζωγονουσα(*)τῶν παρεχον(*) μοι
μοχευμετω(ν) (*)
ἀντὶ τῶν διαπνεώντων(*) ἐμοῦ τὴν κατάθησιν(*) ποι[ο]υμένου ἀμιστὶ(*) γενομένης σοι τῆς πρά-
20ξεως παρά τε ἐμοῦ ὡς καθήκι(*). κυρία ἡ ἐπιδοχὴ καὶ ἐπερωτηθεὶς ὡμολόγησα. καὶ ις (ἔτους) καὶ ιε (ἔτους)
τῶν κυρίων ἡμῶν Διοκλητιανοῦ καὶ Μαξιμιανοῦ σεβαστῶν καὶ η (ἔτους) τῶν κυρίων ἡμῶν Κω\ν/στα\ν/τίου

καὶ Μαξιμιανοῦ τῶν ἐπιφανεστάτων Καισάρων Φαῶφι ιγ.

(hand 2) Αὐρήλιος Ὡρίων προ\νο/ητή[ς]... τουτο...

## Apparatus

4. l. ἐπιδέχομαι
4. l. [ν]εομηνίας
5. l. ἐνεστῶτος
6. l. κατατιθεμένης
8. l. ἐδ[ώδιμα]
10. l. ποτισμού[ς]
11. l. ἕως
11. l. τελέσαι
12. l. φόρου. l. ἐ<κ>
13. l. ὑπηρεσίαν
13. l. καιρὸν
13. l. κατατιθεμένων
14. l. γένηται
14. l. ἄχρις
15. l. καιρὸν
16. l. δέοντι
16. l. τόν
16. l. φόρον
17. l. τὸν
17. l. ἄμπελον
17. l. ἐπιμεμελημένην
18. l. ἐπιμελείᾳ
18. l. εὐθαλοῦσαν
18. l. ζωγονοῦσαν
18. l. παρεχομένων
18. l. μοσχευμάτω(ν)
19. l. διαπνεόντων
19. l. κατάθεσιν
19. l. ἀμισθὶ
20. l. καθήκει

## Translation

Transcribed from Kloppenborg (2006, p.544)

During the consulships of the lords Emperors Diocletian, [year 7 and Maximian, year 6], Angusti. To Aurelia Diogenis, also called Tourbiana, a *matrona stolota,* from Aurelius Theon son of Theon, whose mother is Helene, from the illustrious city of Oxyrhynchus.

4 I willingly agree to lease, for the coming one year, from the first of the coming month of Hathyr of the present 16th and 15th years, all of the labour and the irrigation and the weeding of the newly planted vineyard in your vineyard land near the village of… called… *kleros* on the condition that I... ... during the winter, the edible vegetables (and) during the summer the cucumbers and gourds of... irrigating the vineyard.... from the new moon of Pharmouthi until... Phaophi... and to pay me 1200 dr. for rent for each *aroura* on the basis of a land survey, and I (shall) take care of the plants that are planted from time to time, from the time (the lease) comes into force until it is terminated. The undertaking being guaranteed, I shall be obliged to complete all of the work of the vineyard in its proper time, the irrigation and the weeding; and I shall return the work tools at the proper time, and the rent in the month of Pauni. And I shall surrender the vineyard at the end of the period (of the lease), well tended through viticulture work, thriving and alive. I shall perform the layering of the vine cuttings that I obtain in place of those which expire (?) without payment, the right of execution being yours against me, as is appropriate.

20 The undertaking is valid; when the formal question was put, I acknowledged it. Year 16 and 15 of our lords Diocletian and Maximian, Augusti, and year 8 of our Lord Constantinius and Maximianus, the most distinguished Caesars, Phaophi 13.

## P.S.I. 9 1037

Papyrus hosted on http://www.papyri.info/hgv/17467 [accessed 05/05/2014].

[ὁ]μολογοῦ[σιν] ἀλ᾽λήλοις Αὐρήλιοι Ἀτρῆς Ἀνικήτου
[μ]ῃ(τρὸς) Θαήσιος ἀπὸ τῆς λαμ(πρᾶς) καὶ λαμ(προτάτης) Ὀξ(υρυγχιτῶν) πόλεως καὶ Ἀπολ-
[λών]ιος [Δ]ημέου μη(τρὸς) Θερμουθίου ἀπὸ τῆς αὐτῆς
[πόλ]εως μετ᾽ ἐγ᾽γύου τῆς ἐξῆς δηλουμένης χρείας
5[ -10-11- ] Traces [ἀ]πὸ τῆς
[αὐτῆς πόλ]εως, ὁ μὲν Ἀτρῆς συνηλλαχέναι τῷ Ἀ-
[πολλων]ίῳ ἣν καὶ αὐτὸς συνήλ᾽λαξεν χώραν μείαν(*)
[ῥαβδο]ύχου [ἑ]νὸς παρὰ διαφόρων κωμῶν, Ἰ(*)βιῶνος
Ταμώρ[ο]υ καὶ Κόσμου καὶ ἄλλων, τῶν ἀνερχο-
10μένων πρὸς ὑ(*)πηρεσίαν τῶν μετάλλων ὄνων
τε καὶ καμήλων, ἐπὶ τῷ τὸν Ἀπολλώνιον ἀντὶ τοῦ
Ἀτρῆ ἀνελτῖν(*) ἅμα τοῖς ζῴοις ὄνοις τε καὶ καμήλοις
καὶ παραμ[εῖ]ναι ἐκῖσαι(*) ἀποπληροῦντα ἅπαντα τὰ
[ἐπιτασσό]μενα αὐτῷ δημόσια ἐπιτάγματα,
15[ἀντιλαμβ]ανόμενον τῶν ἐκεῖσαι(*) ἄχρις οὗ ἀπολυ-
[θῇ, λαμβάνο]ντα παρὰ τοῦ Ἀτρῆ ὑπὲρ σαλαρίων ἤ-
[τοι ὑπὲρ μισθοῦ ἡ]μερησίως ἀδιαλίπτως(*) ἀφ᾽ ἧς
[ἡμέρας - ca.10 -].. [. ]ται ἀπὸ τῶν ἐνταῦθα, δρα-
[χμὰς τετρακοσί]ας . αὐτόθι δὲ ὁμοῦ[ο]γεῖ ὁ Ἀπολλώνιος
20ἐσχηκέν[αι σαλάρ]ιον μηνὸς ἑνὸς [ἐ]ν ταλάντοις δυσί ,
ὅστις εὐγν[ωμονήσ]ει ἐν τόποις καὶ ἐκὼν ποιήσει ὡς
ἅπαν[τ]α δι[. ].. ται πρὸς τὸ ἀπαρενόχλητον καὶ
ἄσκυλ᾽τον καὶ ἀζήμιον εἶναι τὸν Ἀτρῆν περὶ τῶν
ἁπαξαπλ[ῶ]ς διαφερόντων τῇ αὐτῇ χρείᾳ. παρα-
25μενῖ(*) δὲ ταύ[τῃ ὁ] Ἀπολλώνιος ἔστ᾽ ἂν οἱ πάντες
ἀπολυθῶ[σι], λαμβανοντος(*) παρὰ τοῦ Ἀτρῆ μετ᾽ ἐγγύ-
ου εἰς ἔκτι[ι]ν Αὐρηλίο[υ] Παῦ(*)μιος Βησᾶτος α...
... ἀπὸ τῆς αὐτῆς πόλεως. τὰ δὲ λοιπὰ σαλάρια

ἀπολήμψ[ετ]αι κατὰ μῆνα ἕκαστον. κύριον τὸ συν-
30[ά]λ’λαγμα [δ]ισσὸν γραφὲν πρὸς τὸ ἑκάτερον ἔχειν...
[κ]ᾳὶ ἐπερω[τ]ηθέντες ἀλλήλους ἀλλήλοις ὡμολόγησα(ν).
[(ἔτους) ιζ καὶ (ἔτους) ις τ]ῶν κυρίων ἡμῶν Διοκλητιανοῦ καὶ
[Μαξιμιανοῦ Σεβα]στῶν καὶ (ἔτους) ἐνάτου τῶν κυρίων ἡμῶ(ν)
[Κωνσταντίου καὶ Μ]αξιμιανοῦ τῶν ἐπιφανεστάτων
35[Καισάρων, -ca.?- ] κη, ὑπατίας(*) Ποστουμίου Τιτιανοῦ
[τὸ β καὶ Οὐιρίου Νε]πωτιανοῦ
(hand 2) [Αὐρ(ήλιος) Ἀτρῆς Ἀνικήτου συ]ν̣ή[λ]λαξα τὴν χρείαν καὶ ἀποδώ-
[σω πάντα ὡς πρόκειται (?) -ca.?- ] Αὐρήλιος Παῦμις ἐνγυ-
[ῶμαι ὡς πρόκειται -ca.?- ] Αὐρ̣ήλ(ιος) Νε̣... ος
40[ἔγραψα ὑπὲρ ἀγραμμάτων (?) -ca.?- ]
v
Ἀπολλωνίου(*) δρατέως(*) ὑπ̣ο̣γραφω(*) σοινηλαχα(*) ἀντὶ Ἀτρῆ
<καὶ> ἀνταιακνωμονήσω(*) Traces
ἀπὸ τῆς κωμαρχείᾳ̣ς(*) [Κό]σμ̣ο̣υ.

## Apparatus

7. l. μίαν
8. ϊβιωνοσ papyrus
10. ϋπηρεσιαν papyrus
12. l. ἀνελθεῖν
13. l. ἐκεῖσε
15. l. ἐκεῖσε
17. l. ἀδιαλείπτως
24-25. l. παρα|μενεῖ
26. l. λαμβάνων
27. παϋμιοσ papyrus
35. l. ὑπατείας
41. l. Ἀπολλώνιος
41. l. βραδέως
41. l. ὑπογράφων
41. l. συνηλλάγην
42. l. ἀντευγνωμονήσω
43. l. κωμαρχίας

## Translation

(author's translation)

It is agreed between Aurelius Hatres son of Aniketos whose mother is Thaesios from the illustrious and most illustrious city of Oxyrhynchus and Apollonios son of Demeos, whose mother is Thermouthios of the same city for the work of appearing for the following service
…. from the same city Hatres contracts with Apollonios and he will contract for him the single office of Rabdouxos for the duty of the villages of Ibionos, Taamoros and Kosmos and of the others, of taking the assess to the ?team of the quarries and also the camels, on the condition that he Apollonois will have gone in the place of Hatres with the draft animals and the camels, and to stay there having satisfied all the duties for the public service on him. Having taken them to that place, he shall be freed taking from Hatres for salary
for a wage per month unceasingly….
… for these things, drachmas 400. Apollonios agrees on the spot that he will have a salary per month of 2 talents, being blameless in the place and he will undertake all the work willingly…
That is undisturbed and untroubled and free from liability Hatres [?] of the duties due to him. Apollonios will remain in the job until all the duties will have been completed, having from Hatres for the pledge for payment Aurelius Paumios son of Besatos…
… from the same city, that the agreed salary is to be paid for each month. The agreement is valid, written in duplicate for each to have and each being questioned they agreed with each other.
The 17th year and the 16th year of the rule of our Lords Diocletian and Maximian, Augusti and of the same rule of our Lords Constantius and Maximianius, most illustrious Caesars, In the Counsulship of Postumius Titanius 2 and Virius Nepotianus
[2nd hand] Aurelius Hatres son of Aniketos has agreed the service
I will ?give
I will give all the aforesaid…. Aurelius Paumios to the aforesaid Aurelios…
Wrote being illiterate…
V
Apollonios [being] illiterate being a written agreement for Hatres

and I shall be honest… before the Comarchs of Kosmos

## P. Oxy XXXVIII 2859

Text hosted at: http://papyri.info/ddbdp/p.oxy;38;2859 [last accessed: 10/07/14]

Αὐρ̣ήλιοι Σαραπ[ά]μμων Ἡρᾶτος μη̣’(τρὸς) Ἰ(*)σιδώρας αἱρεθεὶς(*) δεκανὸς καὶ
Πα̣[ῦ]λ̣ος Ὡρίω̣ν̣ος μη̣’(τρὸς) Ἑλέ̣νης ἀμφότεροι ἀ̣πὸ τῆς λαμπρᾶς καὶ λαμ(προτάτης)
Ὀξυρυγχειτῶ̣ν πόλεως μετ’ ἐγγύου μον[ῆ]ς καὶ ἐμφανίας(*) τῆς ἐξ̣ῆς
χρίας(*) Αὐρηλίου Ὡρίωνος Ὡρίωνος ἀπὸ τῆς αὐτῆς πόλεως ἀλλήλοις
5χαίρειν. ὁμολογοῦμεν ἐγὼ μὲν ὁ Π̣αῦλος ἀντὶ σοῦ τοῦ Σαραπάμμωνος
κα̣τελθεῖν ἔνθα ἐὰν κελευσθ̣ῶ̃(*) μετὰ τῶν παραδιδ̣ομένων μοι ὀνι-
κῶν καὶ καμηλικῶν ζώων καὶ ῥαβδούχων καὶ τὴν χώραν σου τοῦ
δεκανοῦ ὑ(*)ποστῆναι καὶ ἀποπληρῶσαι καὶ παραμῖναί(*) με πρὸς τῷ
δημοσίῳ ἐπιτάγματι ἔστ’ ἂν ἀπολυθῶ̃ ἀποπληρῶν ἅπαντα
10τὰ ἐπιτατ’τόμενά μοι εἰς τὸ μηδεμίαν μέμψειν(*) ἢ ἐτίαν(*) ἐπακο̣λου-
θῆσαι. λήμψομαι δὲ ὑ(*)πὲρ σαλ̣αρίων ἡμερησίως ἀπὸ τῆς ἐξ̣ῆς ἡμέρας
ἥτις ἔστιν Ἀθὺρ ιε ἔστ’ ἂν παραγένωμαι ἀργυρίου δραχμὰς διακοσί̣ας
πεντήκοντα . αὐτόθι δὲ ὁμολογῶ̃ ἐσχηκέναι ὑ(*)πὲρ μηνῶν δύο
ἀργυρίου τάλαντα δύο καὶ δραχμὰς τρισχειλίας(*) . ἐὰν δὲ παραγένωμαι
15ἐν̣[τ]ὸ̣ς τῆς διμήνου τὰ φανησόμενα παρ’(*) ἐμοὶ ἀργύρια ἀποκαταστή-
σω. ἐ̣. στάντος δὲ τῶν μηνῶν δύο ἐμοῦ προσυ(*)δρεύοντος(*)
τῇ δημοσίᾳ̣ χρείᾳ χορηγήσις(*) μοι σαλάρια ἔστ’ ἂν παραγένωμαι.
καὶ ἀπαρενόχλητον καὶ ⟦ἀζήμιον(*)⟧ καὶ ἄσκυλτον παρασχεῖν σε
τ̣ὸ̣ν [Σ]α[ρ]α̣πάμμω̣να̣ σωματικῶς περὶ πάντων ἁπαξαπλῶς
20τῶν διαφε̣ρ̣όντων τῇ χρ̣ε̣ίᾳ τοῦ δ̣ε̣κ̣α̣νοῦ. ἐγὼ δὲ ὁ Σαραπάμμωνος(*)
21ε̣ὐ̣δοκῶ̃ν(*) ἐπὶ τούτοις καὶ ἀποδώσιν(*) τὰ φανησόμενα σαλάρια ἀκυλ̣α̣ν̣τ̣ως(*) ἐὰν δ̣ὲ
ζ̣ή̣τη̣σ̣ίς τ̣ις γένητα̣ι καθ’ ὅντινα οὖν τρόπον περὶ ε̣
[.... ]ν̣τ̣. ω̣. ρηγο̣ν̣.. οις δεκανοῖς ἐμὲ τὸν Σαραπάμμωνα
α̣π̣ο̣ [.....  κα]τὰ τ̣ὸ ἐπίβαλλόν μοι μέρος καὶ ἀπαρενόχλητόν
25σ̣ε̣ Π̣αῦλ̣ο̣ν εἶν̣α̣ι περὶ τ̣ο̣ύ̣τ̣ου. κ̣ύ̣ρια τὰ γρ̣ά̣μματα δ̣ι̣σ̣σ̣ὰ γραφέντα
πρὸς τὸ ἑκάτ̣ε̣ρ̣[ο]ν̣ ἔχειν μοναχόν. <καὶ> ἀλλήλ̣[ο]υ̣ς ἐπερωτήσαντ(ες)(*) ἀλλήλοις
ὡμολογήσαμεν. (ἔτους) ιη καὶ (ἔτους) ιζ̣ τ̣ῶ̣ν̣ κυρίων ἡμῶν
Δ̣[ι]οκλητ̣ι̣α̣ν̣[οῦ] κ̣α̣ὶ Μαξιμι̣α̣ν̣οῦ Σεβαστῶν καὶ (ἔτους) ι τῶν κυρίων

[ἡ]μ[ῶν] Κ̣ω̣νσταντίου κ̣α̣ὶ Μ̣α̣ξιμ̣ι̣α̣νοῦ τ̣ῶ̣ν ἐπιφανεστάτων
καισάρω[ν] Ἀθὺρ ιδ(*) ὑπα[τείας] Τ̣ιτιανο̣[ῦ κ]α̣ὶ Νεπωτιαν[ο]ῦ
2ϱ
(hand 2) Α̣ὐρ̣η̣λιος Σαραπάμ[μ]ω[ν ε]ὐ̣δ̣ο̣κῶ πᾶσι τοῖ[ς π]ρ̣ο̣κ̣ειμένοις καὶ ἀποδ̣ώ-
σω τὰ φανησόμενα σ̣α̣λ̣ά̣ρ[ι]α ὡς πρόκειται καὶ ἐπερωτηθεὶς
ὡμολόγησα.
v
Θέων Διονυσωδώρου(*) ἀδελφῷ
χαίρειν
ἐπεστάλην διὰ κτηνῶν ξ
τοῦ Ὀξυρυγχείτου δι’ Ἰσιδώρου
καὶ Πατερμ[ο]υ̣θίου δεκανῶ(ν)
ἀχύρου

## Apparatus

1. ϊσιδωρασ papyrus
1. corr. ex αιρεθις
3. l. ἐμφανείας
4. l. χρείας
htt6. corr. ex λοελευσθω
8. ϋποστηναι papyrus
8. l. παραμεῖνάι, corr. ex παρεμιναι
10. l. μέμψιν
10. l. αἰτίαν
11. ϋπερ papyrus
13. ϋπερ papyrus
14. l. τρισχιλίας
15. corr. ex α̣αρ
16. l. προσεδρεύοντος : προσϋδρευοντοσ papyrus
17. l. χορηγήσεις
18. corr. ex αζημιοις
20. l. Σαραπάμμων
21. l. εὐδοκεῖν
21. l. ἀποδώσειν
21-22. l. ἀκοι|λάντως.
26. corr. ex επερ̣ατησαντ
30. corr. ex ια
v.14. l. Διονυσοδώρῳ

## Translation

Translation from Weinstein *et al.*(1971, p.85 – 86)

'The Aurelii Sarapammon, son of Heras and Isidore, chosen *dekanos*, and Paulus, son of Horion and Helena, both from the illustrious and most illustrious city of the Oxyrhynchitcs with Aurelius Horion son of Horion of the same city as surety for their presence and appearance for the following service, to each other greetings, We agree, I, Paulus, on the one hand, to go instead of you Sarapammon wherever I may be commanded, with the asses and camels and wand-bearers handed over to me and to undertake and fulfill the position of you the dekanos and (I agree) that I shall remain at the public command until I be released fulfilling all the orders given me so that no blame or guilt result, I shall receive as daily wages from tomorrow which is 15 Hathyr until I return 250 silver drachmas. I agree that I have received on the spot two talents 3,000 silver drachmas for two months, If I return within the two months I shall return the silver found to remain in my possession. If I [am on the job]two months and continue in the public service, you will pay me until I return and (I agree) that I shall make you Sarapammon free of any corporal harm and annoyance in all matters in general pertaining to the service of dekanos. I, Sarapammon, on the other hand, (agree) to approve on these conditions and to pay the wages found to have accrued in full. If any inquiry in any way whatsoever arises about(?) " . (to) the dekanoi, I, Sarapammon(shall ...)in accordance with the share falling on me and (I agree) that you, Paulus, will be free from trouble in this matter. This contract written in duplicate for each party to have a copy is valid. Each having questioned the other we agreed with each other. Years 18 and 17 of our lords Diocletian and Maximian Augusti and year 10 of our lords Contantius and Maximian the most illustrious Caesars 14 Hathyr, in the consulship of Titian and Nepotian. I, Aurelius Sarapammon, agree to all the aforesaid and I shall pay the wages found to have accrued as aforesaid and in answer to the official question I agreed.'

## Appendix 7: 4th century papyri with wheat prices analysed in text

## CPR VI.75

Greek transcribed from Harrauer (1985, p.126)

τιε[ -ca.?- ]
αμα. . .  [ -ca.?- σί(του) (ἀρτάβας)]
τέσσαρας γίν[(ονται) σί(του)]
(ἀρτάβαι) η λογισθ(εῖσαι) αὐ[ταὶ]
5 ἐκ (δραχμῶν) ς. .  (hand 2) ἐσημ(ειωσάμην) [σίτου]
ὀκτὼ ἀρτάβ(ας) ἐκ δραχ[μ(ῶν) ἐξα-]
κοσίων τεσσεράκοντ[α]
(hand 1) ιζ (ἔτους) καὶ ις (ἔτους) καὶ θ (ἔτους) Μεχ[εὶρ -ca.?- ]

## Translation

...Of corn artabas
four being of grain
artabai 8 [they] themselves having been reckoned
at 6[?00?] drachma1 [2nd hand] I have signed for
8 artabai of grain at 640 drachma [apiece]

## O.Bodl.2.2062

Greek hosted at http://papyri.info/ddbdp/o.bodl;2;2062 [Accessed 15/02/2014]

γυ(νὴ) Λολοῦτος παστ(οφόρου) διέγ(ραψεν) ὑπ(ὲρ) διάφορου

σίτου οὗ παρέσχεν πρὸς τὴν ἐπ᾽ ἀγο-

ρᾶς τιμὴν ἑκάστης (ἀρτάβης) με ἀργυ(ρίου)

(δηνάρια) τετρακόσια ἑβδομήκοντα πέντε

.

(ἔτους) κ καὶ (ἔτους) ιθ καὶ (ἔτους) ιβ Χοίακ κβ.

(hand 2) [Εὐδα]ίμων σεσημίωμαι

## Apparatus

6. This should read: σεσημείωμαι

## Translation:

(Author's translation)

The woman Loloutos, of [?παστ(οφόρου)?] has given on account of the expense of corn. She has supplied it in the market, the payment for each *artaba* being of silver denarii four-hundred and seventy-five. Year 20 and year 19 and year 12. Choiak 22. [Hand 2] Eudaimon signed

## P.OXY. 36.2798

Greek text hosted at: http://www.papyri.info/hgv/16575 [Accessed 15/02/2014]

Αὐρήλιοι Μουνάτιος
καὶ Ἀμμώνις καψάριοι
Αὐρηλίῳ Ὡρίωνι ὁμοέργῳ
χαίρειν. [ἔ]σχαμεν παρὰ σοῦ
ὑπ(ὲρ) τιμῆς [πυ]ροῦ ἀρταβῶν δύ̣ο
(γίνονται) (ἀρτάβαι) β, ἀρ[γ]υρίου δραχμὰς δισχιλίας <τετρακοσίας>
(γίνονται) (δραχμαὶ) Βχ.
(ἔτους) ιγ ((s-etous )) καὶ α ((s-etous )) τῶν κυρίων ἡμῶν
Κωνσταντίου καὶ Μαξιμιανοῦ
Σεβαστῶν καὶ Σευήρου καὶ Μαξιμίνου
τ̣ῶν ἐ̣π̣ιφαν[εσ]τάτων Καισάρων
... [ -ca.?- ] vac.?
(hand 2) [Αὐρή]λιοι Μουνάτιος καὶ Ἀμμώ-
[νιο]ς ἀπέσχαμεν ὡς πρό-
κειται. Αὐρήλιος Δίδυμος
ἔγραψα ὑπὲρ αὐτῶν μὴ εἰδό-
τ̣ω̣ν γρ̣ά̣[μ]ματα.

## Apparatus

4 ἔσχομεν

14 ἔσχομεν

## Translation

Translation transcribed from Coles *et al.*, (1970, p.92)

Aurelius Munatius and Aurelius Ammonius, dressing-room attendants, to Aurelius Horion their fellow worker, greetings. We have received from you for the price of two *artaba*s of corn, (being) (*artaba*s) 2, of silver drachma 2000 <400>, (being) (drachma) 2400. Year 13 and 1 of our lords Constantius and Galerius, Augusti, and Severus and Maximinus most noble Caesars. (Hand 2) We Aurelius Munatius and Aurelius Ammonius have received as aforesaid. I Aurelius Didymus wrote on behalf of them because they do not know letters.

## Appendix 8: *Sportulae* Inscriptions

Evidence of stability during the 3rd century comes from outside Egypt in the form of low status payments for *sportulae*. Although *sportulae* payments were initially public meals paid for by a wealthy benefactor to celebrate a significant event. It seems that under Nero a system of cash payments were adopted. Despite a temporary reversal under Domitian, these were soon formalized into a tariff of payments paid to demonstrate the generosity of a benefactor, and to ensure that enough people witnessed the event celebrated as this reflected the importance of the patron[1141].

*Sportulae* inscriptions have been here chosen to determine if the amounts stated change during the third century crisis. *Epula* (traditionally meaning public banquets) were also included since unless *sportulae* and *epula* are mentioned in the same inscription it is difficult to determine if *sportula* means money, or money for food; so too can *epulum* which can also (confusingly in this context) mean just money[1142]. Where amounts are specified sestertii are usually mentioned but the amount given out is generally so small, that they should be sensitive to any inflation from the devaluation of the denarius; since there was a fixed relationship of sestercii to the denarius. Table 68 (p.317) gives the references to *sportulae* gifts from the assassination of Alexander Severus (A.D. 235), since this traditionally marks the start of the years of crisis using the data gathered by Duncan-Jones[1143]. In addition Table 69 (p.317) gives a list of foundations established in the 3rd century to provide money for regular *sportulae* payments, as recorded by Duncan-Jones[1144]. In each the symbols "HS" means sestercii, as is typical of 3rd century inscriptions[1145].

**Table 68 Third century dated *sportulae* inscriptions. Data from Duncan-Jones (1974, p.187 - 191)**

| Date | Location | Amount | Inscription |
|---|---|---|---|
| A.D. 230-40 | Ostia I | 20HS (Augustalibus) | v.772[1146] |
| A.D. 230-40 | Ostia I | 12?HS (Decurionibus) | v.772[1147] |

[1141] Duncan-Jones (1974, p.138).
[1142] Slater (2000 p.112); Szilagyi (1963, p.360 – 371).
[1143] Duncan-Jones (1974, p.187 - 191).
[1144] Duncan-Jones (1974, p.190, 198 - 199).
[1145] Duncan-Jones (1974, p.363).
[1146] Duncan-Jones (1974, p.190 - 191).
[1147] Duncan-Jones (1974, p.190).

| | | | |
|---|---|---|---|
| A.D. 234 | Saturnia VII | 4HS (po)pulo sportulae | XI2650;v697[1148] |
| A.D. 247/8 | Ocriculum VI | 30HS singulis (amatoribus Romuliorum) discumbentibus et epul(antibus) | XI 7805 = ILS 7365[1149] |
| A.D. 249 | Minturnae I | 12HS Decurionibus | x6012 = ILS 5062[1150] |
| A.D. 251 | Ostia I | 12HS Decurionibus | xiv352 = ILS 6149[1151] |

**Table 69 Foundations for *sportulae*. Data from Duncan-Jones (1974, p.190, 198 - 199)**

| Date | Location | Amount | Book Citation |
|---|---|---|---|
| A.D. 230-40 | Ostia I | 50,000HS for annual distribution "inter (Augustales) praesentes" | 674[1152] |
| A.D. 234 | Saturnia VII | 8000HS Annual "confrequentatio et sportulae" for the "Augustales" and the "plebs urbana" | 697[1153] |

A search of the online database by Clauss Slaby[1154] was made to determine if there was any evidence for *sportulae* rates from elsewhere in the empire, and if so, how different coins values might be. In each case, searches were made using the terms: "sportul", and the consular names; and "epul" with the consular names. The date was obtained by identifying the consuls and cross-referencing those consuls with the consular tables given by the Chronographer 354 A.D. Searches were made by emperors and by consuls between the usurpation of Maximus Thrax (A.D. 235) and the end of Diocletian's reign in A.D. 305.

**Table 70 Further *sportulae* inscriptions**

| Date | Location | Type | Detail | Reference |
|---|---|---|---|---|
| A.D. 254 | Ostia | sportula | A.D. 254 in Ostia (?) denarii to be | AE 1987, 00199 |

[1148] Duncan-Jones (1974, p.187).
[1149] Duncan-Jones (1974, p.189).
[1150] Duncan-Jones (1974, p.191).
[1151] Duncan-Jones (1974, p.191).
[1152] Duncan-Jones (1974, p.198-99).
[1153] Duncan-Jones (1974, p.190).
[1154] http://oracle-vm.ku-eichstaett.de:8888/epigr/epigraphik_en. (Last Accessed: 22/10/10).

| | | | | |
|---|---|---|---|---|
| | | | divided as sportula | |
| A.D. 256 | Ostia | Foundation | Dedication of a silver symbol of the great mother<br>A bequest of 6000 HS[1155].<br>180 denarius to be used for epula (feasting) and sportulae. | HD008328 = AE 1987, 0198 |
| A.D. 259 | Ceccano / Fabrateria Vetus | sportula / foundation | ?HS? given to each person at the statue dedication1156<br>A bequest of 6000 HS to celebrate his birthday from which an unknown amount will be divided as sportula | Fabrateria 00003 = AE 1979, 00140 |
| A.D. 263 | Setia (modern Sezze) | sportula / foundation | A bequest of 4000 HS has been made for the annual celebration of the birthday<br>A donation will be made to those present and to the Decurions | HD007053 = AE 1985, 0272. (B) = CIL 10, 06465 |
| A.D. 277 | Dalmatia: Vid / Narona | epulum | The offer of epulum to the citizens at the repair of the baths | CIL 03, 01805 (p 2328,119) = D 05695 = CINar-01, 00028 |
| A.D. 277 | Africa Proconsularis, Gafsa / Capsa | epulum | The offer of epulum and games at the dedication of the temple | CIL 08, 00100 = CIL 08, 11228 |
| A.D. 290 – 294 | Midid / Mididi | epulum | A new portico has been built to the *curia* and a most "splendid" epulum has been given to all the plebeians and also to the curials dedicaed byTitus Aristobulus [1157] | CIL 08, 11774 = AE 1946, +00119 |
| A.D. 293 – 303 | Dougga / Thugga | sportula | 611158 in coins paid by Papirius Balbius Honoratus as the sums | CIL 08, 26472 = Dougga 00139 = AE |

[1155] The term HS became SS on later 3rd century inscriptions Duncan-Jones (1974, p.363).
[1156] [3] is the shorthand to represent missing letters in the inscription.
[1157] Titus Claudius Marcus Aurelius Aristobulus, proconsul of Africa A.D. 290-294, see Jones *et al.* (1971 p.106.
[1158] Denomination not specified.

| | | | | |
|---|---|---|---|---|
| | | | raised for the decoration of the temple.[1159] | 1902, 00005 = AE 1904, +00121 |

## Analysis

Corbier[1160] asked if the third century exhibits a decline of *sportulae* but two inscriptions, one from Gasrin[1161] (A.D. 314 – 322) and one from Feltria[1162] (A.D. 323) show that the *sportulae* and *epula* traditions continued over the third and into the early fourth centuries. The fragmentary nature of the evidence should not concern us as Duncan-Jones reminds us since there are many factors that affect the survival and recovery of archaeological material including the area of the town that has been excavated; the durability of the local stone; the extent to which the town was used as a quarry; and how far continued occupation has erased the Roman levels[1163].

The evidence shows that sestertii are still considered to be payment in the third century until A.D. 263 at Setia and was still being continued (though at an unknown rate) in A.D. 293-303 at Dougga. The inscription from Setia is interesting because one would expect the legacy of HS 4000 to have *substantially* increased if the impact of the substantive debasement was being felt since Carson[1164] suggests that at this time 800 denarii are now being produced for one aureus. Given that HS 4000 is a typical value for a 1st – 2nd century foundation, and that the number of denarii to the aureus had increased from 25 to 800[1165], then one would expect the effect of inflation to mean that the inscription should be about HS 128,000[1166]. The *sportulae* and foundation costs until A.D. 263 therefore show no sign of inflationary pressure. Moreover in each case a bequest is being made, on which the dedicator expects a rate of interest. Confidence is the currency was sufficient for the dedicatees to expect that interest to be continued to be paid. The data from Ostia is particularly interesting. If there were widespread inflation in the mercantile and urban economies one might expect to see that inflation reflected in the *sportulae* of a major port like Ostia. Would an increasingly

[1159] *sportulae* payments are made at a time of supposed high inflation. This inscription clearly shows that the tradition of *sportulae* payments continued in the late third century contrary to assertion that they stopped until A.D. 323, see Corbier (2008b p.413).
[1160] Corbier (2008b, p.413).
[1161] CIL 08, 00210 (p 925, 2353) = CIL 08, 11299 = D 05570.
[1162] HD016836 = AE 1990, 0396.
[1163] Duncan-Jones (1974, p.360 – 362).
[1164] Carson (1990, p.234).
[1165] A 32-fold increase.
[1166] 4000 x 32 = 128,000.

worthless coin[1167] still be given to the *cives* if the act of *sportulae* was to demonstrate the generosity and largess of the patron?

As Slater[1168] reminds us, although based an older tradition of the *cena recta*, the provision of an *epulum* required more organization than a simple *sportulae* payment in coin. A *manceps* or middleman would need to be hired to provide all the apparatus necessary for an epulum, and to ensure that nothing was stolen. If dining outside, rather than in a *schola*, then all the tables, food and cutlery, wine and slaves would need to be hired. The two inscriptions from A.D. 277 (from Narona and Capsa) are consistent in the way you abbreviate things throughout actually mention the provision of epulum date to a time when it would potentially have been cheaper and more convenient to circulate depreciating bronze coin. The inscription date A.D. 277 from Dalamtia suggests some sort of public banquet that would certainly require a *manceps*, while the A.D. 277 inscription from North Africa cites provision of public games. The two fourth century inscriptions refer to *sportulae* at a time of inflation. This is a clear indication of the continuation of classical customs into the Dominate period. It seems, therefore, that despite the years of "crisis" classical traditions remained strong. The crisis of the third century had not altered this aspect of social behaviour[1169]. Competitive display was still expected of patrons and members of the curial orders and Cicero's *de officia* was still read in Diocletian's day with its emphasis on the honour of financial largess to emphasize one's generosity[1170].

[1167] Carson (1990, p.234-235) notes the drop from 50 denarii to one aureus in A.D. 235 (Severus Alexander) and A.D. 249-51 (Decius) to 400 denarii to 1 aureus under Gallienus (A.D. 260 -268). The inscription does not suggest a major increase in inflation.
[1168] Slater (2000 p.117).
[1169] Martial's visits to his patron for 100 Quadrantes (HS 6.5) occurred twice daily: at dawn at the client's *domus* and then in the early evening at the *baths.* It is possible that the development of large reception-dining rooms, and focus on maintaining of the baths during late antiquity also point to the continued (even increasing) importance of the *salutation* and, by implication, of the *sportulae* custom.
[1170] Cicero *de officia* 11.40 - 15.52.

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