

Currencies and Prices in 3rd and 4th Century  
Palestine and their Implications for Roman  
Economic History

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General

BRIEF ABSTRACT

The following study is an attempt to throw further light on Roman economic history of the III and IV cents. by drawing upon the Palestinian source-material of the period. Clearly, it is no more than a beginning in this direction, and makes no claims to being exhaustive either in the collection of material or in the analysis thereof.

In the first section lists of Palestinian prices of different commodities are set out in chronological order, and compared with their Egyptian parallels. Babylonian material (analysed in Appendix C) is likewise presented.

There follows a discussion of the monetary terminology of the period, and there certain semantic changes are noted and inferences of economic significance drawn. With the clarification of these terms, some observations are made on the patterns of III cent. monetary developments, and the nature of its price-levels.

A series of legal texts are next analysed and it is shown that they reflect the change from a silver to a gold standard, via a transitional period of economic instability and confusion.

Thereafter follows an analysis of IV cent. Palestinian price-levels, and these are compared with the Egyptian evidence. It is suggested that internal discrepancies and apparent differences are to be explained on terminological grounds.

In the final section, certain questions are raised concerning the chronological pattern of the III cent. economic developments, and some pointers to the answers hazarded. To end, a very brief and concentrated description of the social conditions of the times (viewed partially as implications of the economic development) is given, primarily to indicate the possible range of the sources, their ability to illumine dark periods, and the embryonic-ness of these studies.



## INTRODUCTION

The last fifty years have seen a significant change in historiographic emphasis. Ever more is attention being paid to social and economic factors rather than mere political events. In the case of Roman history this tendency has been given added impetus by the great papyrological finds of the last ninety years (beginning with Arsinoe in 1877). For these finds revealed to us for the first time a new class of evidence, more intimate, more personal, more banal and everyday, than almost any previously known manner of source-material - bar a few graffiti, perhaps. One would hardly expect this kind of source-material to survive the stern challenges of time, the countless painstaking transcriptions of fading manuscripts, the secondary and tertiary translations of cherished texts. Nothing less than the classics, the ecclesiastical histories, the great codices, or the hallowed writings of the revered doctors of the church, and other works of such class would have come to be reverently placed in state libraries and preserved in national archives. Yet somehow or other papyri did survive this challenge, being preserved in the hot dry Egyptian sands for many a century, finally to be rediscovered and yield up their secrets.

Now it is something of an accident of nature - a happy combination of factors both climatic and geological - that such papyrological evidence survives almost exclusively in Egypt. In the last ninety years, the Egyptian sands and ancient rubbish heaps have yielded untold papyrological treasures, tens of thousands of fragments, casting light on almost every aspect of Egyptian life. These have been



published in numerous volumes and journals, and after analysis it has been possible to build up a remarkably vivid and rounded picture of Egyptian life in Hellenistic and Roman times. Furthermore, scholars have laboriously compared this evidence with the relatively meagre epigraphic and literary material surviving from other provinces, and in this way sought to infer from Egypt to the rest of the Empire, to construct a more complete picture of the times.

This method, though without doubt invaluable, has at times led to somewhat curious results. Thus, for example, a comparison of mid-III cent. Egyptian prices with those (maximum) prices recorded in Diocletian's edict of 301 appears to reveal that the latter are above the general contemporary price-levels, even though the Edict's prologue clearly suggests the reverse, namely that these maximum prices constituted a ceiling below the general price-level. Or again, IV cent. Egyptian papyri seem to present incontrovertible evidence of a most phenomenal inflation, while scanty contemporary sources from other provinces suggest distinctly rising costs, but not on a scale remotely comparable with those of Egypt. As a result some scholars have suggested that in Egypt there was a "local devaluation of a coinage, which under the system of Diocletian was current throughout the Empire, and which had not depreciated anything like the same extent in other provinces...." (J.G. Milne, JRS 17, 1927, p.10). And yet it is equally an incontestible fact that the same marks of value occur on coins from the mint of Alexandria as do from the mints of Rome, Antioch, Cyzicus, etc.



This must immediately give cause to doubt the methodological soundness of such inferences from Egypt to the rest of the Empire. For Egypt was a particularly independent province, having her own peculiar agricultural characteristics, class system, religion, her own currency system (till the time of Diocletian), and so forth. That is not to say that no inferences are valid, but rather that a class of inference must first in some manner and degree be proven to be valid by reference to unambiguous material before it be further applied conjecturally.

As a result of the enormous preponderance of Egyptian evidence over that of any other province we now have a picture of the Empire which is distinctly Egypt-orientated, and perhaps lopsidedly biased in this direction. The evidence from other provinces has been thus far too scanty to offset this lack of balance (except for an attempt by the Hungarian scholar Szilágyi, in *AAH* XI, 1963, pp. 325-89).

And yet there remains a whole body of contemporary and highly relevant source-material that is still largely terra incognita to the classicist. I refer to the great corpus of Rabbinic literature, the Talmud and Midrash. The degree to which this remarkably rich and informative field has been neglected is somewhat astonishing. Even the amazingly erudite Rostovtzeff in his great "Social and Economic History of the Roman Empire" (=SEHRE) never once cites the Talmud or Midrash. And this not only in 1926 (1st ed.) but as late as 1933 (Italian ed.) by which time almost the whole of the Babylonian Talmud was available in a very fine German translation (by L. Goldschmidt, Berlin 1925-34), not to mention the Palestinian Talmud, long available in (an inferior) French translation (by M. Schwab, Paris 1871-89).



Likewise the major part of Midrashic material had by then been translated into German by Wunsche. (For bibliographical details see relevant parts of H.L. Strack's Introduction to the Talmud and Midrash, Philadelphia 1931).

But more amazing still, not only were and are the primary sources shrouded in mystery and never utilized by classicists, but even secondary analyses of this material seem to have made no impact upon Roman historians. Thus, for example, Rostovtzeff can write in a note on social and economic conditions in Palestine (SEHRE<sup>2</sup>, p.664, note 32) that: "It might be worth while to collect the whole evidence including that of the Talmud, on this subject", being apparently completely unaware of a whole body of literature on the subject, such as A. Büchler's classic "The Economic conditions of Judaea after the Destruction of the Second Temple", published in London in 1912! (Jews' College Publications No.4), or L. Herzfeld's "Handelsgeschichte der Juden des Altertums"<sup>2</sup> (Brunswick 1894), L. Goldschmidt: "Les impôts et droits de duane Judée sous les Romaine", (REJ XXXIV, 1897, p.192 et seq), or S. Krauss' invaluable "Talmudische Archäologie", I-III (Leipzig 1910-12), etc.

The first scholar to make any serious attempt to utilize these sources was Fritz Heichelheim, in his section on Syria, in Tenney Frank's "An Economic Survey of Ancient Rome", Vol. 4, pp.121-257 (Baltimore 1938), and in several other of his studies. However, as we shall see below, he was apparently not sufficiently intimate in his acquaintance with the sources, and (in the case of Talmudic texts)



with their legal background, to read and understand them correctly. Thus his work is marred by numerous errors and misinterpretations which seriously reduce <sup>its</sup> the value.

The aim of this study is to bring to bear upon Roman history certain significant Rabbinic texts, and with their aid to re-examine some aspects of III and IV cent. Palestinian economic life. In this manner a non-Egyptian dimension can be introduced into our picture of Roman economic history, and a comparison of the resultant image with that yielded by Egyptian papyrological sources may put the Egyptian evidence into a new perspective. Thus fitted into a new proven frame of comparative reference, the field of inference may be legitimately extended.<sup>1</sup>

Here in this study I have chosen to deal only with a small part of economic history, the aspects of currency and prices.

For a clear notion as to the cost of living in a given period is crucial for a real understanding not only of economic but also social conditions in that period. And in order to build up a picture of the cost of living during a given period, one must first compile a price-list of basic commodities, and a table of wages (standard and otherwise) tabulated chronologically and thus mutually comparable, and comparable with cognate material. The data must (thus) be fairly unambi-

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1. Johnson in JJP, 4 (1950)p.151 writes: "Since more papyri have been preserved from sites above the flood level, the evidence which they present may tend to distort the general picture of economic condition" (even within Egypt, that is). This attempt to bring a non-Egyptian perspective was the object of Szilágyi's article in AAH XI, (1963), pp. 325-89. Basing himself on prices from the Western Provinces, he concluded (p.325) that Egypt "is an exception in every respect".



guous in meaning, approximately datable, and as far as possible representative of the real conditions obtaining at the time. Thus abstruse theoretico-legal examples, literary archaisms etc., when not borne out by independent "actual" evidence are to be treated with great reserve, (for example the case in M. Baba Kama 4.5, where the prices for male and female slaves are said to vary from 1 to 10,000 d.).

The first systematic attempt to compile such price-lists for Roman Palestine (and/or Syria) is that of F. Heichelheim, in his section on Syria (in vol. 4 of *An Economic Survey of Ancient Rome*)<sup>2</sup>. Unfortunately, Heichelheim's work is deficient in several respects. In many cases not only is his dating of the texts wrong<sup>3</sup>, his readings incorrect<sup>4</sup>, but even the references are inaccurate<sup>5</sup>. Moreover, monetary terms occurring in the sources cited are not quoted as they appear in the original, but are translated into some kind of standard terms (e.g. "Syrian ass", "Imperial ass") according to Heichelheim's own theories as to the meaning of these terms (outlined *ibid.* pp.211-227). We have endeavoured to show elsewhere that Heichelheim's views on this subject are at least problematic and perhaps even wholly untenable, and thus many of the prices in his price-list are questionable if not actually misleading.<sup>5a</sup>

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2. Baltimore, 1938. pp. 155-6, 163-6, 184-8.

3. E.g. p.184; T. Shevi'it 6.21, a II cent. C.E. Text is dated c. 400(?).

4. *Ibid.*: Gen. Rab. 49. Cl., should read 10 folles, not 2 folles. p.185 M. Baba Kama B.6, read kad, not cab (a "jug" not a measure which equalled approximately 1/6 modius, see Appendix A end). Jones' remarks in his review of Heichelheim's work in JRS 29 (1939) p.121 are rather misguided in places.

5. p.184. Lev. Rab. 27.2, should read 37.2. M. Eruvin 7.1. should read 7.10. p.186: M. Baba Batra 9.4 should read 9.5. M. Yoma 3.6 should read 3.7 p. 183: Gen. Rab. 70.14 should read 70.15, p.185: Gen. Rab. 49.7 should read 49.4, M. Ma'asrot 2.5 should read 2.6 etc.

5a. Next page.



He further confused rather than added by including prices pertaining to Babylonia. It can be demonstrated (and even a cursory comparison of the Babylonian prices assembled below with the Palestinian ones will make it quite clear) that the economic situation in Babylonia was rather different from that of Syria, and that a separation of the two sets of material would have been far more valuable. Thus, for example, during the years 320-50 C.E. when the Empire was apparently going through the throes of extreme inflation, in Babylonia one could get a barrel of wine for 4d. (B. Baba Mezia 64A), a slave for 100d. (B. Baba Batra 127B), a mansion ("apadna") for 500 zuz (= d. generally), (B. Ketubot 91B). At that same period in Palestine a pint of wine cost from 75-100d. (P. Rylands<sup>6</sup>, 629, line 91, ibid + 631 col ii Line 91 etc., c.317-23 cited below), and not so long after a single pound of meat cost 50d. (J. Barachot, 2.8, 5c. 57-66). Whether these enormous differences represent actual differences in prices (in terms of gold, for example), or whether they merely reflect a varying usage in monetary terminology will be discussed below. (See Appendix C). Nonetheless, whichever the case may be, an initial separation of the material is essential.

Our first task, therefore, has been to correct and enlarge Heichelheim's price-lists separating the Babylonian from the Palestinian material, and adding brief notes discussing the accuracy,

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5a. In JQR, LVI, 1966, pp. 273-301 ("Monetary Systems in the Second Commonwealth").

6. Heichelheim on p.184 quotes this papyrus (then unedited) dating it incorrectly c.300. Moreover he translates ψωμίον "loaf", whereas "roll" (an undefined smaller unit of bread) would have been less misleading (see below).



datability, etc., of the sources<sup>6a</sup>. And although our primary interest is with the III and IV cents., the lists cover the first four centuries. For only in this way can some sort of relative norm be established, a background of the first two comparatively stable centuries, against which may be seen and with which may be compared the fluid and inconstant inflationary prices of the following two centuries. Our lists are by no means complete, and can be no more than some kind of roughly representative guides

As reliable and datable material is very scanty, we have next attempted to establish a very approximate guide as to the relative costs of certain commodities. We have attempted to demonstrate that in a general way these price-relationships hold good not only for isolated instances but for a long span of time (covering our period).

However, this "table of relationships" is meant only as a working hypothesis, acting as little more than a general guide as to the relative scales of such equivalences. Thus, while wheat prices may have considerable seasonal fluctuations, the relationship between the costs of wheat and the price of bread (or flour) would tend to be rather more stable (especially in a system that restricted bakers' profits to one sixth, as did the Jewish legal system). (We have, in fact,

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6a. I have not included any material from late Midrashim, as their accuracy, datability etc., always raises too many points of uncertainty. For this reason I excluded, for example, the slave price in a text cited in Torat Hesed (by Isaac b. Solomon Jabez) as coming from "Midrash Rabba". See Rav Po'alim by Abraham b. Elija of Wilna (Warsaw 1894), p.21. I have also not drawn upon the wealth of interesting material contained in Seder Eliyahu Rabba and Zuta, despite the fact that M. Margulies regarded it as the work (with later interpolations) of a III cent. Palestinian scholar. See his article in Sefer Assaf. pp. 370-90 (Jerusalem 1953). For the issue is still far from certain. See Baron, Social and Religious History etc., vol. 6, pp. 401-2, note 7, for bibliography.



made very little actual use of this table of equivalences, but where it has been used, the results would seem to justify this use. Even then, it is not pivotal to any central arguments, and our general conclusions will hold good even if the methodological soundness of this table were to be called into doubt).

As an understanding of metrological terminology is essential for our purposes, we have added an appendix (A) which no more than touches upon some of the very complex problems of Palestinian and cognate metrology.

Particular attention has been paid to certain monetary terms,<sup>6b</sup> not merely to give further clarity and definition to the prices, but also in order to infer from them, where possible, the currency systems within which they functioned as units. For a knowledge of the structure of a currency system and changes within it can give an understanding of the monetary conditions posited by it and of the economic forces motivating it.

A number of purely legal texts have then been examined for the light they can cast upon monetary developments during this period. Here again, the III cent. pattern only emerges and becomes fully appreciable when seen against the backdrop of the II cent. legal position.

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6b. In this discussion I have not made use of the many mediaeval Jewish numismatic and metrological treatises, since they reflect their own current conditions, rather than those of antiquity. See, for example, my remarks in Sinai 58 (1966), pp. 164-8.

Finally IV cent. price-levels are discussed, and suggestions as to the relevance of this material to the Eastern Empire as a whole are put forward.

Now in this study (from part 2 onwards) it will be seen that for the first time Palestinian source-material has been used in conjunction with numismatic evidence to help build up the picture of economic development during the III and IV cent.

Here, I think, some further introductory remarks should be made, firstly regarding the use of the numismatic evidence and secondly regarding the treatment of the literary source-material.

(a) Numismatic research has advanced by leaps and bounds during the last few years. The appearance of the two latest volumes of R.I.C., dealing with the periods of Diocletian and Constantine, fill a significant historical gap, one in which some crucial economic and monetary changes took place. Chronological problems, problems of mint-organisation, coinage distribution etc., have all been subjected to a fine scrutiny yielding very positive results.

Furthermore, the whole discipline of numismatics has become more rigorous and exact. Hoard analysis is no longer a random business, and statistical methods of appraisal have been carefully applied with telling results, (see P. Grierson's Presidential addresses in N.C. 1965-6). And what is for our own purposes even more important is the recent breakthrough in methods of



metrological analysis - by which is meant the analysis of the metallic contents of a coin. Thus, a comparison of the results yielded by two different methods of analysis, that of X-ray on the one hand, and that of neutron-activation on the other, has now proved conclusively that the follis was a silver-coated coin. (See Archeometry IV, 1961, pp. 56-60, and see bibliography in one discussion in the follis). Since the time when Mickwitz' key works were written, i.e. 1923-4, many more coin-analyses have been made, many more coin weights recorded, and this too must affect and modify his findings. Without accurate classification, chronological and by mints, one cannot hope to use numismatic evidence with trustworthy effect. Thus, Bolin, because he was not a numismatist, sometimes arrived at most peculiar results, as when he classed under one category many varying types of Gallienus' coins belonging to different periods and mints. (See our analysis of Gallienus' coinage).

In my own treatment of numismatic problems, I have been most fortunate to have had the constant help, advice, suggestions and criticisms of Dr. J.P.C. Kent and Mr. R.A.G. Carson, of the British Museum's Department of Coins and Medals, two of the foremost authorities on Roman III and IV cent. coinage. My debt to them is in evidence throughout this study. I have also been able personally to examine and where necessary weigh etc., (in the British Museum) examples of every major class of coin that I have discussed below.

(b) The treatment of the source-material requires somewhat more preliminary comment.

Considerable progress has been made in the last few decades in our knowledge of how to tackle Rabbinic sources. The most significant advances are in the field of Jerushalmi studies and have been spearheaded by one of the world's foremost Talmudists, Saul Lieberman, the appearance of whose small booklet "On the Yerushalmi" (Hebrew, Jerusalem 1929) constituted a turning point for this area of research. The brilliant studies of J.N. Epstein have shown us methods whereby one may disentangle differing historical and regional strata in a single Talmudic discussion (sugya). For it is an all-too-common phenomenon in the Babylonian Talmud to find IV and even V cent Babylonian Amoraim interpreting statements of I and II cent Palestinian Tannaim in terms of their own contemporary Babylonian socio-economic and political situation. Thus, Palestinian Tannaitic and early Amoraic statements, where found in the Babli, must be carefully separated from the later Babylonian strata of discussion and reinterpretation that surround (and sometimes obscure) them. It should also be borne in mind that at times these Babylonian strata of reinterpretation may radically affect the form of the original Palestinian statement, so as to completely change its meaning. Or that a text may be altered in the process of transmission from one country to another, perhaps undergoing translation from Hebrew to Aramaic, etc. A further pitfall lies in the fact that what



may appear, on the face of it, to be a purely Tannaitic text, may really be an Amoraic rewording of the original model. (For examples of this, see Appendix B, and my explanation of J. Kila'im 1.1, 22A8, in Archiv Orientalni 34, 1966, p.65). And conversely, statements of IV cent. Babylonian authorities may be stylistically dependent on Tannaitic models. (For an example, see Appendix C).

Thus, in a discussion of specific terminology<sup>7</sup>, for example, it is crucial to distinguish the original authentic form of a statement (as far as is possible) from its re-edited or reworded form. Likewise, it must be seen whether a term belongs historically to its chronological stratum, or whether it is not merely being used as a literary device, an archaism (etc.). Our greatly increased knowledge of the techniques of Rabbinic textual transmission has helped us to clear up a number of puzzles, (See Appendix B. See also the discussion of Rava - R. Aba in the section on the "lumma").

In the field of Talmudic law, it is perhaps even more essential to be able to differentiate the varying strata in a Sugya (discussion), and to build up a coherent picture of an early Palestinian legal view on a problem from a later Babylonian discussion of it. The textual studies of J.N. Epstein coupled with the legal researches of scholars such as Gulak and Zuri have formed the methodological background to

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7. Work has been greatly facilitated by the appearance of a series of splendid new concordances on the Mishna, Tosefta (in progress), Mechilta and Babli (in progress) by the Kasovsky family.

our (legal) treatment in part 3 (Gold and Silver Standards). And even now, one cannot help but feel that students of Jewish legal history place too little emphasis on the socio-economic forces acting on the halacha and shaping its development.

The state of Rabbinic source-material from a text-critical point of view is better now than ever before. Firstly, we have a number of significant new critical editions, e.g. B. Mandelbaum's *Pesikta de R. Kahana* (which however cannot be used without the old Buber edition), M. Margulies' edition of *Leviticus Rabba*, Epstein-Melamed ed. of the *Mechilta of R. Simeon b. Yochai*, Lieberman's publication of a new Ms. of *Deuteronomy Rabba*, Finkelstein's publication of the Vatican Ms. of the *Sifra*, etc. But without doubt the most important single contribution lies in Lieberman's edition (in progress) of the *Tosefta*, with his astonishingly brilliant and erudite extended commentary. (*Orders Zer'im and Mo'ed* have so far appeared). This brings a new dimension to our knowledge of the Tannaitic textual and legal situation. The importance of Shraga Abramson's publication of a very early Spanish Ms. of (Babli) *Avoda Zara* can also hardly be minimised. For this Ms. gives for the first time an indication of the text of one complete tractate of the Babylonian Talmud not according to the Franco-Germanic literary tradition, (see his introduction).<sup>8</sup>

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8. Hitherto our knowledge of the text of the Babli has been based almost solely on the (single complete) Munich Ms. (of the Babylonian Talmud). See Rabbinovitz' introduction to his *Variae Lectiones in Mischnam et in Talmud Babylonicum*. This introduction has recently been republished separately with additional notes by A. M. Habermann, under the title "*Maamar al Hadpasat ha-Talmud*" (Jerusalem 1952).



Furthermore, the last eight years alone have seen the publication of over three hundred new books of early Mediaeval commentaries or Responsa etc. (either critical editions, or publications of texts published from Mss. for the first time). (See Sinai 61, 1967, p.316. An incomplete list of these publications has appeared recently in a pamphlet entitled "Sifrei Rishonim", by Israel Ta-Shema, Jerusalem 1967). These numerous texts include countless citations (or paraphrases) of passages from the Talmud and Midrashim, and at times may contribute significant variants which help in the correction of corrupt and incomprehensible passages.

Finally, the establishment in Jerusalem of a microfilm collection of all Hebrew Mss throughout the world (of which some 70% are represented there to date) has made it possible to check with relative ease problematic readings of almost any text in every major Ms.

In my own treatment of Rabbinic passages I have tried to make use of these many new avenues of approach, so recently made available to us. I have taken no text for granted (i.e. the standard printed version of it), but have always checked its variants, where a critical edition was available, and checked Ms. readings where necessary. (Thus, for example, I checked every Jerushalmi passage in the Leiden Ms., the only complete <sup>4</sup>s of the whole Jerushalmi, in addition to the Venice edition, the ed. princeps.)<sup>9</sup>. I also examined how these

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9. I have also been able to check a number of Syriac texts in Ms. original, in the British Museum's incomparable collection.

passages were quoted in Gaonic literature, in the early commentaries, and so forth.

Where I have had to deal with other philological problems (e.g. in the discussion of LEUKON and ARGARON), I have followed in the main the rules set forth in the first volume of Krauss' Lehnwörter. But here too I have taken into account the significant new development carried out in this field by Lieberman (Greek in Jewish Palestine etc.) and K<sup>u</sup>tcher (articles in Tarbiz XXI-XXIII, Sefer Yalon etc.).

All this new material and these new methods have made it possible to achieve a far greater accuracy in the dating of texts and the establishing of their correct reading than ever before. And, clearly, chronological exactitude is essential to the economic historian, as is the establishment of an exact text for a close examination of terminological (and semantic) developments.

Here then, I feel, a notable advance has been made over the researches of earlier scholars, and most specifically those of Heichelheim, Krauss and Büchler and to some extent Marmorstein touched more upon social problems of the Talmudic period (in their work limited to the first three centuries of the common era), than on economic ones. Economic considerations were not in the forefront of consciousness then, as now. Neither were economic theories (and specifically theories of money) so highly developed then as they are now. Furthermore, these scholars were not numismatists, and had therefore no tools with which to check empirically (even in a very partial measure) any



economic and monetary theories they might have wished to put forward. Heichelheim, for whose pioneering researches we must ever be grateful, had not the training to meet the challenge posed by his subject, (a comprehensive survey of Syria from Pompey to Diocletian). His work betrays a linguistic weakness in the field of Rabbinic studies, and a serious lack of Talmudic legal knowledge. (See section on Gold and Silver Standards). Furthermore, he is no numismatist, and this lack is strongly felt in his treatment of metrological subjects. (See my criticisms in JQR LVI, 1966, pp. 277-80). Finally, none of these scholars dealt with the IV cent.

In the following study I have tried to bring together the legal and textual disciplines of Rabbinics together with the most up-to-date views in specialised fields of metrology and numismatics, and to put the whole into the contemporary historiographic focus of an economic historian.

However, here I should like to make it clear that, while I take full responsibility for my treatment and interpretation of Rabbinic sources, in dealing with papyrological evidence I have been content to base myself almost completely on secondary sources, such as the works of West and Johnson (and to a lesser extent those of Mickwitz and Segrè). These works, though between twenty and thirty years old, remain to this day the only systematic examination and comprehensive presentation of the material. I am not qualified either to assess them positively or to criticise them negatively. However, they (West and Johnson's works) have generally been regarded as accurate, sound,

comprehensive and authoritative, and in recent literature I have found no serious reversal of this accepted view. My aim in this study has been not to reappraise the classical and papyrological evidence for this period, a task which I am not qualified to undertake<sup>10</sup>, but rather to present new Palestinian material, and to see whether these hitherto unexploited texts may not serve to clarify some of the puzzles and make some sense of the apparent absurdities of III and IV cent. economic history.

The results of this study may be briefly summarised as follows: An examination of Palestinian sources indicates a price level in Palestine very different from that which was in Egypt. The implications of this statement are that when dealing with economic matters Egyptian sources can no longer be regarded as representative for the rest of the Empire (or even for the rest of the Eastern part of the Empire). Roman economic history of the III and IV cent. reads more logically when we disregard in a goodly measure Egyptian sources. Diocletian's very elaborate edict makes good sense in terms of its own avowed intentions (as outlined in its preamble), which it (apparently) does not in terms of comparative papyrological evidence. IV cent. economic developments make far better sense in terms of Roman (mainly Syrian) literary sources, than it does in terms of the Papyri of the time, unless the latter be reinterpreted in terms of the former, and not vice-versa.

The Classicist should be able to check on our results by examining what little remains of Roman non-Egyptian sources (literary and epigraphic),

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10. I have, however, gone through quite a number of articles in which significant corrections to published papyrological texts have been made, such as the series of articles by Boak in TAPA, N. Lewis'



and seeing whether these too do not indicate that Egypt is a very individual and special province of the Empire, a non-representative one. The one study - a by no means exhaustive one - that in recent years has been carried out along these lines, that of the Hungarian scholar J. Szilágyi, does indeed bear out our findings. For in an article entitled "Prices and Wages in the Western Provinces of the Roman Empire " (AAH XI, 1963, pp. 325-89), he concluded that Egypt "is an exception in every respect" (ibid p.325).

But our conclusions are not only negative. Through a detailed analysis of certain Palestinian key-texts, whose dates have been pinpointed with considerable accuracy, we have been able to build up a picture of the process of monetary deterioration during the III cent. The degree to which this debased currency was reduced in value is shown to have been significantly higher than has hitherto been thought. Thus while former estimates of the value of the aureus during the '70s were pitched at around 500d. (Carson etc.), we have proved that the denarius (or antoninianus) had so far dropped in value that there were at times as many as 1000 of them (denarii) to the aureus. The great collapse is shown to have come at the end of the reign of Gallienus, and new interpretations of the monetary policies of Aurelian and Diocletian are offered. A complete reconstruction of their metrological systems is presented, and it is argued, inter alia, that the former in his reform reduced the number of denarii in the aureus from 1000 to 500, while the latter altered the silver-gold ratio from around 7.2:1 to the more realistic 14.4:1.

The policy of progressively overvaluing silver (in ratio to gold) which ran hand in hand with the debasement of the coinage, is traced, and the relationship between these two processes is outlined. Two new arguments are adduced to prove the above points. The first consists of an examination of semantic changes in certain key monetary terms, which changes are best explained in terms of the economic developments here outlined. The second is based on an analysis of the changing legal attitude of the Rabbis to gold and silver, which are shown to be the direct result of the changing economic situation.

The effects of these complex monetary developments on price-levels is also examined. It is shown that in general price-levels held quite firm till the period of the great collapse in the late sixties. Even then, when we speak of the great inflation of the III cent., it is really only in terms of the debased currencies, and here the rise in price-levels was in a ratio favourably comparable to the decrease in the value of the debased silver currency. In terms of gold, however, prices kept a fairly steady level. However this, too, may mean an increase on an absolute scale, as gold itself went up in value.

Fourth cent. currency developments and their effects on price-levels are then discussed. Here too it is shown that only in terms of the unstable and wildly fluctuating copper and silvered money did prices rise. In terms of gold and pure silver prices remained fairly steady. Nonetheless, the devaluation of this "small change" had a serious effect on the poor man's purse; legal evidence is adduced to



illustrate this. In this context, a new interpretation is offered for the metrological development of the first few decades, and the three crucial papyri fragments (P. Ryl. 607, P. Oslo III, 83, and PSI 965) are also reinterpreted to accord with the numismatic facts.

Finally, and all too briefly, the social effects of these monetary developments are outlined. They contributed to the changes in patterns of investment and landholding, encouraging and ushering in the "manor economy" that later was to be the basic agrarian structure of the middle ages.

If our reconstructions of this development is correct, it should find corroboration in the (little) literary and epigraphic (non-Egyptian) evidence that has survived. Such passages and fragments should, as it were, click into place within the framework we have outlined. It should now be the task of the Roman historian to correlate such classical sources with Rabbinic evidence, a small part of which has been here presented.

PART I

PRICE LISTS.

Palestinian Price Lists

Wages

C.E. early I cent.	B. Yoma 35B	Hillel's daily wage: 1 tarapik (= $\frac{1}{2}$ d) <sup>1</sup>
"	Ibid	$\frac{1}{2}$ tarapik (= $\frac{1}{4}$ d) given to doorkeeper of academy as entrance fee.
"	Avot de R. Nathan ed. Schechter 27B 2nd version	Hillel's daily wages: 1-2d. <sup>2</sup>
"	Mat. 20.2	Daily wage of vineyard workers 1d.
"	Luk. 10.35	Expenses for looking after sick man. 2d. (or more).
"	B. Yoma 38A	Jerusalem. Daily(!) wages of specialized temple craftsmen (a whole family) 1,200d. before a "strike", and 2,400d. after a "strike". <sup>3</sup>
"	Ibid	Different estimate of the above, 2,400d. and 4,800d. <sup>4</sup>
"	Eccles. Rab. beginning	Porter's fee (5 men) to carry stone from Arab (= Arbat-el-Batuf. N. of Beit Netufa lower Galilee) to Jerusalem, 5 sela'im (= 20d.)
40-80 or 135-70	T. Baba Mezia 5.13	Wages for working a field of 10 kor of wheat: 200d.
1-II cent.	M. Shevi'it 8.4	Daily wage: 1 issar
"	B. Avoda Zara 62A	Daily wage: 1d. <sup>5</sup>
135-70	T. Baba Mezia 6.15	Daily wage: 1-4d (harvest or threshing).

1. Considered very little.

2. As Avot de R. Nathan was edited in the II and III cent., this probably represents a II or III cent. estimate of Hillel's wages, and is no doubt meant to mean a low wage.

3. Estimate of II cent.

4. Estimate of R. Judah [b. llai] c. 135-70.

5. Beraitha based on earlier text with substituted coin.

NOTE An asterisk denotes that the price is cited and discussed below in the text. This list cannot be understood or appreciated without reference to subsequent chapters of this study, where the meaning of monetary terms, comparative measures, exact readings, etc. are discussed.



Wages (cont)

I - II cent	T. Baba Mezia 7.1. J. Baba Mezia 6.1 (10071)	Wages for weaving a tallit: 2 sela'im (= 8d.)
?	Mechilta of R. Simeon b. Yohai 175.1	Daily wages: 1-2 sela'im (= 4-8d.).
early II cent.	M. Bechorot 4.5 Jamnia	Ritual examination of cattle: 6 issars (= $\frac{1}{4}$ d)
"	Ibid	Same of sheep or goats: 4 issars (1/6d)
135-70	Eccles. Rab. 2.17	R. Meir a good scribe earned 12d per week (4 sala'im); thus 2d. per day. He ate and drank for 4d per week, and paid for his clothing with 4d per week.
II - III cent.	B. Baba Mezia 16B	(Palestine and Babylon). Scribe's wages per document: "a few prutas" <sup>6</sup>
220 -50	J. Baba Mezia 6.6	(11B 73) Akbara (lower Galilee) daily wage: less than 1d.
*290-320(?)	B. Ketubot 105A	Judges wages: 99 maneh (per annum) <sup>7</sup>
early IV cent?	Gen. Rab. 70.15	Wages (daily?): 6-7 follarin.

Wheat

C.E. early I cent	Avot. de R Nathan Schechter ed. 28A 1st version	1 se'ah: 2 or 3d <sup>2</sup>
*I - II cent.	M. Baba Mezia 5.1	1 se'ah: 5/6 = 1d.
"	M. Ma'aser Sheni 4.6	1 se'ah(?): 4-8d.

6. Meaning a small sum

7. See below discussion of the meanings of "maneh". If maneh here means one denarius, as it can from the end of the III cent. onwards, then this may be a daily wage. (Cf Ed. Diocletian VII, 72-3, ed. Graser, p. 346.

Wheat

1. Famine price
2. Perhaps II or III cent. estimate.

Wheat (Contd)

*100 - 140	M.Pe'a 8.7, M. Eruvin 8.2, M. Kelim 17,11	1 se'ah: 1d.
135-70	B.Baba Batra 91A	1 se'ah: 2-4d (expensive)
late II cent.	B.Ta'anit 19B	1 se'ah: 1d. <sup>3</sup>
220-250	Ibid	1 se'ah: 1d. (cheap) or 4d. (expensive)
late II cent.	B.Baba Batra 86B	1 se'ah (wheat?): 1 sela (= 4d)
"	Ibid	1 kor (= 30 se'ahs): 30 sela'im (= 120d.)
*312-13	Eusebius. Hist. Eccles 9,8. Syria/Palestine	2500 Attic drachmae (= 2,500d.) <sup>4</sup>
c.362-3	Antioch	30 modii wheat per solidus <sup>5</sup>
late IV cent	J.Baba Kama 9.4 (6D bottom) Sepphoris Tiberias	20 modii: 8 solidi <sup>6</sup> 25 modii: 8 solidi

3. So R. Johanan remembered.

4. Famine and inflationary price

5. Julian the apostate sold at this price to alleviate the famine, (see our discussion in "Currency Terminology" I. below). The wheat was imported.

6. See below "Currency Terminology" I.



Clothing etc.

C.E.		
I cent. pre 70.	B.Yoma 35B Jerusalem	Suits of high-priests 10,000 d.-20,000d.
" "	Ibid * T.Yoma 1.21 "	Clothing (Kutonet) of Simeon b. Payi (High-priest): 100 maneh (= 10,000d.) <sup>1</sup>
80-110?	Avot de R Nathan. Schechter ed. 1st version 43A.	Clothing of sacking to last 4 or 5 years: 4d.
110-135	B. Shabbat 128A	Mention made of cloak (itztela) and girdle of 100 maneh (= 10,000d.) <sup>X</sup>
135-170	Mechilta ed. Friedman 96B	Cloak (K'sut) of (a rich) man: 100-200d.
"	M. Me'ila 6.4	Tallit: 12d.
"	B. Baba Mezia 86B	Haluk or tallit: 1d (very cheap) <sup>3</sup>
I-II cent.	M. Arachin 6.5	Slave-suit: 30d. (a good one)
"	T. Arachin 4.2)	
"	T. Bechorot 6.13)	Tallit: 5 sela'im (= 20d.)
"	T. Me'ila 2.10	Tallit (small one): 8d. <sup>3</sup>
"	T. Baba Mezia 3.14	Tallit: 1 gold denarius (= 25d)
"	T. Shekalim 2.8	
"	T. Me'ila 1.23	Tallit: 50 zuz (= 50d.)
135-70	M. Me'ila 6.4	Haluk: 12-25d.
I-II cent.	T. Me'ila 2.10	Haluk (small one): 8d. <sup>3</sup>
"	T. Baba Mezia 3.16	Haluk: 5-6 sela'im (= 20-24d)
"	T. Me'ila 2.10	Haluk (big one): 24d.
220-50	J. Baba Mezia 4.3	Cloak: 5d. <sup>4</sup>
early IV cent.	J. Baba Kama 9.4(6d. bottom)	Suit (?) 20-25 maneh. <sup>5</sup>
* 350-75	J. Kila'im 9.1(32 8)	Expensive suit of (I and II cent) Rabbis: 300,000d. <sup>5</sup>

1. Considered very expensive. Probably a II cent. estimate.
2. The context is as follows: R. Nathan said "If a man is found owing 100 d. to his neighbour and he is wearing a k'sut worth 200 d., the claimant may not say to him 'Sell your k'sut (worth 200d) and cover yourself with one worth 100d., and give me 100d....' " The full context suggests the case of a rich man who has suddenly become impoverished.
3. Price of tallit = price of haluk.
4. Considered cheap, but not very respectable.
5. Inflationary prices.

Bread, Flour

C.E.		
*I-II Cent.	M. Shekalim 4.9	1-1.1/3 se'ah: 1d.
* "	M. Shevi'it 8.7	1 loaf of bread: 1 pundion (= 1/2d)
80-110	M. Eruvin 7.10	1 small loaf: 1 issar (= 1/24d)
I-II Cent.	T. Demai 5.11	1 gluska (= large round bread): 1 issar (= 1/24 d.)
*135-70	M. Pe'a 8.7.	1 loaf: 1 pundion (= 1/12d.)
	M. Erubin 8.2	1 se'ah (flour): 1d.
	M. Kelim 17.2	
* "	T. Shevi'it 6.21	1 loaf: 1 pundion (= 1/12d).
*C.290-350	Gen. Rab. 49.4	1 loaf: 10 follarin

Wine

C.E.		
*290-320	B. Avoda Zara 348. Akko	1 xestes: 4 luma (= nummi)
*end of II cent.	J. Baba Batra 8.4(16 c. 38-40. J. Baba Mezia 4.2(19D 14)	100 ordinary bottles ("garbin") of wine(?): 10 aurei 100 big bottles of wine(?): 20 aurei
*IV Cent(?)	Lev. Rab. 37.2	1 xestes(?): 10 follarin

Olive Oil

C.E. 66-7	Jos. Wars 2.21.2(11. 591-2) Galilee	1 amphora: 1 Tyrian drachma (= 1d.)
110-135	M. Baba Kama 8.6	1 kad (= jug): 1 issar (= 1/24d.) <sup>1</sup>
135-70	M. Baba Batra 5.9	1 tzelohit (= glass jar): 1 issar (= 1/24d.)

- 
1. Kad is probably big, comparable with havit, a barrel. See M. Baba Kama 2.1.
  2. The tzelohit may not have been full. It is only stated that the vendor served the child an issar-worth of oil.



Meat

*C.E. 290-350	Gen. Rab. 49.4	1 litra (= libra): 10 follarin.
*III-IV Cent.	J.Berachot 2.8. (5c. 57.66)	1 litra: 50 maneh <sup>1</sup>
*early IV Cent (?)	Tanhuma Numbers, ed. Buber, p.145	1 litra pork: 10 maneh <sup>2</sup> 1 litra kosher beef: 8 maneh <sup>2</sup>

Fruit

C.E. I-II Cent	M. Ma'asrot 2.6	10 figs ) 1 issar 1 pomegranate ) (= 1/24d.) <sup>1</sup> 1 cluster of grapes)
80-135	T.Daba Mezia 8.8	1 Cucumber (expensive): 1d.
135-70	M. Me'ila 6.4	1 pomegranate: 1 pruta
"	Ibid	1 pomecitron (ordinary size): 1 pruta 1 pometitron (large size): 2 pruta
"	T. Ma'aser Rishon 2.11 M. Ma'asrot 2.5	5 figs: 1 issar (= 1/24d.)
"	IBID	3-4 figs: 1 issar (= 1/24 d.)
I-II Cent.	T.Demai 5.11	Several pomegranates: 1 issar (= 1/24d) <sup>3</sup>
*290-320	Eccles.Rab.5.10	1 cucumber: 2 maneh <sup>3</sup>
* "	Esther Rab.2.3	1 endive: 1/2-1 maneh <sup>3</sup>

Slaves

late II Cent.	B.Kiddushin 20A B. Arachin 30B	Prices (RANSOM) of Jewish slaves to be freed: 100-200d. <sup>1</sup>
320-50	B.Kiddushin 8B	Slave women: a few bronze prutot (very little)
359	BGU 316. Ascalon	Sale of slave: 18 solidi <sup>2</sup>

Meat 1. Probably early IV Cent. inflationary price.

2. Probably early IV Cent. inflationary price.

Fruit 1. Purely theoretical examples.

2. R. Judah said that once in Jerusalem...

3. Probably early IV cent. inflationary prices.

Slaves 1. Both in Palestine and Babylon.

2. But according to Taubenschlag in JJP III (1949) pp. 51-2,  
basing himself on Arangio-Ruiz' ed., this should read 22  
denarii(!).

3. Probably

CATTLE

C.E. I-II Cent.	M. Menahot 13.8	Ox: 100d.
*135-70	M. Baba Kama 4.1	Ox: 200d. <sup>1</sup>
I-II Cent.	M. Hulin 5.4, Sifra Emor. 8. (Weiss ed. 99c).	Ox: 1000d. <sup>2</sup>
"	M. Baba Kama 3.9	Ox: 100 or 200d. <sup>2</sup>
"	M. Menahot 13.8 T. Bechorot 6.13	Calf: 5 sela'im (= 20d.)
"	T. Baba Mezia 5.1	100 calves: 100 aurei (... 1 calf: 25d.) <sup>3</sup>
?	J. Kiddushin 1.6 (61A)	Cow: 100-200d.
*second half of IV Cent.	J. Baba Mezia 4.1 (9c)	Cow: 8 (gold) denarii (probably solidi)

Asses

C.E. 80-110	B. Bechorot 11A	New born donkey foal: 2-4d. (redemption price)
I-II Cent.	M. Baba Kama 10.4	1 ass: 1-2 maneh (= 100-200d.)
*end of IV Cent.	J. Baba Mezia 4.1 (9c)	Donkey: 8 aurei

- 
- Cattle.
1. Theoretical prices, convenient for reckoning.
  2. Theoretical examples, taking the form of..."Even if an ox were worth 100d." etc.... suggesting that in fact this is a more or less impossibly high price.
  3. Cf. sheep.



Sheep

C.E.80-110	M. Keritot 5.2	Ram: 2 sela'im (= 8d)
I-II cent.	M. Menahot 13.8	Ram: 2 sela'im (= 8d)
"	M. Keritot 6.6	Rams: 4d. 8d. 10d.
"	M. Menahot 13.8	Lamb: 1 sela (= 4d)
"	T. Baba Mezia 5.2	100 sheep: 100 aurei (∴) 1 sheep = 25d.) <sup>1</sup>
"	M. Shekalim 2.4	1 sheep: 1-3 sela'im (= 4-12d.)

Birds

C.E.Before 70	M. Keritot 1.7	Jerusalem. 2 pigeons: 1 aureus. Then reduced to 1d.
"	Mat. 10.29	2 sparrows: 1 ass(= 1/16d)
"	Luk. 12.6	5 sparrows: 2 asses ( = 1/8d.)

- 
1. Cf. cattle.
  2. Report of R. Judah lb. Ilai<sup>7</sup>. c.135-70. Talking of temple times.

Misc. Foodstuffs

C.E. Before 70	B. Ketubot 105A	Plant, 1 year old: 2 ma'ah (= $\frac{1}{3}$ d.) 2 years old: 4 ma'ah (= $\frac{2}{3}$ d.) <sup>1</sup>
70	Jos. Wars 6.3.3 (line 199)	Jerusalem 4 Attic drachmae (= 4d.) <sup>2</sup>
I-II Cent.	M. Baba Batra 9.5	Cheapest meal of bridegroom: 1d.
*290-320	B. Avoda Zara 34B (Akko)	1 xestes muries: 1 lumma (= nummus?)
350-75	Gen. Rab. 11.4	Fish for 12d. (of gold) considered very expensive in Rome <sup>3</sup>
?	Midrash Psalms 4.13 ed. Buber, p.24B	Small roll of bread and plate of lentils + 2 pieces of meat + 2 glasses of wine: 2 issars (= 1/12d.) <sup>4</sup>

Houses

C.E. I Cent.	To Arachin 4.11	Value of beit Homer barley in Jubilee year: 5 shekels (= 20d.)
I-II Cent.	M. Baba Mezia 5.2	Rent of courtyard: 10 Sela'im per annum (= 40d.).
"	T. Baba Mezia 4.5	Rent for house: 1 sela per month (= 48d. per annum)
"	T. Baba Mezia 8.31	Rent for house: 10 zehuvim (= aurei) per annum (= 240d.).
II Cent.	M. Baba Mezia 8.8	Lease of bath-house: 12 aurei per annum (= 288d.)
135-70	J. Ketubot 4.14(29B 33)	Cost of house: 10 aurei
"	J. Baba Mezia 4.2 (9D 11)	Rent of house: 100d.
250-90	J. Ketubot 8.3(32a 67)	Field unsown: 2 aurei Same field sown: 3 aurei
"	Deut. Rab. 4.8	Half a field: 5 aurei

1. Report of R. Jose, c.135-70.
2. Famine price.
3. Pesikta Rabbati, ed. Friedman 119. There R. Pinhas is mentioned so it may be of the earlier IV cent.
4. This text is probably of a late date and the price unreliable.



Palestine Miscellanea

I Cent.B.C.E.	B.Rosh Hashana 22B	Boethusians gave bribes of 400d.
10-50 C.E.	T.Ketubot 5.9 Jerusalem	Cosmetics per day: 500 aurei (of very wealthy lady)
90-135	B.Sukka 41B	1 lulav: 1000d. (very expensive indeed, on a sea voyage) <sup>1</sup>
90-135(?)	T.Sukka 2.11	1 lulav: 1 aureus (very expensive) <sup>2</sup>
80-110	B.Kiddushin 31A Ascalon.	Jewels (estimate): 600,000d.
220-50	Ibid. Ascalon	Same jewels (new or alternative estimate): 800,000d.
135-70	M. Me'ila 6.3	Several lamps and wicks: 1 peruta
170-200	J. Pe'a 15D 57, Gen. Rab. 35.3	1 mezuzah: 1 follas.
200-20	B.Nedarim 38A	Lease of ship: up to 400 aurei.
*219-47	J.Baba Mezia 5.10, 10c 68-70	1 kor (= 30 se'ah) flax: 1 aureus
220-50(?)	B.Gittin 35 AB	Book of Psalms, Job, Eccles, and a thick woollen coat: 5 maneh (= 500d.)
250-289	J.Sukka (55A 51 (5.1))	R. Judah b.Nahman and R. Levi used to receive 2 sela'im each (= 8d. each) for convening the public to attend R. Johanan's lectures.
pre 250-90	B.Yoma 11A	R. Judah (b. Ezekiel) tells that Artabin was an examiner of Mezuzot in the upper market of Sepphoris, and a quaestor once took 1000d. from him.

1. Perhaps exaggeration. Story told regarding R. Gamliel (II), as is evident from the other scholars mentioned, e.g. R. Akiva.

2. This seems to be the more accurate version, while the Babli's price is perhaps a later recension. In this version only R. Gamliel and 'the elders' are mentioned.

From the Archives of Theophanes<sup>1</sup>. c.317-323 C.E.<sup>2</sup>

Ascalon

\*P. Rylands + 637 line 428 (p.144) 1 xest. fish-sauce: 200 dr. = 50d.

Betar (= Allage)

\* " + 637 line 403 (p.143) 6 litra meat: 1200 dr. ∴ 1 litra: 50d.

Antioch

\* " 629 line 44 (p.126) 9 litra meat for salting: 2800 dr.  
∴ 1 litra: 88d.

\* " ibid line 24 4 litra meat: 1200 dr. ∴ 1 litra: 75d.

\* " ibid line 91  $\frac{1}{2}$  Kab (=2 sextarii) sweet wine: 600 dr.  
∴ 1 sext: 75d.

\* " 630 Col. ii Line 85 7 litra meat for salting 2800 dr.  
∴ 1 litra: 100d.

\* " +631 col.ii line 91 1 Kab wine: 1800 dr. ∴ 1 sext: 112 $\frac{1}{2}$ d.

\* " ibid line 104 1 xestes ordinary wine: 700 dr.  
∴ 1 sext: 175d.

\* " +636 col. i line 205 meat ( ) (?) 3 litra: 1200 dr.  
∴ 1 litra: 100 dr.

\* " 636 only line 265 2 litra meat: 800 dr. ∴ 1 litra: 100d.

\* " ibid line 267 1 xest wine (for breakfast): 400 dr.  
∴ 1 xest: 100d.

1 roll: 25d. Antipatris +637 line 403

Antioch 630 col.ii lines 36, 51, +631 col. ii  
lines 112 etc.

\* Average litra meat: 75/100d.

Average xestes wine: 75/100d.

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1. Published in the Catalogue of Greek and Latin Papyri in The John Rylands Library, vol. 4, ed. by C.H. Roberts and E.C. Turner.

2. Ibid, p.105.



Some Babylonian Prices<sup>1</sup>

230/50(?)	Baba Kama 113A	100 barrels (wine?): 1 drm. <sup>2</sup>
220/50	Kiddushin 12A	1 kor (= 30 se'ah) dates: 1 drm. (cheap) <sup>3</sup>
* "	Baba Mezia 102B	1 se'ah (wheat): 1 selah (= 4d. = 4 drm) <sup>4</sup>
"	Baba Kama 113B	1 bronze vessel: 4-5 drm.
"	Shabbat 129B	100 pumpkins: 1 drm.
* "	Pesahim 113A	1 bunch grapes: 1 drm (expensive)
"	ibid.	1 date (kotevet): 1 drm.
* "	ibid.	100 cucumbers: 1 drm. (cheap)
250/90	Baba Mezia 40A	1 barrel (dana) wine (containing 48 kuzé <sup>5</sup> ): 6 drm. (wholesale)
* "	ibid	6 kuzé wine: 1 drm. (retail)
*250/90	Baba Mezia 115A	Cloak (glima): 4 drm.
"	Baba Mezia 114B	Expensive coat: 12,000 drm.

- 
1. All references are to the Babylonian Talmud. We have equated the zuz with the Sasanian drachm (= drm) throughout. For further analysis of these prices see Appendix C.
  2. R. Kahana [I(?)]
  3. Samuel, .'. pre. 254. Wholly theoretical, of the order of: "even if it were the case that...."
  4. Samuel and Rav, .'. pre-247. Jacobs, in Journal of Semitic Studies col. 2 (1957), p.354, note 1, seems to have misunderstood this text, stating that 1 kor: 1 sela.
  5. = Jug. Jastrow, Dictionary etc., S.V. כוז, p.618A Cf. Hulin 107A a Kuza of 1/4 log. For "dana" see Jastrow ibid, p.315A, S.V. כוז . See also note and end of list.

250/297	Sota 48A	100 se'ah wheat: 1d. 100 geese: 1 drm. (very cheap). Then 1 goose: 1 drm. expensive. <sup>6</sup>
250/309	Baba Mezia 51A	Jewels: 50-60 drm. <sup>7</sup>
*250/320	Pesaḥim 88A	3 baskets of dates: 1 drm.
* "	Gittin 52A	1 barrel wine: 4-6 drm.
*290/320	Pesaḥim 32A	1 griva <sup>8</sup> dried figs: 1 drm. <sup>9</sup>
* "	Eruvin 29A	
*290/320 <sup>10</sup>	Pesaḥim 32A	1 griva dates: 4 drm.
* "	Ibid <sup>11</sup>	1 griva wheat: 1-4 drm.
"	Bechorot 11A	Young lamb: 1 danka (= 1/6 drm.) <sup>12</sup>
*290/320	Kiddushin 7B	Bundle of silk: 50 drm.
320/350	Baba Mezia 51A	Silk-strain: 5-6 drm. <sup>13</sup>

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6. Exaggerated extremes.

7. R. Hisda, .'. pre-309. True value, 50 d.

8. See Jastrow, Dictionary, S.V. חל'ה , p.268A, where he equates it with the se'ah and the modius.

9. R. Josef, .'. pre-333. Theoretical.

10. Perhaps even earlier.

11. By inference. Probably wholly theoretical.

12. Wholly theoretical, of the order of: "even if a lamb were to cost..."

13. See Jastrow, Dictionary, S.V. כסף p.376A. Other explanations (ibid): beads, frontlets, true price, 5d.



290/320 or 320/50	Baba Mezia 41A	1 barrel wine: 1-4 drm. <sup>14</sup>
320/50	Baba Mezia 64A	1 barrel wine: 4 drm.
*320/338/9	Baba Mezia 65A	4 griva wheat: 1 drm. <sup>15</sup>
"	Baba Mezia 115A	Book: 80-120 drm. <sup>16</sup>
"	Baba Batra 127B	1 slave (male): 100 drm.
"	Baba Kama 11A	Ox corpse: 1-4 drm. <sup>16</sup>
"	Baba Mezia 65A	1 cloak (glima): 4 drm. <sup>17</sup>
* "	Temurah 6B	1 cloak (glima): 4-5 drm.
* "	Hulin 49A	A cooked goose: 4 drm. (because spiced). The goose (by itself): 1 drm. <sup>18</sup>
C.320	Ketubot 91B	Small field: 50 drm.
320/50	Ibid.	Mansion (apadna): 500 drm.

14. Rabba (d.339) or Rava (299-252).

15. Abaye, .'. pre-338/9

16. Wholly theoretical. Jacobs ibid. cites this as the price of an ox-hide. Yet the whole corpse including its meat value (as it would be sold to a non-Jew) is being considered.

17. Rava, .'. pre-352.

18. Cf. Sota 48A, R. Hisda (d.309), 1d.

320/50	Baba Batra 155B	Scribe's wages for writing Megilat Esther: 1 drm.
└ "	Nedarim 55A	Rava inherited 13,000 drm.. <sup>19</sup>
"	Yevamot 63A	100 drm. in business means meat and wine every day. 100 drm. in land, only salt and vegetables. Furthermore, it embroils him in strife and causes him to sleep on the ground. <sup>17</sup>
350/70	Mo'ed Katan 27B	Cheapest shroud: 1 drm.
└ "	Baba Kama 104B Baba Batra 77B, 150B)	) Bé Hozai owed R. Papa 12,000 drm. <sup>20</sup> ]
370/425	Baba Mezia 75B	Mansion (apadna): 10 drm.
"	Ibid.	Small field: 10 drm.
"	Baba Kama 115A	Cloak: 4 drm.
* ?	Baba Mezia 76A	Wage of worker per day: 3 - 4 drm.
?	Sanhedrin 109B	Crossing by ferry: 4 drm. <sup>21</sup>

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19. Rava, .'. pre-352.

20. R. Papa, d.375.

21. Legendary Aggada on the people of (Biblical) Sodom.



NOTE

Jastrow (referred to above) and Levy (Neuhebräisches und Chaldäisches Wörterbuch, vol. 1 [Leipzig 1876] p.354A, S.V. גריבא both state that the gariba (griva) equals a modius or se'ah. (See sources cited above). They further identify the two forms גריבא and גרינא as different spellings of the same word<sup>1</sup>. In Syriac sources the identity of the geriba and the se'ah is clearly stated, (see below Appendix A).

As to the dana, Jastrow (S.V.) defines it as a "cylindrical jar, (dolium). For its etymological root he refers to the word אִידְנָא (ibid. p.22B, S.V.) - "a leather-bottle, jar (a liquid measure)" etc. A more likely root, however, is the Accadian "dannu", jug, tub, vessel, see Muss-Arnolt's Assyrian Dictionary, vol. 1, (Berlin 1905), p.258A, S.V.<sup>2</sup> See also Payne-Smith, Thesaurus Syriacus, 924 S.V. تينة ; Latin tina (Lewis and Short. S.V. p. 1873A).

There is, however, no clear indication as to the size of the dana, if indeed it had a standard size. It was quite large, as is evident from an inscription found at Dura Mithraeum, in which the price given for a dana (line 6, δάνα \*κη' σ' α' ) of 28d. is very high. (See "the Excavations at Dura Europos, Preliminary Report of the Seventh and Eighth Seasons of Work, 1933-4, 1934-5. [New Haven 1939] p.125, No.862. Cf. ibid, No.861, line 1 δάνα [- ]. See also Report IV, No.245, pp. 122f. = SEG VII, 401. See also Liddell & Scott<sup>2</sup>, Addenda et Corrigenda, p.2060A, S.V. δάνα , who cites Accad. as etymological source).

1. See also Appendix A.

2. See further the Assyrian Dictionary (Chicago) vol. 3, pp. 98-9 and W. von Soden, Akkadisches Handwörterbuch, I, p.161.

PRICE + RELATIONSHIPS

Wheat, Barley and Spelt

In M. Pe'a 8.5 we read: One may not give to the poor from the threshing-floor (as the Poorman's tithe) less than half a kav of wheat or a kav of barley.

And in M. Ketubot 5.8 we read: If a husband supports his wife through a third person, he may not grant her less than two kavs of wheat or four kavs of barley.

From these two texts we learn that wheat cost (in the II century, the approximate date of both texts) twice as much as barley.

According to the Edict of Diocletian of 301 C.E. (Chap. 1, lines 1,2; ed. Graser p.318):

1 modius castensis wheat: 100 denarii

1 mod. castr.      barley: 60 d.

Thus in Diocletian's time, too, wheat was almost twice as dear as barley.

In Ephesus around the period of Trajan (98-117 C.E.) we have some indication of a similar ratio between wheat and barley. For in F.E. Nos. 10-12 and p.103<sup>1</sup> we read:

Price of fine bread: 14 oz. 4 obols

Coarse (kibar) bread 10 oz. 2 obols

10 oz. of fine bread would thus have cost  $2\frac{6}{7}$  obols, and hence kibarios bread costs about  $\frac{1}{3}$  less. Elsewhere I have tried to show that Kibarios bread was barley bread, as opposed to "white bread",

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1. Ibid, p.880, see also Byzantium 15, p.270, note 86. See also Cicero Verr. 3.188. Wheat 4 sest. per mod., barley 2 sest. per mod. (Economic Survey etc., vol. 1, p.403). Polybius 2.15.1, wheat 4 obols per Sicilian medimnus, barley 2 etc. (Econ. Survey vol. 3, p.264).



which was made of wheat<sup>2</sup>. The difference in value between wheat and barley is no doubt the cause of the difference in price between the two types of bread.

Again in Egypt there are some indications of a comparable kind of ratio, e.g.:

SB.7621 316 C.E. Philadelphia Barley 1000 dr. per art

" 315 C.E. Wheat 3000 dr. per art.<sup>3</sup>

And moving forward to the VI Cent. C.E. and East to Edessa, we have clear indication once again of a similar relationship. In the Chronicle of Joshua Stylites XLVI<sup>4</sup> we read that in the year 501-2 wheat was sold at 12 modii per dinar, and barley at 22 mod. per dinar. In 504-5 (ibid) LXXXVII<sup>5</sup> the prices were 6 mod. wheat: 1d., and 10 mod. barley: 1d.<sup>6</sup>

Nonetheless the relationship is by no means constant and obviously subject to specific seasonal as well as geographic conditions. Thus in Egypt for the year 314 C.E. we find: PER.E.200 Hermopolis

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2. In Tarbiz 33 (1966) pp. 199-201 (Hebrew).

3. Johnson and West, Byzantine Egypt; Economic Studies (Princeton 1949), p.175-6. See also P. Teb. 520 (15 C.E.), Tebtynis, 574 art. barley = 344 art wheat.

4. Ed. W. Wright (Cambridge 1882), p.35.

5. Ibid, p.69.

6. See also ibid, p.29 (Chap. XXXIX), for the year of the great famine, 500 C.E., when wheat was 4 mod. : 1d., and barley 6 mod. : 1d. See also Discoveries in Judaeian Desert etc., Vol. 2, p. 219, from which it is clear that wheat is twice as expensive as barley. Revelation 5.6. A lso Scriptores Historiae Augustae, Claudius XIV. 3.

Wheat 10,000 dr. per artab. Ditto barley 10,000 dr. per artab.<sup>7</sup>

The Mishna in Pe'a (8.5) continues: ... or a kav and a half of spelt... That is to say wheat costs three times as much as spelt. Once again the Edict of Diocletian (ibid, line 8) is evidence of the same relationship: 1 mod. castr. spelt: 30d., just a little under  $\frac{1}{3}$  of the cost of 1 mod. castr. wheat (supra.).

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7. It may of course be that these prices are from different times of the year, as Mickwitz thinks. Johnson and West ibid. See also J. Baba Mezia 9.8., (12A 61). See also SB. 7341, P. Mich. 127, S.B. 7365, PSI. 281, P. Grenf. 11.77. All these Egyptian sources (dating from the I and II cents. C.E.) give the price of wheat as being equal to that of barley. See Economic Survey etc., vol. 2. (Roman Egypt, A.C. Johnson, Baltimore 1936), pp. 310-12. On the other hand P. Col. 1.4. (Frisk Bankakten 1, (Theadelphia, 155 C.E.) gives the price of wheat as 8 dr. per art., and that of barley as 4 dr. 2 ob. or 4 dr. 3 ob. or  $4\frac{8}{10}$  dr. per art. (Economic Survey etc. ibid). See further Geld und Wirtschaft im Römischen Reich des Vierten Jahrhunderts, by G. Mickwitz (Helsingfors, 1932), p. 100 note 9. See also Harvard Studies in Classical Philology, LI (1940), p. 45, (Boak, Some Early Byzantine Tax Records from Egypt).



Wheat - Bread - Wine - Meat

Mishna Eruvin 8.2.

And what is the prescribed amount for a Shittuf? Food for two meals for each one ... R. Johanan b. Beroka says: not less than one loaf worth a pundion ( $= \frac{1}{12}$  denarius) from wheat costing one sela ( $= 4d.$ ) for four se'ahs. (1 se'ah = 1 modius)<sup>1</sup>. R. Simeon says: Two-thirds of a loaf of a size three to a kav.

J. Eruvin 8.2 (25 A 12-16)

And we have learned in a Beraitha (Cf. B.Eruvin 82B, B.Ketubot 64B): Their statements those of R. Johanan b. Beroka and R. Simeon are almost identical in meaning. Come see in what manner are they almost identical in meaning? Surely the one (R. Johanan b. Beroka) makes a loaf to be twelve eggs? (For there are 4 se'ah to the sela, i.e. 4 se'ah: 4d. 1 se'ah = 6 kav.  $\therefore$  1 loaf of a pundion = 12 eggs). The other (R. Simeon) makes a loaf to be 8 eggs ( $= \frac{2}{3}$  kav, Mishna above). And yet you say that their statements are almost identical! Rab Huna answered: subtract (from R. Johanan B. Beroka's  $\frac{1}{2}$  kav = 12 eggs)  $\frac{1}{3}$  as expenses, i.e. on 8 eggs =  $\frac{2}{3}$  kav, he earns  $\frac{1}{3}$  more, and  $\therefore$  the weight of  $\frac{1}{3}$  kav costs  $\frac{1}{12}d. = 1$  pundion).

R. Jose be R. Bun went and preached to the bakers, that they should not charge more than  $\frac{1}{3}$  more in accordance with the opinion of Rab Huna.

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1. Peshitta and LXX identify mod. with se'ah. in Mat. 5.15 and Mark 4.21, (see Old Syriac Gospels, ed. A. Lewis Smith, 1910, p.10; Sinai palimpsest, p.9, Tetraevangelion Kaddisha). See Jastrow Dict. when two are equated (based on B. Eruv. 83A). See Syriac Epiphanius, ed. J.E. Dean (Chicago 1935) pp. 12, 40; 1 Kor = 30 mod., 1 Kor = 30 se'ah,  $\therefore$  se'ah = mod. Also ibid p.142 note\*; Segrè, Metrologia, p.442 note 2; Circolazione, p.56. But see Appendix A infra.

Thus according to the Jerusalem Talmud's explanation, both R. Johanan b. Beroka and R. Simeon are dealing with a loaf of the same size, namely of 8 eggs ( $= \frac{1}{3}$  kav  $= \frac{1}{18}$  se'ah). But R. Johanan b. Beroka gives the price of such a loaf (1 pundion), and R. Simeon the weight ( $\frac{1}{3}$  kav). The Talmud's difficulty was that it first identified the price of wheat - 4 se'ah: 1 sela - with the price of a finished loaf, and hence R. Johanan b. Beroka's loaf, which costs  $\frac{1}{3}$  more than  $\frac{1}{18}$  se'ah of wheat, was thought to weigh  $\frac{1}{3}$  more (i.e.  $\frac{1}{12}$  se'ah). The answer given is that the difference between the price of the amount of wheat in the bread and the loaf itself is  $\frac{1}{3}$  and that includes all the cost of labour and profits involved.

In Rab Huna's time (320-350 C.E.) the net profits did not exceed  $\frac{1}{3}$ , and in the next generation (350-375 C.E.) the bakers had to be told not to charge at a higher rate than this.

From the above we may learn two things:

(a) The average loaf was about  $\frac{1}{18}$  se'ah. It is likely that the se'ah produces about 22 loaves (of  $\frac{1}{18}$  se'ah each) or even more, as on an average 100 pounds of flour produce over 120 lb. loaves.<sup>1</sup>

(b) Such a loaf cost  $\frac{1}{12}$  se'ah. Other Mishnaic sources giving (approximately) the same relationship are as follows:

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1. See e.g. Encycl. Brit. 9th ed. Vol. III, p.254, s.v. baking. According to P. Flor. 322,  $26\frac{2}{3}$  mod. produced 320 double-loaves (or 620 single loaves) ... 1 mod. produced 12 double- (or 24 single loaves). Thus 1 se'ah (= 2 mod., see Appendix A) would produce about 24 double-loaves. See below and note 4.



M. Shekalim 4.9 (I-II cent)	1-1 $\frac{2}{3}$ se'ah (flour): 1d.
M. Baba Mezia 5.1 (I-II cent)	1 se'ah(wheat): $\frac{5}{6}$ - 1d.
M. Pe'a 8.7 ) ) (1-140)	(1 se'ah (wheat): 1d. (
M. Kelim 17.11)	(1 loaf (bread): 1 pundion (= $\frac{1}{12}$ d.)
M. Shevi'it 8.7 (I-II cent.)	1 loaf bread: 1 pundion (= $\frac{1}{12}$ d.)
T. Shevi'it 6.21(II cent.)	1 loaf bread: 1 pundion (= $\frac{1}{12}$ d.)

Conclusion (a) would seem to be borne out by a statement in Pliny, *Historia Naturalis* 18. 89-90 (c.79 C.E.). There he writes: panis vero e modio similaginis p.XXII... (... "the finest wheat flour will yield 22 lbs. of bread to the modius of grain"..)<sup>2</sup>

Further evidence may be cited for a VI Cent. Egyptian papyrus, P.O. 1920, according to which 1 artab of wheat yields 80 lbs. of bread (for the military annona)<sup>3</sup>. An artab equals approximately  $3\frac{1}{2}$  modii;<sup>3a</sup> hence, 1 modius yields approximately 23 lbs. of bread.

Assuming for the moment that the average yield of 1 mod. wheat is about 20 lbs. of bread, and knowing from the Edict of Diocletian (*ibid*, I.1; p.318) that 1 mod. castr. wheat: 100d., we may reckon that 2 lb. contains 5d. worth of wheat. The average loaf weighs about 2 lb. or

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2. See also *ibid* 18.66. Nunc ex his generibus, quae Romam invehuntur est Gallicum atque chersonneso advectum, quippe non excedunt modii vicens libras, si quis granum ipsum ponderet. ("Of the various kinds of wheat which are imported into Rome, the lightest in weight are those which come from Gaul and the Chersonese; for, upon weighing them, it will be found that they do not yield more than twenty pounds to the modius".) See *Economic Survey etc.*, vol.5, p.144.

3. West and Johnson, *Byzantine Egypt etc.*, p.183. See also P.Flor. 322 (Theadelphia 258 C.E.), from which one may derive the same conclusion. But see P.O. 1454 (Oxyrhynchus, 117 C.E.). *Economic Survey etc.* Vol. II, p.316 (see note 4).

3a.St. Jerome (*Comm. in Daniel XI.5*). See *Econ. Survey II*, p.466.

a little more perhaps,<sup>4</sup> and as the difference between the cost of wheat and the loaf is about  $\frac{1}{3}$  (see above), the cost of such a loaf would be  $5-5\frac{1}{2}d. + \frac{5-5\frac{1}{2}}{3} = 6\frac{2}{3} - 7\frac{1}{2}d.$

Now in Genesis Rabba 49.4. R. Azaria (PA<sub>5</sub>) in the name of R. Judah [b. R. Simeon b. Pazi] (PA<sub>4-5</sub>) states (c.290-350 C.E.) that:

1 xestes (= approximately 1 pint) of wine: 10 follarin,

1 lb. meat : 10 follarin

and 1 loaf of bread (probably fairly large) : 10 follarin.

Thus 1 lb. meat costs as much as 1 pint wine and 1 loaf bread.

According to the Edict of Diocletian:

1 lb. meat: 8d. (Ibid IV, 2; p.324)

1 bottle ordinary wine: 8d. (Ibid, II, 10; p.332).

Thus 1 loaf of bread would cost about 8d. (very little more than our assumed  $7\frac{1}{2}d.$  above). As 1 mod. castr. wheat: 100d., the relationship between a loaf of bread and a mod. wheat is 12:1. This is completely in accordance with conclusion (b) above.

We have stated above that 1 lb. of meat costs approximately the same as 1 pint of wine. This is borne out by a mid IV Cent. Egyptian papyrus, P. London 985<sup>5</sup> according to which:

4. See above and A. Segrè in Byzantion XV, p.270, note 86, commenting on Forschung. in Ephesos VII (1923), Oesterr. p.101, inscr. 10, according to which loaves were about 1 lb. in weight. (Cited above, wheat, barley and spelt). The loaves (?) there vary between 10 and 14 ozs. See also P.O.1454 (Oxyrhynchus, 117 C.E.), an agreement of bakers to deliver baked loaves, each weighing 2 lbs., 30 loaves to artab. (See above note 3). 2 lb. loaves, (or slightly less) are also referred to in P. Flor. 322. (Above note 3). Also Scriptores Historiae Augustae, Aurelian XXXVI.
5. See West & Johnson, Currency in Roman and Byzantine Egypt (Princeton 1944), p.125.



1 lb. meat : 33,000 d.

1 pint wine : 33,000 d. (inflationary prices).

This holds good not only for Palestine (Gen. Rab.) and Egypt (P. London), but also for Antioch of approximately the same time. For in P. Rylands 629<sup>6</sup> (dating from c.317-23 C.E.) we find the following:

Line 24. 4 lbs. meat: 1200 dr. = 300 d. ∴ 1 lb. meat: 75d.

line 91.  $\frac{1}{2}$  kab. (= 2 sextarii) wine: 600 dr. = 150d. ∴ 1 sext:75d.

Hence 1 sext (= pint) of wine costs the same as 1 lb. of meat<sup>7</sup>.

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6. Catalogue of Greek and Latin Papyri in John Rylands Library, ed. Turner & Roberts, Vol. IV, p.126.

7. But cf. Pliny, Hist. Nat. 17.4 (line 17). For the identity of costs of lb. meat and 1 log (= pint) wine, see also M. Sanhedrin 8.2; J. Sanhedrin 8.2, 26A62; B. Sanhedrin 70A.

Wine - Honey

In M. Baba Kama 10.4 we read of the following case:

If one man came with his barrel of wine; and another with his jar of honey, and the barrel (read - jar) of honey cracked, and the other poured out his wine and saved the honey [by receiving it] into his [barrel], he can claim no more than his hire. But if he said, "I will save yours [if] you will give me the value of mine", then the other must pay [it] to him.

From the above text it is quite apparent that honey was more expensive than wine. (Palestine I-II cent.). But here there is no precise relationship indicated. When we then refer to the Edict of Diocletian Chap. II (dealing with wines) and compare it with Chap. III lines 10 and 11 (prices of honey), we find the same thing, namely that wine is less expensive than honey.<sup>1</sup>

Good wine, according to the Edict, costs 30 denarii per Italian pint, (ibid. lines 2-7, 13), while ordinary wine (line 10) costs as little as 8d. per pint. Honey of the best quality, on the other hand, costs 40 d. per pint, and of the second quality, 24d. per pint, (ibid. Chap. III, 10,11). Thus comparing the ordinary types of honey and wine, we may say that the former is at least three times as expensive as the latter.<sup>2</sup>

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1. Ed. Graser, pp. 321-3.

2. But see ibid, line 12, Phoenician (date) honey, 1 Italian pint: 8d. i.e. the same as a pint of cheap wine (Chap. II, 10). The Mishna would appear to be talking of bees' honey. See also T. Baba Kama 10, 25, 26. According to P.O. 1733 (of 390), bees' honey costs 25 xest. per sol. Cf. the much later (VI cent.) P. Nessana 85, according to which 21 xest. honey cost 1 sol.



Wine - Oil

M. Pe'a 8.5 ... half a log of wine or a quarter of a log of oil ...

From here we learn that oil was approximately twice the price of wine (during the Mishnaic period, and the Talmudic one, J. Pe'a 8.5., 200).

According to the Edict of Diocletian:

ordinary wine, 1 Italian pint: 8d. (II, 10, p.322).

oil, ordinary, 1 Italian pint: 12d. (III, 3, p.323)

Here then the difference in price is far less extreme.<sup>1</sup>

Thus far we have arrived at the following relationships, which may be thus tabulated in terms of units (the unit being approximately 8d. according to the Edict of Diocletian, and 1 pundion = 1/12d. in the Mishna).

1 modius castr. wheat	: 12 units
1 modius castr. barley	: 6 units
1 modius castr. spelt	: 4 units
1 pint bees honey	: 3 units
1 pint oil	: 2 - $1\frac{1}{2}$ units
1 pint wine	: 1 - 2 units (see appendix)
1 loaf bread (2 lb. loaf)	: 1 unit (see appendix)
1 lb. meat	: 1 unit

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1. In Egypt, however, it would appear that oil was many times more expensive than wine. Thus if we accept Segre's equation of *cera-mion* = *metrates* (Economic Survey, etc., Vol. II, p.467), then we may calculate the following price-relationships. According to P. Amherst. 126/7 (Hermopolis, 110 or 130 C.E.), oil cost 17 times as much as wine. According to P. Ross Georg. II,41 (II cent) oil costs 4-8 times as much as wine. (See Economic Survey etc. *ibid.* pp. 314-7. In the above we have reckoned the drachma at 6 obols; see West & Johnson, *Currency in Roman and Byzantine Egypt*, Princeton 1944, p.43 et seq.)

The use of this unit system of price-relationship is demonstrated in the following examples:

Example I

If 1 xest wine: 1 unit and 1 mod. wheat : 8 units and 1 ceramion wine = 72 xest.<sup>1</sup> Then 1 art. wheat:  $8 \times 3\frac{1}{3} = 26$  units and 1 xest wine = 1 ceramion.

Therefore 1 art. wheat =  $\frac{1 \text{ ceramion wine}}{72} \times 26$

BGU. 14 (Memphis, 255 C.E.)<sup>2</sup>

1 ceramion wine: 28, 40 or 52 dr.

1 art. wheat : 16 dr.

$\frac{28, 40 \text{ or } 52}{72} \times 26 = 10\frac{1}{9}, 14\frac{4}{9} \text{ or } 24\frac{1}{7}$

Average = 16 dr. = cost of 1 art. wheat.

Example II

P. Lond. 1226 (Theadelphia 254 C.E.)<sup>3</sup>

1 art. wheat : 12 dr.

1 Monochoron wine : 8 dr.

4 monochoron = 1 ceramion<sup>4</sup>, therefore 1 ceramion wine: 32 dr.

$\frac{32}{72} \times 26 = 11\frac{5}{9}$  dr. almost exactly the same as the cost of 1 art.

wheat (12 dr.)<sup>5</sup>.

It should, however, again be stressed that this table is no more than a working hypothesis, meant as a rough guide to scale-ratios.

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1. 1 ceramion = 1 metrates (Segrè). Economic Survey etc., Vol. 2, p. 467. (See also ibid. Vol. IV. p.394). 1 metrates = 12 choes = 144 cotylae (Ibid). Therefore 1 xest = 2 cotylae.
  2. Economic Survey ibid. pp.311, 315.
  3. Ibid.
  4. Ibid. p.467
  5. But see P. Goodsp. 30 (Caranis 191 C.E.); BGU 1717 (Theadelphia III Cent.). Economic Survey ibid. pp. 311-2, 314-5, where these methods lead to very different results. See also Mickwitz, Geld und Wirtschaft etc., p.73.



In the rare cases when it is used below in this study, it is with due caution, but in those few cases, I believe the results justify the use of the method.

B. Eruvin 29A

(in the name of R. Simeon b. Eleazar.  
flor. 170-200 C.E.)

Spices, 1 ukla.<sup>2</sup>

Greens, 1 litra

Nuts, 10

Peaches, 5

Pomegranates, 2.

Pomecitron, 1

J. Pe'a 8.5 (2-d 63-4)

Anonymous  
Rice, 1 Rova.<sup>1</sup>

Spices, 1 ukla.<sup>2</sup>

Greens, 1 litra

Carobs, 3 kav.

M. Pea 8.5 = { Wine,  $\frac{1}{2}$  log  
Oil,  $\frac{1}{4}$  log

Nuts, 10

Peaches, 5

Pomecitron, 1.

Wheat - Rice

Taking into conjunction both J. Pe'a 8.5 and M. Pe'a 8.5, we find that 1 rova ( $= \frac{1}{4}$  kav), rice =  $\frac{1}{2}$  kav wheat. Therefore rice is twice as expensive as wheat.

According to the Edict of Diocletian:

1 mod. castr. wheat : 100d. (1. 1. p.318)

1 mod. castr. rice, cleaned : 200d. (1. 23. p.319)

Therefore in Italy too rice (cleaned) cost twice as much as wheat.

1. Rova =  $\frac{1}{4}$  kav. See Jastrow, Dict.

2. Ukla =  $\frac{1}{8}$  litra =  $\frac{1}{8}$  log. B.Baba Batra 80A. See also Appendix A.

Wheat - Rice

1. But note "cleaned" and cf. ibid. lines 24, 25. We understand the Mishna to be talking of cleaned rice.

Peaches - Pomegranates

According to B. Eruvin ibid. 5 peaches cost as much as 2 pomegranates, or in other words pomegranates cost  $2\frac{1}{2}$  times as much as peaches.

According to the Edict of Diocletian, (Chap. VI, p.334):

Line 61 peaches, largest size 10: 4d.

Line 62 peaches, smaller size 20: 4d.

Line 71 Pomegranates, largest size 10: 8d.

Line 72 pomegranates, smaller size 20: 8d.

Thus in Rome pomegranates cost only twice as much as peaches, as opposed to  $2\frac{1}{2}$  times as much of late II cent. C.E. Palestine.

In the Mishna there are 5 peaches to the unit,  
and 2 pomegranates to the unit.

According to the Edict of Diocletian there are 20 (large peaches  
to the unit

and 10 (large) pomegranates to the unit.

Hence in Palestine peaches appear to have cost four times as much  
and pomegranates five times as much as in Rome.<sup>1</sup>

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1. Of course the Edict Diocl. is of a hundred years later. Furthermore, its purpose was to bring down prices to a "normal" standard, perhaps as much as four times cheaper than their actual standard. Thus the Mishnaic prices may well accord with actual prices of c.301 C.E., but then they would be abnormally high (see Diocletian's introduction to his edicts ed. Graser p.314), whereas we take it that the Mishna is speaking in terms of normal price standards.



Cost of Wheat per Modius in Egypt, in Denarii

c. 18 B.C.E.	P. Fay. 101	Euhemeria	$\frac{1}{4}$
13 B.C.E.	O. Strassb. 46	Upper Egypt	$\frac{3}{10}$
10 B.C.E.	O. Strassb. 48	Thebes	$\frac{3}{16}$
9 B.C.E.	O. Strassb. 51	Upper Egypt	$\frac{3}{16}$
5 B.C.E.	P. Tebt. 459	Tebtynis	$\frac{3}{20}$
4 B.C.E.	Tait O.P. 197, 199 2-1	Coptos	$\frac{1}{4}$
C.E. 3	S.B. 7341	Philadelphia	$\frac{9}{40}$
45/6	P. Mich. 127	Tebtynis $\frac{3}{7}$ (Sebastos 20) $\frac{6}{11}$ (Sebastos 29), $\frac{3}{5}$ (Phaophi 4).	$\frac{1}{3}$ (Sebastos 10), $\frac{3}{5}$ (Sebastos 27) $\frac{4}{9}$ (Phaophi 4)
46/7	P. Mich. 123 V. XI	Tebtynis	$\frac{2}{3}$
56	W.O. 1558	Thebes	$\frac{1}{3}$
65	Tait O.P. 210	Coptos	$\frac{1}{6}$
100	P. Anth. 133		$\frac{1}{2}$
125	BGU 834 Soc. Nes.		$\frac{1}{2}$
138	PSI 281		$\frac{3}{7}$
153	W.O. 1587	Thebes	$\frac{9}{10}$
155	P. Col. 1.4 & Frisk, Bankakten 1	Theadelphia	$\frac{3}{5}$
138/61	P. Baden 79	Heracleopolite nome	$\frac{9}{10}$
162	P. Ryl.		$\frac{5}{8}$ (exported wheat)
191	P. Goodsp. 30	Caranis $1\frac{1}{2}$ (Col. XV)	$1\frac{1}{2}$ (Mechir, Col. XX)
254	P. Lond. 1226	Theadelphia	$\frac{9}{10}$

255	BGU. 14	Memphis	$1\frac{1}{5}$
256	P.Flor.321	Theadelphia	$9/10$
294	Rend. Harr. 93 (appendix)	Oxyrynchus	$16\frac{1}{2} - 17\frac{2}{5}$ or $66 - 69\frac{2}{5}$
312	Harv. St. LI.	Caranis	$1\frac{1}{2}$ or 50 (emmer)
314	PER.E.2000	Hermopolis	750 or 3000
315	SB.7621	Theadelphia	225 or 900
335	P.Lond.1914	Alexandria	6300

Cost of Bread in Egypt, in Denarii

C.E. 1	P.O. 736	Oxyrynchus. Loaf of fine bread $1/48$ . cost of grinding a modius of wheat $\frac{1}{8} - 1/6$
45/6	P.Mich.123	Tebtynis Bread $1/24$ per loaf.
46/7	P.Mich.128	Tebtynis Bread $1/24$ per loaf.
117	P.O.1454	Oxyrynchus. Agreement of bakers to deliver baked loaves each weighing 2 lbs. 9 per mod. Bakers receive $\frac{1}{8}$ mod for milling, selling and other expenses.
220	S.B.7181	Oxy. Military requisition for 3141 loaves at $1/24$ per loaf.
258	P.Flor 322. Theadelphia.	$26\frac{2}{3}$ mod. per 320 doubleloaves (= 640 single loaves). Rations of labourers 2 single loaves per day ( $2\frac{1}{2}$ mod. per month) or 4 single loaves (5 mod. per month). If wheat was worth $9/10$ per mod. (P. Flor. 321) the double loaf was worth approximately $1/12$ d.



II cent.	O. Brüssels 71.	An allowance of 1/12 per day for bread to builder.	
III cent.	P.O. 165	Oxyrynchus.	1 measure fine flour 3. 1 loaf bread 1. 20 pairs of dry loaves 3. 40 variegated loaves 11. 40 large loaves 5½. 20 small cakes 3.
III cent.	SPP XXII. 56 Soc. Nes.	1¼ per mod.	bread
<u>Egypt. Cost of Cattle in Denarii</u>			
6 B.C.E.	P. Lond. 890(?)	15 (balance of price of 5 cows)	
C.E. 110	P. Baden II, 19	Hermopolite nome	30 for cow.
118/38	BGU 986	Bacchias	75 (plus) for steer.
123	P. Lond. 839	Hermopolis	15½ for cow and calf.
136	P. Cxy. 707		2 pair oxen valued at 115
139	P.O. 729	Oxyrynchus	8 cattle (5 fully grown and 3 young cattle(?)) valued at 625.
191/2	P. Goodsp. 30	Caranis	47½ (at least, paid for cow [col. XL, XLI]).
II/III Cent.	P. land. 35	Theadelphia	30½ for black cow
239	P. Flor	Euhemeria	Ox valued at 25, furnished by lessor for irrigation.
III Cent.	P. Tebt. 404	Tebtynis	Cow furnished for annona 15.
	P. Lond. 965	Theadelphia	100 for ox, unbroken for work.
346	P. Gen. 48		Team of full grown oxen 180,000 (= 1200 T.).

Egypt. Cost of Fowl in Denarii

C.E. 1	P.O. 736	Oxyrynchus	Pigeon 1/24
42	P. Mich. 121	Tebtynis	2 choice cocks 1.
151	PSI.1124	Tebtynis	Fowl $\frac{1}{2}$
169 or 199	P.Lond.335	Heraclia	2 chickens at 1 each
II cent.	P. Ross. Georg.II.41		4 fowls at $1\frac{1}{2}$ ea. 2 at 2 each.
II-III cent.	P.O.2129	Oxyrynchus	4 fowl at $\frac{5}{8}$ each

Note: In the above we have reckoned the artab as  $3\frac{1}{3}$  modii (St. Jerome, Comm. in Dan. XI. 5). See also The Book of Paradise of Palladius etc., ed. E.A. Wallis Budge, London, 1904, I.582 = II. 428, fol. 195b, beginning). But there were a number of artab measures varying from  $57\frac{3}{5}$  sextarii to 78 sextarii, according to Segrè in Metrologia e Circolazione p.35. (See also Economic Survey etc. Vol. II [Egypt] p.466). We have also reckoned the denarius as equalling 24 obols. (6 obols = 1 drachma, 4 drachmae = 1 denarius). However sometimes tetradrachms (= denarii) were rated at 28 or 29 obols. (West & Johnson, Currency in Roman and Byzantine Egypt, p.47, 49-50, 72 etc.). Furthermore, in certain papyri, around c.270, c.290, it appears that the drachma and denarius were equated (P.O. 1414, P.O. 1718, Currency etc. ibid, p.72).

Thus while in the above lists we have translated obols into denarii, and artabs to modii, to make comparisons possible, there is no clear guarantee of the accuracy of any individual price listed. However, the totally resultant picture is, in all probability, fairly



accurate. The material is taken from Economic Survey etc., vol. 2, (Roman Egypt) (A.C. Johnson, Baltimore, 1936), pp. 310-12 etc., and Johnson and West's Byzantine Egypt: Economic Studies (Princeton, 1949), pp. 176, 183 etc.

Bread and Wheat Costs (Contd)

According to P. Flor 332,  $26\frac{2}{3}$  mod. wheat produced 320 double loaves, or 640 single loaves  $\therefore$  1 mod. produced 12 double or 24 single loaves. (This bears out well our earlier calculations, where we showed that 1 se'ah  $\overline{\text{L}}$  = 2 mod. see appendix A produced about 22 double loaves).

c.1 C.E. 1 mod. wheat:  $1/4$ d. and could produce 24 single loaves

$\therefore$  1 single loaf had  $1/96$ d.-worth of wheat in it.

At that time a loaf of fine bread actually cost  $1/48$ d., i.e. twice as much as the worth of its wheat content. But the cost of grinding a mod. of wheat was  $1/8$ - $1/6$ d.  $\therefore$  the cost of wheat plus the cost of grinding =  $1/4 + 1/8/1/6 = 3/8/5/12$ d.  $\therefore$  the cost of a loaf =  $(3/8 / 5/12 \div 24 =) 1/64 / 1/58$ d. As a single loaf of fine bread cost  $1/48$ d. the bakers made approximately 20-33% profit.

Some added support for this may perhaps be found in P.O. 1454.

For there bakers are stated to have agreed to deliver baked loaves, each weighing 2 lbs. 9 to the mod. They received  $1/8$ d. per mod. for the milling, selling and other expenses, a mod. itself costing about  $\frac{1}{2}$ d. Normally a mod produces 12 double (= 2 lb.) loaves, and thus in this case it appears that the 3 double-loaves were left to the bakers as payment

in kind, while all expenses were paid for. They thus got a clear profit of 3 out of 12 loaves, or in other words 25%.<sup>1</sup>

Looking back now on the Mishnaic material that we analysed above, we may perhaps modify our statements slightly. One se'ah probably yielded 24 (and not 22) double-loaves. 1 se'ah: 1d. and a loaf: 1 pun-dion (= 1/12d.). Yet the loaf contained in itself only 1/24d.-worth of wheat, on the one hand, and on the other hand, we know that the bakers made no more than 33% profit. Thus approximately 17% of the cost of the loaf must be put down to milling etc. (i.e. 1/6 total expense).

Again, looking back at the Edict of Diocletian, we may state that 1 mod. castr. of wheat produced 24 double-loaves. As 1 mod. castr.: 100d., a loaf had 4d-worth of wheat in it. We have seen that a loaf cost about twice as much as the value of its wheat-content, and hence the price of a loaf would be 8d. This is equal to the cost of 1 lb. of meat or 1 bottle of wine in the Edict, again bearing out our calculation of the price-relationships of these various commodities, (see above).

We may then say that in a Palestinian loaf of bread during the Talmudic period:

Approximately 50%	= cost of wheat
17%	= cost of milling etc.
33%	= clear profit (maximum)
Total 100%	

Thus both in Egypt and in Palestine the ratio between the cost of 1 mod. wheat and 1 single-loaf of bread is 1:12<sup>2</sup>.

1. They obviously were not given anything for the cost of milling etc. their own 25%. Had they been paid for this they would have received 25% more or 1/6d.
2. Eg. Egypt, c.1. C.E., 1 mod. wheat 1/4d; 1 loaf bread 1/48d. c.45 C.E. 1 mod. wheat (average) 1/2d; 1 loaf bread 1/24d. etc.



From P.O. 1454 (117 C.E.) we have learned that the bakers got about 25% profit and  $1/8d.$  expenses. As the cost of wheat accounts for 50% of the price of the bread, and in this case the profit was 25%, the expenses must have been 25% per loaf.  $\therefore 1/8d. (= \text{expenses}) \div 9 = 25\%$  of cost of the loaf  $= 1/72d.$   $\therefore$  the cost of the total loaf  $= 1/72 \times 4 = 1/18d.$   $\therefore 1 \text{ mod} (= 1 \text{ loaf} \times 12) = 2/3d.$  According to this calculation, then in Oxyrynchus in 117 C.E., 1 mod.  $= 2/3d.$  This is only a little higher a price ( $1/6$ , in fact) than those recorded in P. Amh. 133, for 100 C.E., and in BGU 834, 125 C.E., both of which give  $1/2d$  per mod.

From P. Flor 332 we learn that the ration of labourers was usually 2 single loaves per day. This no doubt was for two meals, and thus corresponds to our Mishna, cited above, where we are told that the poor man is to be given "food for two meals" (iBId), which amount we have shown to be a double-loaf.

Thus the undated P. Brussels 71, where an allowance of  $1/12d.$  of bread per day is made to a builder, presupposes a current price for the mod of  $1d.$  (The allowance is for 1 double loaf  $= 1/12 \text{ mod.}$ ). It would thus appear to be from the end of the II Cent. C.E. where the prices of wheat in Egypt are approaching this kind of level.<sup>3</sup>

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3. Sometimes the allowances in Egypt were more generous, e.g. 4 single loaves per day, as in P.Flor. 322, P.Flor.135, PSI.1050, all from Theadelphia and dating around 250 C.E. See further Richard Duncan-Jones in Papers of the British School at Rome, Vol. 33 (N.S. Vol. 20), 1965, pp. 222-3, for further examples of these higher rates, (and their approximate calorific value), etc. For the whole subject of bread and wheat costs, see Segrè, in Aegyptus XXX, (1950), pp. 180-9, and also Szilágyi in AAH XI (1963), p.380.

EGYPTIAN WAGES (approximate, in denarii, daily  
unless otherwise stated).

28/3 B.C.E.	P. Com. 25	Philadelphia	1/8 for harvesters.
C.18	P. Fay 101	Euhemeria	Harvesters receive 1/3 mod. daily (1/12).
13	BGU 1123	Alexandria	Contract to cultivate 2 ar. for 3 years for 112½.
8	P.Lond.1171	?	Shepherds and foreman, 6 per month. Assistant shepherd 3 per month.
C.E.1	P.O.737	Oxyrynchus	Conductei 1/6; weavers 1/7; magister 1/4 (As = obol here, c.f. P.Teb. 684).
C.1	P.O.736	Oxyrynchus	Household servant 1/10
46	P.Mich.	Tebtynis	Contract to harvest 52½ ar. for 52½. Fee for writing document 1/24 - 7/24 (Cf. ibid 128). Grammatikon from 1/24 to 10.
78	P.Lond.131*	Hermopolis	Pruning 5/24 - 7/24 (Pharmouthi). Boys weeding and gathering leaves 1/12. Irrigation 5/24.
C.79	P.Lond.131	Hermopolis	Thoth. Men on farm work, 1/8, 1/7, 1/6. Boys 1/10. Plasterer's assistant 1/5. Phaophi. Water-guard 5 per month. Bricklayer 1/4, Pruners 1/6, Ploughmen 1/5, Digging sebakh 1/6. ...Pachon. Harvesting 1/12. Threshing 1/8, Cutting straw 1/12, Clearing water-channels 1/8.



92	P.Grenf.II.43	Arsinoe	Guard at metropolis. 10 per month.
104	S.E.7365	Fayum	Arab guard at customs, 4 per month.
113	P.Lond.1177	Arsinoe	Foreman and labourers at water-works. 10 per month (pachon-Epiph) 9 (Thoth-Phaphi). 5/12 per day on daily wage. Ox-drivers' foreman, 8 per month; others, 3, 4, 6 per month. On daily contract paid 1/6.
126	P.Fay.331	Theadelphia	Farm-work, 3/8.
145	P.Lond.306	Caranis	Deputy tax-collector, 63 per year. X
150	P.O.1654	Oxyrynchus	Fee for writing memoranda, 2/3 X
155	P.Col.1.4 and Frisk Bankakten 1.	Theadelphia	Tower guards, 6 and 10 per month.
156	P.Ryl.88	Arsinoe	Salary of guard, 4½ per month.
172	P.Teb.42	Tebtynis	Bricklayer laying 10,000 bricks, 10. <i>100 bottles of oil 61</i>
191	P. Goodsp.30	Caranis	Guard, 6 per month (?) Ox-drivers, 7 per month (?) Mason, 7 per month (?)
214	BGU 362	Arsinoe	Temple guards, 4½ and 7 per month. Keeper of records, 7½ per month X Clerk, 10 per month. Fee for advocate pleading before prefect, 15. X
229	P.O.1500	Oxyrynchus	Bath-attendant, 2 for half a month (?)
254	P.Lond.1226	Theadelphia	Steward, 10 per month Cowherds, 12 and 15 per month X Donkey drivers, 2, 4 per month.

255	BGU 14	Memphis	Guard of vineyard, 20 per month. (Salary may be for longer than month).
256	P.Flor.321	Philadelphia	Steward, 10 per month. Cowherd $1\frac{3}{4}$ and 12 per month. X Ox-drivers, $8\frac{1}{2}$ and 12 per month. Donkey-drivers, 2 and $4\frac{1}{4}$ per month. (Probably allowances of wheat and wine to regular workers).
258	P.Flor 322	Euhemeria	Steward, 10 per month. Ox-driver, 1 and 2 per month Cowherders, 2 and 3 per month. X Donkey-drivers, 1 and 4 per month. Woodcutter, 1 per month. Other workmen on monthly basis, 1 and 2. Cutting hay $\frac{1}{2}$ Cutting hay on contract $\frac{1}{2}$ and $\frac{3}{4}$ per ar. Harvesting $5/6$ . (Men regularly employed receive $3\frac{1}{2}$ mod. wheat per month. Others, an allowance of bread from 2-4 loaves per day).
259	P.Lond.1170	Theadelphia	Men gathering olives, sowing wheat and performing other farm duties, $\frac{1}{2}$ Ox-drivers, $\frac{1}{2}$ . (Wine distributed to workmen in varying quantities).
C.260?	PSI.811		Worker, $\frac{3}{4}$
C.270	BGU.952		Pieceworkers, 3 or 12
295	PSI.712	Oxyrynchus	8000 (or 2000) for making X 40,000 bricks.
297	SB.7676	Caranis	200 or 50 for work on Trajan's canal.
299	PSI 873		Worker 240 or 60.



301	PSI.1037	Oxyrynchus	400 or 100 per day for Rhabduchus.
308	Gr.Pap.II.75	Oasis	30,000 (=20T) of Augustan silver paid in nummi, food and clothing for a fourth part of a nurse's service.
309	P.O.2499		500 per month, for bath and attendant. X
314	PER.E.2000	Hermopolis	Cutting weeds, clearing ground dykeing and building home, 100. irrigation and builders, 125. Labour, 162½.
C.325	P.O.1626		500 for rhabduchus.
340	BGU.21		Workers (Payni) = 37,500 (= 25T); (Epiph.) - 22,500 (= 15T); (Epiph.) - 18,000 (= 12T); (Messori) - 22,000 (= 15T)
377	PSI IV.287	Oxyrynchus	Apprentice to 300,000

The above is based upon the material contained in Economic Survey etc., Vol. 2 (Egypt), pp. 306-310, Johnson & West's Byzantine Egypt etc. p.194, Segrè's Circolazione etc. pp. 118-21, Mickwitz's Geld und Wirtschaft etc. pp. 226-8.

On the basis of the above information West and Johnson in Currency etc., p.81 come to the following conclusions:<sup>1</sup>

	Wheat, d. per mod.	labour per day
I cent. C.E.	1/6 - 5/6	1/6 - 2/3
II Cent.	1/2 - 1½	1/2 - 1½
mid. III Cent.	1	1 - 1½

1. Johnson in JJP, 4, (1950) p.156 gives the following wheat averages: I cent. ½d. per mod; II cent. ¾d. per mod; early III cent. 1d. per mod. For 245-6 he gives prices of 1-1½ per mod. For 269 (P. Erlangen 101), 2d. per mod; (but this may be a famine price, JJP ibid note 24). For 276 the price has risen to 15 d. per mod (P. Mich.1. 157, corrected by Youtie in TAPA 76, 194-5, pp. 144-7). For 293, add: PO.2142, 23d. per mod. For Western wages (e.g. Pompeii, 5 asses per day, CIL IV 400), see Szilagi, AAB XI (1963) pp.345-52.

Even the most cursory comparison of these results with Palestinian costs of wheat and wages demonstrates that life in Egypt was considerably cheaper than in Palestine. Wheat appears to have cost half as much in Egypt as in Palestine, and Palestinian wages are more than twice as high as Egyptian ones. Our tables further show that cattle were cheaper in Egypt than in Palestine.

In Rome, however, prices of wheat appear to have been as much as twice as high as those of Palestine. Thus N. Jasny<sup>2</sup> very convincingly argues for the price of triticum (cheaper type of wheat) per modius C.70 C.E. as 2d., and that of siligo (more expensive type) as 2½d.<sup>3</sup>

In Tosefta Machshirim 3.4 (ed. Zuckermann p.675, lines 21-3) we read: Joshua ben Peraḥia (flor. c. latter part of II cent. B.C.E.) says: "Wheat that comes from Alexandria is impure because of their (the Alexandrians') antalia, (= ἀνταλία - pump with wheels and buckets.<sup>4</sup>) (Meaning that in Alexandria they used to bring their water from the river with such an antalia. R. Joshua b. Peraḥia suspects lest some water may have been sprinkled onto the wheat, thus

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2. In Wheat Studies of the Food Research Institute, Stanford University, California, Vol. XX, No.4 (March 1944) pp. 137-70. Article entitled: Wheat prices and milling costs in Classical Rome. See further Richard Duncan-Jones in Papers of the British School at Rome, Vol. XXXIII (N.S. vol. XX), 1965, pp. 221-2, and bibliography *ibid.*, and p.224, where it is shown that land was cheaper in Egypt than elsewhere.
  3. Basing himself on Pliny, Hist. Nat. XXXVII (Teubner, ed. Bk. 18, Chap. 10, sec. 90, pp. 166-7). See his extensive bibliography *ibid.*, for earlier scholarly opinions, notably that of Rostovtseff, in Pauly-Wissowa Real-Encycl. S.V. Frumentum, etc.
  4. Jastrow, Dict. S.V. p.84A.



making it liable to become defiled, if touched by anyone not ritually pure- a highly likely eventuality<sup>5</sup>).

The Sages replied: If so, it is impure for Joshua b. Peraḥia, but it is pure for all [the rest] of Israel.

Ginsberg explains this otherwise rather surprising view of Joshua b. Peraḥia as being an attempt to legally enforce an economic "boycott" (or sanctions) on Alexandrian wheat, as it was seriously challenging the home market. To protect the local produce he tried to declare it ritually impure, and hence virtually unuseable to at least a certain section of the population.<sup>6</sup> This method had been used to the same ends in the preceding generation by the (great) Jose ben Jo'ezer who took measures to limit the use of glassware (then predominantly non-Palestinian), and in the following generation by Simeon ben Shetaḥ (c. first half of 1 Cent. B.C.E.) who did the same to Non-Palestinian metalware.<sup>7</sup>

In the light of the above evidence, we may see that Ginzberg's suggestion has a sound economic basis. If wheat in Palestine cost twice as much as it did in Egypt, it could be brought from Alexandria to Ascalon or any other of the ports by sea at relatively little cost, and sold at considerably less than the price of Palestinian wheat, still making a clear margin of profit. Thus for example, even if the cost of transport, loading and unloading etc. came to as much as 10%

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5. Louis Ginzberg, in his Hebrew University Public Lecture (1st Adar, 5689, published afterwards in Jerusalem 5691); Mekomah shel ha-halacha bechochmat Yisrael p.37, note 4. This explanation is based on that of the Ra'ah. See also Krauss, Lehnwörter etc., S.V.

אֲשֶׁר וְלֹא לֹא and Löw's comments ibid, and Zeitlin in J.Q.R. N.S. (1917) etc.

6. Ibid, p.6.

7. Ibid, pp. 5-6. B. Shabbat 14B. J. Pesachim 1.6.

of the cost of the wheat itself, Alexandrian traders could still undercut Palestinian prices by 30% and be left with a clear profit of almost 30%<sup>8</sup>. In 363 Julian the Apostate still found it an economic proposition to bring wheat from Alexandria to the famine-ridden Antioch (see below).

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8. Johnson and West, *Byzantine Egypt* etc. p.160. Cost of transport from Alexandria to Rome and Byzantium in Ed. Diocl. 16% and 12% respectively. Edict XIII of Justinian 10%. Constantine (342) allowed 4% to shipowners as cost of transport from Alexandria to Byzantium. From Alexandria to Ascalon, e.g. is only a fraction of the distance from Alexandria to Rome or Byzantium although, of course, the fraction of the cost is considerably higher than the fraction of the distance. See also Giulio Jacopi, *Gli scavi della Missione Archaeologica Italiana ad Afrodisiade nel 1937*, XV-XVI; *Monumenta Antichi* 1939, XXXVIII. Cf. Jasny *ibid.* p.145B. But cf. Libanius epistles 549-50 (of 358?) on Julian's journey and the remarks of Liebeschütz, in *Rheinisches Museum für Philologie*, 104/3, (1961), p.242. See also Segrè in *Byzantion* XVI, 1942-3, pp. 400-2.



PART 2

CURRENCY TERMINOLOGY

Currency Terminology - I

At this point it becomes imperative to examine the numismatic terminology used in Rabbinic literature more closely. I have discussed some of these problems elsewhere at considerable length,<sup>1</sup> and here shall cite only my general conclusions, concentrating on those arguments that touch directly upon our own specific topics.

During the early Hasmonean period Palestinian Jews employed a monetary system that was Syro-Greek in structure based on the drachm-obol system, and dependent upon the value of the Tyrian tetradrachm. (Table A). Only small bronze denominations were actually minted. Later, during the reign of Mattathias Antigonus (40-37 B.C.E.) there was a reorganisation of the currency system (perhaps due partly to the incipient inflation) in which larger denominations were introduced and an attempt was made to bring it further in line with the Roman denarius-as system (Tables B and C). It appears that at this stage the halachic value of the pruta was fixed. For a variety of reasons both internal and external this system actually remained in use for only a short period. Nevertheless, the terminology applied to it continued to be used in subsequent generations, notwithstanding the many changes which took place. However, this now purely Halachic (and theoretical) terminology sounded very similar to actual current Roman monetary terminology, while having quite different values to the Roman equivalents. There had therefore to be created a completely new system of terminology for the Roman currency currently in use (Table D).

1. The following section is based upon the conclusion of my article in the Jewish Quarterly Review LVI (1966) pp. 273-301 entitled "Palestinian Currency Systems in the Second Commonwealth". In it I reject the views expressed by Heichelheim in his section of Syria, Econ. Survey, etc. Vol. 4 (New Jersey 1959), chap.3, part 4, pp. 211-213.



Bronze				Silver	
<u>PRUTA</u>	<u>SHAMIN</u>	<u>HANEZ NIZ</u>	<u>DAROSA HADRIS</u>	<u>MA'AH</u>	<u>DINAR</u>
144	72	36	18	6	1
24	12	6	3	1	
8	4	2	1		
4	2	1			
2	1				

Chart A

Metal		bronze				silver	
R		QUADRANS	SEMIS	AS	DUPONDIIUS	DENARIUS	
P	PRUTA	KARDIONTS (KUNTRUN(K))	MUSMIS	ISSAR	PUNDION	MA'AH	DINAR
	192	96	48	24	12	6	1
	32	16	8	4	2	1	
	16	8	4	2	1		
	8	4	2	1			
	4	2	1				
	2	1					

Chart B

R. Roman name.

P. Palestinian name.

COPPER (or ORICHALCUM)

<u>ORICHALCUM</u>			<u>SILVER</u>		<u>GOLD</u>	
<u>Quadrans</u>	<u>Semis</u>	<u>As</u>	<u>Dupondius</u>	<u>Sestertius</u>	<u>Quinarius</u> <u>Argentens</u>	<u>Aureus</u>
1600	800	400	200	100	50	2
800	400	200	100	50	25	1
64	32	16	8	4	2	
32	16	8	4	2	1	
16	8	4	2	1		
8	4	2	1			
4	2	1				
2	1					
1						

Chart C

<u>METAL</u>	<u>orichalcum</u>			<u>silver</u>			<u>Gold</u>
<u>R As</u>	<u>Dupondius</u>	<u>Sestertius</u>	<u>Quinarius</u> <u>Tarapik</u> <u>Rova</u>	<u>Denarius</u>	<u>Didrachm</u>	<u>Tridrachm</u>	<u>Aureus</u>
<u>P Termissis</u>	<u>Tressis</u>	<u>Riv'a</u>		<u>Dinar</u>	<u>Tiba</u>	<u>Ragia</u>	<u>Dinar-Zahav</u>
16	8	4	2	1	$\frac{1}{2}$	$\frac{1}{3}$	1/24 or 1/25
8	4	2	1				
4	2	1					
2	1						

Chart D

R. Roman name  
P. Palestinian name.



There are certain other numismatic terms that must be carefully examined, as they change their meanings at a definite stage in their history. The most important of these is the "maneh".<sup>1</sup> During the Tannaitic and early Amoraic times this term meant exclusively 100 denarii.<sup>2</sup> However, from the early III cent. onward we find it being used in the sense of a single denarius.<sup>3</sup> For, for example, while the Greek Eusebius (Historia Ecclesia 9.8.4)<sup>4</sup> relates that during the famine of 313/3 a μέτρον (= modius, in this case) of wheat cost 2500 Attic drachmae (= denarii), the syriac version reads: one modius of wheat [cost]

1. I have discussed this problem at considerable length in an article shortly to be published (in Hebrew) in Talpiot (New York) entitled "Al Erko shel Maneh" (hereafter simply - Talpiot).
2. See Multsch MSR; index s.v. *μνα*, *μανη*, *ἀργυρος*, etc.. See Jastrow Dict. S.V. *מנא*. Also P. Oxy 9v (III cent. C.E.). Inscriptions Grèques et Latines de la Syrie, Jalabert & Mousterde, vol. 3, part 1 (Paris 1950), pp. 479-81, No. 867. Read *μναστιατηρων* and not *μναστιατηρων* (p.480) to make sense of the inscription. See also my detailed discussion of the use of the term maneh in the Peshitta to Mark XII.42, in an article entitled "Mark XII.42 and its metrological background", Novum Testamentum 9, (1967), pp. 178-90.
3. In this we reject the suggestion of Segrè, J.Q.R.34 1943-4, p.481. See further S. Lieberman, in his Edition of Deut. Rab. p.126, note 2, and in Margulies' ed. of Lev. Rab. p.879. Segrè equates the maneh with the ma'ah, on the basis of a comparison of the Targum Onkelos to Exod. 30.13 with that of the Targum Ps. Jonathan. However, here he followed the printed ed., while the Mss of the Targum Ps. Jonathan read *גגל* as does Onkelos. Eg. Ms. Neofiti I (Jerusalem microfilm), and Brit. Mus. Add. 27,031 fol.97A, misread by J. Ginzburger in his edition of this text (Berlin 1903). On the causes motivating the printed editions' mistaken *גגל*, see my article on Novum Testamentum 1967, and Talpiot.
4. Migne, Patrologia Graeca. XX, col. 816: *ὡς ἐνὸς μέτρον πυρῶν δισχιλίας καὶ πεντακοσίας Ἀττικᾶς ἀντικατὰ ἀλλὰ τεσθαι*. (Loeb. ed. 352).



2500  $\text{מָנֶה}$  - maniah (= maneh)<sup>1</sup>. Thus, maneh = denarius (Attic drachma).

Furthermore, we read in Deuteronomy Rabba (ed. Lieberman, p.130) of a parable (in the name of R. Abba b. Kahana flor. c.290-320)<sup>2</sup> in

1. See Payne-Smith, Thesaurus Syriacus, s.v. mana, 2164. But cf. The Syriac version of Eusebius, etc., from the St. Petersburg manuscript (dated 462 C.E.) by W. Wright and N. McLean (Cambridge, 1898), 369 and P. Bedjan's ed. (Leipzig, 1897), 530, where the reading is "ma'in", (= obols). Quite clearly this cannot be the correct reading, as an obol was never equal to an Attic drachma. Furthermore, in Bar Hebraeus, Chronography (ed. Budge, vol. 1, p.58) we read "God admonished the world with famine and pestilence so severely that a modius of wheat was sold from 250 manin". (See Lieberman, in Annuaire de l'Institut de Philologie et d'Histoire Orientales et Slaves, vol. VII, 1939-44, p.434, note 4). In Syriac the difference between an "n" and an "ayin" is hardly noticeable at times. E.g. cf. different readings to Syriac Job 21, 24 cited in Schulthess, Lexicon Syropalaestinum (Berlin 1905, p.115A S.V. m'a. (Another example of this change may be found in The Story of Ahikar, ed. Conybeare, Rendel Harris & A. Smith Lewis (Cambridge 1913), p. XXXI). The St. Petersburg Ms is a copy of an earlier one, now lost. The Greek version was first translated into Syriac in the IV cent. See E. Lohmann, Der textkritische Wert der Syrischen Übersetzung der Kirchengeschichte des Eusebius (Halle, 1894), pp. 10-12.
2. It is however true that there was one R. Aba B. Kohen, who is at least on one occasion confused with R. Aba B. Kahana (B. Baba Mezia 11B, also J. Halla 2.7, see A. Hyman's Toldoth Tannaim Ve'amoraim p.48B), and who flourished in Palestine in the fifth generation (C.350-75, *ibid*). Thus one might argue that our text is of a later date, c.370 for example, and maneh is here being used in its traditional meaning of 100d. Hence, we would have an equation of 1 aureus = 80,000 d., quite a plausible ratio for the later IVth cent. (Segrè, Byzantion o.c.). A careful analysis of certain cognate texts (Yalkut, 1, 298; 2, 937; Midrash Tillim 9, Buber ed. p.81; Pesikta Rabbati 23; J. Pe'a 1.1, 15D 14) will however demonstrate conclusively that the reading R. Aba b. Kahana in our text is not to be altered. For there we find statements of a similar exegetical nature (based on the same Biblical verse), yet independent in style and form all in the name of R. Aba b. Kahana. The last source cited (J. Pe'a) is particularly significant as it is wholly independent both exegetically and formally, and similar only in idea and content. These texts may therefore be regarded as independent corroborations of the reading 'Kahana' (as opposed to the suggested 'Kohen') in Deuteronomy Rabba. (See also Tanhuma Buber, Deuteronomy pp. 16 and 34). The equation of 1 aureus = 80,000 d. could not be prior to c.340 (Segrè, Byzantion, *ibid*), when R. Aba b. Kahana was no longer alive. Hence "maneh" cannot here be taken in its more usual sense of 100d.



which a king pays his orchard guardians, 1 aureus (אורוס),  $\frac{1}{2}$  aureus, and 200 maneh<sup>1</sup> respectively. Here it seems most plausible that 200 maneh continues the decreasing progression and equals  $\frac{1}{4}$  aureus (a unit that did not exist as a single coin and could not therefore be spoken of). Hence 1 aureus = 800 d. This was certainly true of the period of Diocletian's monetary reforms and Edict of prices (c.295-301), as has been most recently reaffirmed by R.A.G. Carson.<sup>2</sup> According to Ed. Diocl. (chap. 30, line 1), 1 libra aures: 50,000 d., hence 1 aureus = 833 $\frac{1}{3}$ d. Such was the price of one aureus-weight of gold bullion. The minted aureus, however, was itself worth some 4%

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1. Standard editions (Wilna etc.) have "zuz" (= d.)!

2. In a paper read before the International Numismatic Conference in Israel 1963, published in INCP, pp. 231-45. This reference is to p.237.

See also Mattingly, Roman Coins, (London 1928), p.226, West, Gold & Silver Standards in the Roman Empire (New York 1941), p.187 etc. Contra Bingen for example, in Chronique d'Égypt XL (1965), pp. 206-8, 431-4.

less (1 aureus = 800d.).<sup>1</sup> Thus there was at this time a strange situation, where unminted gold was worth more than minted gold as has recently been shown by Bolin, basing himself on papyrological evidence.<sup>2</sup> In the light of the above the sudden increased usage of gold bullion at this time, frequently referred to in Rabbinic literature, becomes very understandable. (See also below).

From the Midrashic text in Deuteronomy Rabba we may learn at least two facts of the utmost importance for the economic historian: (a) that the price-levels in Diocletian's Edict were dependent upon his currency reform of a few years earlier, and (b) this currency reform was not a merely theoretical affair, but an effective step whose effect was immediately felt (presumably throughout the Empire and

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1. Ed. E.R. Graser, in *Econ. Survey*, vol. 5, (Baltimore, 1940), p.412. Although the reading was called into doubt by Mattingly, in his article "Monetary System of the Roman Empire from Diocletian to Theodosian I", (*Num. Chron.* 1946, 113), he himself later accepted the reading as correct when new corroborative fragments were discovered. (See Mattingly, *Roman Coins*, London 1960, pp. 217-8). See also F. Ehrendorfer "Die Münzreform des Diocletian", *Num. Zeitschrift* 72 (1947), p.101. Also L.C. West "The Coinage of Diocletian and the Edict of Prices" (*Studies in Roman Economic and Social History in Honour of Allan Chester Johnson*, 1951), p.290 etc. Most recently F.M. Heichelheim, in *JRS* LV. (1965), p.251, basing himself on information supplied to him by Klaffenbach has shown conclusively the reading in the Elatea Fragment is not to be called into doubt, (contra West, Mattingly, Pareti, Mazzarino, Bernardi, Ruggini, Skeat, cited *ibid*). Klaffenbach's epigraphic evidence, however, is in itself not enough to render Heichelheim's thesis (*ibid*) irrefutable, as West (*l.c.*) for example, considered the possibility of a mason's error in the carving of the inscription. His argument from papyrological sources is very convincing, and the Rabbinic evidence here cited would seem to bear it out.
  2. 2. *State and Currency in the Roman Empire* (Uppsala 1958), pp.332-3, 285. See P. Mich. p.286. For Rabbinic evidence of the use of gold bullion see e.g. J. Ketubot 12.7 (39c 55, 290/320 C.E.). Gen. Rab. 63.3; Deut. Rab. 1.13. (both 290/320), J. Baba Kama 8.8 (6c. 15, 250/60) etc.



certainly) in Palestine.<sup>1</sup> How long this effect lasted we shall see below.

A further few examples of the use of the maneh as denarius will also cast considerable light on economic conditions of this period.

(1) In J. Berachot 2.8 we read of a butcher charging R. Zeira (II) 50 maneh for a pound of meat. We have shown elsewhere<sup>2</sup> that this event must have taken place between the years 317 and 325 (in Tiberias). Now we have already seen that in P. Rylands + 637, line 403 (Archives of Theophanes, c.317-24) 1 lb. meat in Betar cost (200 dr. =) 50d. It seems quite clear that the Jerushalmi price of 50 maneh and that of P. Rylands - 50d. - are equal. Hence maneh = denarius.

We know (from Eusebius, see above) that in 312/3 the famine price of wheat was 2500 d. per mod. [castr.] of wheat (according to the Syriac translation). This price may have been as much as five times as high as it would have been in a normal year.<sup>3</sup> Thus a normal price from c.312 may have been about 500 d. per mod. (castr.). We

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1. I have treated this subject very fully in an article published in the Journal of Roman Studies, LVI, 1966, pp. 190-5, entitled "Denarii and Aurei in the Time of Diocletian". See also Talpiot *ibid.* See also Graser's observations in TAPA 71 (1940), p.152. Fragments of the Edict have been found in the West too. See Szilágyi, AAH XI (1963), p.333 note 43, for bibliography. On the basis of this evidence I reject much of the argumentation of Bolin, followed most recently by Sutherland in RIC 6 (1967), pp. 98-9. For the date of Diocletian's first currency reform see Sutherland RIC 6.
  2. I first discussed this text in an article in Archiv Orientalni 34 (1966) pp. 54-66, and subsequently in Talpiot, where I considerably revised my opinions.
  3. Cf. for example, T. Avoda Zarah 5.4, B. Baba Batra 91A, etc. See below for a more detailed examination of this text.

have shown above that the price-relationship between 1 mod. castr. wheat and 1 loaf of bread is approximately 12:1. If we further accept (as suggested above) that 1 lb. meat cost as much as 1 loaf of bread during this period too, then c.312 1 lb. meat would have cost approximately 40d. This is very close to both the Jerushalmi's price and that of P. Rylands which we have seen above was 50d. per lb. meat.

(2) In Tanhuma Balak 24 (ed. Buber p.145) a text that may be dated c.303/4<sup>1</sup>, we read of a pound of kosher meat (probably beef) costing 8 maneh while the same amount of pork costs 10 maneh. According to the Edict of Diocletian of only two years earlier (301) one Italian pound of beef costs 8d. and of pork 12d. (IV, 1A and 2). Here again the equation of maneh and denarius seems to suggest itself.

(3) In Ecclesiastes Rabba 5.10, a text of c.290-320, the price of a cucumber is given as one to two maneh. According to the Edict of Diocletian (VI, 28 and 29) a cucumber costs  $\frac{1}{5}$  to  $\frac{2}{5}$ d. Here it seems more reasonable to translate maneh as 1d. than as 100d.

(4) Likewise in Esther Rabba 2.3 (to chap. 1, verse 4), not a clearly datable text, we read of endives costing  $\frac{1}{2}$  to 1 maneh each, while the Edict of Diocletian (VI, 3 and 4) gives the price as  $\frac{2}{5}$  to 1d. each

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1. The dating of this text is discussed in detail in my article in Talpiot, a modification of what I wrote in Archiv Orientalni 34 (1966), p.63. The sum of 99 maneh, as judges wages, recorded in B. Ketubot 105A, is problematic. If this text belongs to the inflationary period, then it may be recording a daily wage. See note above in price-lists, section on wages. X



Thus far our examples for the usage of maneh as denarius have been taken from IV cent (or very late III cent) texts.<sup>1</sup> The following example, however, furnishes evidence that this usage was already present in the early III cent. For in J. Megila 4.1, 74D 58-61, we read that R. Hiyya Rabba said that with only two manii (= maneh - a very small sum), he could buy enough flax-reed to plant grow and produce quite a number of ropes (enough with which to make nets and catch deer). During R. Hiyya Rabba's period (early part of III cent.) 200d (the only other possible meaning for 2 manii) was a considerable sum of money, so much so that one who possessed that much was legally regarded as not a poor person and therefore had no rights upon the poor man's gifts (M. Pe'a 8.8). Furthermore, in J. Baba Mezia 5.10, 10c. 68-70 we read of 40 kor (1 kor: 30 se'ah) of flax costing 40 aurei ("dinars" in the text, see below). As R. Kahana and Rav are mentioned in the context, this text must be dated from between 219 and 247. A Kor = 30 se'ah; thus c.219/47<sup>2</sup>, 1 se'ah flax: less than 1-2d. (During this period there were between 25 and 50d. to the aureus).<sup>3</sup>

For two denarii one could apparently buy a goodly amount of flax-

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1. On the J. Berachot text, see now S. Goren's edition of Jerushalmi Berachot, called Hayerushalmi Hamephurash etc. (Jerusalem 1961), p.89. His reference there to J. Sanhedrin 7.2 seems to be a very misguided one. See commentators ad loc.
  2. I have discussed the dating of this text in greater detail in Talpiot. It seems likely that this is a Babylonian text. See also Bacher's remarks in Aggadot ha-Tanna'im, 2/2, pp.181-2, note 6.
  3. See for example Bolin, State and Currency etc., chap. 11, especially p.281, basing himself on a Nubian inscription C.I.G. 5008 (ed. J. Franzius, 3, 1953, p.468, et seq). See also Zeitschrift fur Numismatik, vol. 15 (1887), p.325 (Wilcken), and Kubitschek, Quinquennium, p.325. See also below, Currency Terminology II.

reed, certainly enough with which to produce several ropes. It seems likely then that two manii here are two denarii.<sup>1</sup>

At the same time (or later?) as the maneh came to mean denarius, the unqualified dinar (which had formerly meant silver denarius, as opposed to the explicitly qualified dinar zahav-gold dinar, meaning aureus), in a like manner, came to mean aureus. We have already noted one example of this in J. Baba Mezia 5.10. We shall now cite a further three examples.

In J. Ma'aser Sheni 4.1 we read that "a dinar here (Tiberias?) is worth 2000 and in Arbael (not far from Tiberias) 2000 and a leken ... etc."<sup>2</sup> The leken appears to be a small silver coin of unknown value, the word deriving from the Greek λευκόν, meaning white, and it has therefore been suggested that it is equal to the asper (Greek ἄσπρος,

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1. I am still not wholly satisfied with this interpretation. What is clear from the context is that 2 manii was considerably less than the cost of the whole of the Holy Scriptures (see *ibid*). We do however not know the price of books at that time. (B. Gittin 35A is undated and ambiguous - cited in *Palestine Miscellanea*). For that matter neither do we know the price of nets. If it could be shown here that a complete Bible cost much more than 200d., then maneh here might mean "100d." If it could be shown to have cost less than 200d. then maneh must be a small coin, most likely a denarius. (Cf. B. Baba Mezia 115A). See also below.
  2. I have pointed out some of the difficulties in this very complex text in my article in *Archiv Orientalni*, Appendix. See also S. Lieberman, *Tosefta kifshutah*, Zera'im Vol. 2, p.752 (to T.Ma'aser Sheni 3.8). For further discussion see below, *Gold and Silver Standards II*.



meaning the same) a coin that makes its appearance in the Mishna.<sup>1</sup>  
 (But see below). The meaning of the passage is that the dinar, here clearly an aureus, is worth 2000 [denarii] "here", and a little more in Arbael. PSI 310 describes an identical situation in Egypt for the year 307 by also giving us the equation of 1 aureus = 2000 d. It is interesting to note that the debased denarii are here left unnamed. But what is of yet greater interest is that the exchange-rate of the aureus varied (if only slightly) from one place to another. Perhaps gold coins were worth more in the villages (Arbael)<sup>2</sup> than the towns ("here" - Tiberias?), because they were rarer in the villages. Gold coins were obviously more useful than silver ones at such a time of progressive inflation<sup>3</sup>, and the villagers would be willing to pay a little more to get them.

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1. M. Eduyot 1.10. See further Zuckerman, Talmudische Münzen und Gewichte, (Breslau 1862) pp. 30-1, V. Krauss, Lehnwörter, II, p. 319. Jastrow S.V. לפן, p.719B, who identifies leken with Lepton(?). See also J. Baba Mezia 9c36. I have suggested in my article in the Jewish Quarterly Review that the asper was 1/5d. (smaller than a sestertius but larger than an obol). Note also that in J. Baba Mezia ibid. it is smaller than a carat which is 1/4d. But see below for a fuller discussion of this term. From there it will be seen that the leukon and the asper were not identical in value, and belong to totally different periods. On the other hand, in their relationship to the aureus they are not altogether dissimilar, and the leukon may possibly be a derivative (linguistically and metrologically) of the asper.
  2. This has been understood to be the Arbel between Tiberias and Sepphoris (see Jastrow, Dict. SV. ארבל, p.114A) - the view of Hirschensohn, in Sheva Chochmoth, (London 1912), p.43 SV. The whole matter still requires further clarification. See below for a more detailed discussion of the complete text.
  3. It was sometimes stipulated that debts contracted in denarii had to be paid up in aurei, see J. Ketubot 11.2 (34B42).

In J. Baba Batra 8.4 we read that 100 small "garbin" of wine(?) cost 10 dinars, and the same number of large ones cost 20 dinars. From a comparison with J. Baba Mezia 4.2 we may further learn that the so-called "small garbin" were in fact the standard size ones.<sup>1</sup> The large garbin were presumably double the standard size. Gerev (plural garbin) means bottle,<sup>2</sup> and thus we see that 1 standard bottle of wine(?) cost 1/10 dinar. As both R. Jeremiah and R. Zeira [I] figure in the text, it may be dated around the last quarter of the III cent.

There were many kinds of garbin of varying sizes, as may be gathered from the above and from many other Talmudic passages (e.g. M. Terumot 10.8). But in each case the gerev must have corresponded, if only approximately, to some kind of recognised measure. The minimum possible size we could attribute to the gerev would be that of a xestes, or pint. Yet according to the Edict of Diocletian of 301, ordinary wine costs as much as 10d. per Italian pint.<sup>3</sup> And looking back to the beginning of the III cent. we have an inscription from Zarai, from which it is computed that 1 amphora:10d; hence 1 sextarius (= 1/48 amphora):1/5d. It is hardly conceivable that over half a century later a gerev (a sextarius only at the absolute minimum) should

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1. Stated in the name of R. Jose, whom we know transmitted traditions of R. Jeremiah, and also followed his opinions (e.g. J. Hala 1.1). He may then here be transmitting the view of R. Jeremiah, similar to that of J. Baba Batra 8.4.
  2. Jastrow, Dict. S.V. גרבן I-III, pp. 263B-269A.
  3. The gerev was used for containing wine. See Y. Brand, Klei Baheres Besifrut Hatulmud (Jerusalem 1953), p.95. X



have cost as little as 1/10 denarius. Clearly then dinar here means gold dinar-aureus.<sup>1</sup>

We may now state that sometime during the last quarter of the III cent. 1 (ordinary) gerev of wine(?): 1/10 aureus. We have already stated that the gerev must have corresponded to some kind of recognised measure, and we should like here to suggest that in this case the measure was a chous, a liquid measure well-known in Palestine, and mentioned for example by Josephus, (Ant. 3.8.3).<sup>2</sup> If this suggestion be accepted than 1 xest (= 1/6 chous) wine (?): 1/60 aureus. In terms of Diocletian's Edict this means then 1 xest wine: 13 1/3, a very reasonable estimate.<sup>3</sup>

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1. C.I.L. VIII, 4508; Journal of Roman Studies, vol. 4 (1914), pp. 143-6; Economic Survey etc., vol. 4, pp. 80-2. See also Richard Duncan-Jones, in Papers of the British School at Rome, vol. 30, New Series, Vol. 27, pp. 74-5, who reckons that these computations are somewhat too high.
  2. This term does not appear in Rabbinic literature, yet its absence is no indication that the measure was not used. Thus the sester-tius is not mentioned either, yet sestertii were certainly known. The chous would probably be reckoned in terms of local measures - logs. It may of course be that gerev here = kav (= 4 log = 4 xestes). In that case each log (= xestes) would cost approximately 1/40 aureus. In terms of Ed. Diocl. (800d. = 1 aureus), 1 xestes: 20d. This seems rather unlikely but not impossible. It only strengthens our following argument. See also Econ. Survey, ibid, p.185. I do not know how Heichelheim reached these conclusions. Epiphanius (Syriac version, ed. J.E. Dean, p.6 note 383) erroneously equates (philologically) the chous with the kuza. (See Jastrow, Dict., p.618A SV 113). Cf. Brockelmann, Lexicon Syriacum<sup>2</sup>, p.320B, SV כֹּז, and Additamenta ad Aruch Completum, ed. S. Krauss, p.219B, SV 113). Similarly the measure of length, pes. gradus, and fathom, though never mentioned in Rabbinic literature were clearly known, as they occur in the forms of "shiyurim" - legal measures - expressed as 4 tefahim (= handbreadths), 10 tefahim, 4 amot (= cubits). The gerev was larger than a "kuz" or "legin" (see J. Mo'ed Katan 2.2, 81b top, and J. Megila 1.6, 70d). See Brand ibid, pp. 92-6, especially p.94 notes 39, 40 and 41.
  3. Reckoned at 1/60 of 800d. (= 1 aureus).



It seems very likely that our Jerushalmi text is from before 301, and thus the Edict's price of 10d. ordinary wine per Italian pint would appear to be a slight reduction on that of our text. We would indeed expect this, going by the prologue to Edict, where it is clearly stated that the whole purpose of the fixing of maximum prices was in order to reduce costs thus baulking the profiteer from extorting exorbitant sums of money for various commodities.<sup>1</sup> In Rome the price may well have been even higher, hence the reduction even greater. In Egypt, however, there is a record of wine costing 4-5d. per chous. (Gr. Pap. II.27, Oasis, late III cent.),<sup>2</sup> that is about a third of the Palestinian price.<sup>3</sup> And though, of course, wine-costs range very considerably (varying as they do from place to place, and subject to seasonal changes),<sup>4</sup> this seems to be consistent with the general trend we have noted above (with regard to wheat and wages), that Egyptian prices are approximately half that of Palestinian ones or, at any rate, considerably lower. It seems likely that the reduction in prices, which was the primary purpose of Diocletian's Edict, was reckoned mainly from a Roman standpoint and according to Roman price-levels, or from that of one of the major centres of the Eastern Empire (Constantinople, Antioch?), which would have been even higher than Palestinian ones.

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1. Ed. Diocl., Graser ed. pp. 311-7.

2. See Byzantine Egypt: Economic Studies, p.178.

3. One cannot be more accurate without knowing the exact date, and the exact ratio of the drachma to the aureus at that date. Hence this is only a very rough estimate.

4. Eg. Compare P.O.1733, 160 dr. per ceramion (=72 xest.) and P. Baden 26, Hermopolis, dated 293, 5 dr. per ceramion. For wine prices from the West, see Szilágyi, in *AAH* XI (1963), pp. 340-2. The price of wine in Pompeii is recorded in *CIL* IV 16679 (1 sext.:1-4 asses).



Perhaps in this way we may also point a way to answering the very puzzling problem first presented by Gunnar Mickwitz. On p.73 of his "Geld und Wirtschaft im römischen Reich des IV Jahr<sup>n</sup>. Chr." he sets out a chart which purports to show that prices shortly before 301 were considerably lower than those of the Edict,<sup>1</sup> whereas from the prologue to the Edict one would expect the exact opposite.<sup>2</sup> But in point of fact all his sources for this period are from Egyptian papyri. On an average these papyrological prices are half as high as those of the Edict. If Roman prices were as much as four times as high as Egyptian ones (as we have suggested above) then the Edict's prices show in every case a reduction of about 50% on Roman prices (or on those of Constantinople),<sup>3</sup> and this would be well in keeping with its avowed aims.<sup>4</sup>

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1. See also Bolin, State and Currency etc., p.323, and his approach to this problem, and see my remarks on his views in JRS LVI, 1966, pp. 194-5.
  2. Citing P. Tebt. 394, P. Fay 333, SB.7181, P.O.1753 and 1920, P. Cairo Masp. 67330 and 67141. It should be noted that in Egypt price variations are particularly great, see above note 4 previous page. On the Pliny price cited *ibid.* see above.
  3. See Segre's remark in Byzantion 16, 1942-3, p.392: "The Edict hastily applied to the provinces under the direct rule of Diocletian..." Cf. Mommsen, Das Edict etc., p.50, and see my own conclusions in JRS LVI, 1966, p.195.
  4. Note also that according to J. Ma'aser Shenit 4.1. Nicolaus dates were cheaper in Palestine than in Rome, - such dates are mentioned in Ed. Diocl. Chap. 6, lines 81-2, Ed. Graser p.336 - and compare Bar Kappara's advice cited in B. Berachot 62B.

In J. Baba Kama 9.4,6D<sup>1</sup>: R. Jona said, "We may learn from this [the previous statement] that a man who gave his friend eight dinars to buy him wheat from Tiberias, and he bought it from Sepphoris, may say to him [the purchasing agent], 'Had you bought it in Tiberias, you would have got 25 modii, but since you bought it in Sepphoris and you got only 20 modii, you must make up the difference...'"<sup>2</sup> R. Jona was one of the foremost Amoraim of the fourth generation, and was still alive in 351, though by then he must have been a very old man indeed.<sup>3</sup> Yet from the period after (and even shortly after) the Edict of Diocletian (301) onwards, the modius could hardly have cost so little as  $\frac{1}{3}$  to  $\frac{2}{5}$ d.<sup>4</sup> Clearly then, dinar here means aureus or solidus, and the price was  $\frac{1}{3}$  -  $\frac{2}{5}$  aureus or solidus per mod. As the text is probably from well in the first half of the IV Cent. the dinar would be a solidus rather than aureus.<sup>5</sup>

However, such a price now presents the difficulty of being far too high. For Ammianus Marcellinus<sup>6</sup> relates that during a famine at Carthage in the reign of Valentinian I, "the proconsul Hymetius sold wheat from the public stocks at 10 modii to the solidus - a very high price but evidently below the famine market rate; he was able to

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1. See J.N. Epstein, *Prolegomena ad Litteras Amoraiticas* (Jerusalem) 1962, p.286.
  2. I.S. Horowitz' interpretation of this text (in *Palestine and the Adjacent Countries* (Vienna 1923), p.289A and note 57, though clever, is undoubtedly incorrect, as he himself suspected (*ibid*).
  3. I have discussed the problems of chronology in my article in *Archiv Orientalni*, *ibid*, pp. 61-2.
  4. According to Ed. Diocl. 1 mod. castr. (= 2 mod. Italian) wheat:10d.
  5. By 324 the solidus had completely taken the place of the aureus, even in the East.
  6. 28.1.18. Loeb ed. vol. 3, pp. 98-9.



replace wheat he had sold next year, buying in the open market at 30 modii to the solidus.<sup>1</sup> Thus in Carthage 10 mod. per solidus was considered a very high price, and  $1/30$  sol. per mod. more reasonable.

Furthermore according to Vita S. Pachomii 33-4 (Patrologia Orientalis 4/5), in the second quarter of the IV cent. during a year of shortage, in Egypt for 1 solidus one could purchase from 16 mod. wheat (at a very high price) to 43 mod. wheat (a more reasonable price). (See below a discussion of this text in the section on Fourth Century prices).

Finally, in his Misopogon<sup>2</sup> Julian tells that when he came to Antioch he found the price of wheat 10 metra per argurion. He decreed that for this same sum of money, i.e. 1 argurion, one should be able to purchase 15 metra. He further adds that one would in fact be lucky to get 5 metra for an argurion, with a severe winter well under way.<sup>3</sup>

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1. See Jones, The Later Roman Empire, vol. 1, p.445.

2. 369 A-D. Loeb ed. Vol. II, pp. 504-7. See Downey's article in Studies in Roman and Social and Economic History in honour of Allan Chester Johnson (1951).

3. In 369D Julian writes (Loeb, ed. p.506): καίτοι τίς μένεται παρ' ὑμῶν εὐθηνουμένης τῆς πόλεως πεντακάδεκα μέτρα σίτον πρᾶθεντα τοῦ χρυσοῦ. If Chrusos here means solidus, then the metron must be of a different sort to that mentioned above, as fifteen of the first kind of metron cost only one argurion. If metra here can mean modius castrensis (as it does in Eusebius, see above), then there is no contradiction between the texts; (see below, when we have shown that 1 mod. castr.:  $1/15$  sol.) Short of actually correcting χρυσοῦ to ἀργυρίου or μέτρα to μωδίου (castrenses), corrections for which there are no manuscript bases, this seems the only possible explanation. See also P. Petit, Libanius et la vie municipale à Antioche au IV siècle après J-C (Paris 1955), p.114, notes 2 and 3, and Rostovtzeff in Pauly' Wissowa RE, SV frumentum VII 147



Now the commonest silver coin of this period and the most likely to be called ἀργύριον (literally - silver) was the siliqua =  $\frac{1}{24}$  solidus.<sup>1</sup> We have seen that 1 mod. castr. produced 24 2-lb. loaves of bread, each loaf being one man's ration for one day. It seems therefore likely that the metron (literally - measure)<sup>2</sup> was the daily ration of wheat per capita,<sup>3</sup> and ten such measures cost  $\frac{1}{24}$  sol. (= siliqua = ἀργύριον), meaning that 10-15 mod. castr. (= 20-30 mod. Ital.) cost 1 solidus. Julian apparently reckoned the dole bread in terms of daily ration per capita.<sup>4</sup>

1. Mattingly, Roman Coins<sup>2</sup> (London 1960) p.220, Byzantion ibid p.265; Cod. Just. 90,32, end; Currency in Roman and Byzantine Egypt, p. 129 etc. On argentius - siliqua, see Centennial Publication of the American Numismatic Society, ed. Harald Ingholt (New York 1958), p. 13. (Howard L. Adelson's article: Currency in Early Byzantine Empire).
2. μετρον, here cannot mean modius. Misopog. B: οὗς ἐπιχωρίον ἔστιν λοιπὸν ὀνομαζέειν μοδίους.  
See Downey (ibid, note 48. On the various meanings of metron, see above Eusebius, metron = modius (castrensis), P.O. 90v. (1 artab = 10 metra). Hultsch ibid, index S.V.
3. We do find other examples of reckoning in loaves (or per capita daily rations). Thus Socrates, Historia Ecclesia II, 13 (Migne P.G. 67,209): ἐξωμίωσε δὲ τὴν πολὺν ἀφελὼν τοῦ σιτηρεσίου τοῦ παρασχεθέντος παρὰ τοῦ παρόντος αὐτοῦ ἡμερεσίου, ὑπὲρ τέσσαρας μυριάδας. while in the Migne ed. note 6, the editor cites Photius' biography of Paul of Constantinople: ἡ δὲ τὸ ὅλον τῆς δωρεᾶς, ἡμερήσιου ἄρτοι μυριάδες ὀκτώ.  
(i.e. that 80,000 loaves, rather than merely unspecified units were daily distributed). But see editor's comments ibid. Cf. Byzantine Egypt: Economic Studies, p.234. See also Testament of Job V.20 (ed. Kohler).
4. The "dole bread" was also called ἄρτοι πολιτικοί: - panes civiles, (Chron. Pasch. p.263, Migne 92, 641B, ibid, p.389, 997A) and was probably reckoned in units of the ἄρτος, as indeed it was served by Julian (Misopog. ibid. B). This is the Rabbinic mode of reckoning too (e.g.. M. Eruvin 8.2 (see above)). Such an interpretation of the metron makes good sense of other sections of this passage.

(footnote cont. p.85)



From all the above it is quite clear that in the second and early third quarters of the IV cent. 1 mod. castr. wheat cost between  $\frac{1}{8}$  and  $\frac{1}{20}$  sol., not  $\frac{1}{3} - \frac{1}{5}$ , and the mod. Italicus  $\frac{1}{16} - \frac{1}{40}$  sol.<sup>1</sup>

However, in the Shita Mekubetzet to Baba Kama 100B, this same Jerushalmi passage is quoted with some slight changes,<sup>1</sup> the significant one for our purposes being: he gave his friend one dinar - not eight dinars.  $\text{וְה}$  (as it is there written) meaning "one" was probably abbreviated to  $\text{ה}$  and then mistakenly taken as " $\text{ה}$  - eight"<sup>2</sup> (the numerical value of the letter  $\text{ה}$  is eight and such is a common way of writing numbers in Hebrew and Aramaic). Copyists of the

4. (cont. from p.84)

Thus Julian states (ibid) that he imported 400,000 metra of wheat into Antioch, but they were not sufficient. He therefore brought in a further 22,000 modii is in itself some indication that the metron is a very much smaller measure than the modius. According to our interpretation he imported an additional 528,000 metra, thus totalling 928,000 metra (excluding unspecified amounts from Egypt). As the population of Antioch at this time is reckoned at some 150,000 this amount would suffice to feed the whole population only a week or so. Clearly Julian wished to cater only for the poorer inhabitants, ( $\text{πνιγόμενοι ὑπὸ τῶν πλουσίων}$  - 368c Loeb ed. p.504). On the population of Antioch, see Econ. Survey Vol. 4, p.158 (references ibid). Also Downey in TAPA 89 (1958) 84-91 "The Size and Population of Antioch", and his "A History of Antioch in Syria" (Princeton 1961), excursus 2, pp. 582-3. On the whole Julian episode, see further Socrates, Hist. Eccles. 313, 2-4; Libanius 1.126; P. de Jonge in Mnemosyne, 4th Series, vol. 1 (1948) pp. 238-45. See also J. Adelson, "Economic Theory and Practice in Antioch, 361-63", INCP, pp. 33-40.

1. See S. Liebermann's The Talmud of Caesarea (Supplement to Tarbiz 1931), p.98, note 60. There the reading is R. Josa (a contemporary of R. Jona) which Liebermann prefers. If this reading is accepted the text is probably from not earlier than the 40s. See Talpiot ibid.
2. The Leiden Ms. has  $\text{דנר ה}$ , an intermediate stage.



Jerushalmi then wrote  $\text{D} \text{D} \text{D} \text{V}$  eight - in full<sup>1</sup>. The new correct reading gives us a price of  $1/20 - 1/24$  sol. per modius (Italicus) and thus compares very well with that of Julian of the 360s; (our price-list must be corrected accordingly).

To sum up, during the III and IV centuries we find maneh meaning denarius, and dinar (unqualified) meaning aureus.<sup>2</sup>

1. There are many similar examples of this kind of scribal-error development. I should here like to cite one example. It is explained by Reuben Margaliot in his Nitsotsei Or (Jerusalem 1965), p.133A, to Kiddushin 76B. In the Talmud there it is related that King David had 400 children, all the sons of captive women. This is not possible, as the law permits one to marry only one captive woman per battle, and David waged no more than 18 battles in all (Leviticus Rabbah 1). However, in 1 Chronicles 3, 6-8, nine of David's sons are enumerated, in a separate category from the six born in Hebron (ibid 6) and the four in Jerusalem (ibid, 5). These nine children whose mother's names are not given (in contradistinction to the others) were explained by the Talmud to be the children of captive women. The original text presumably reads:  $\text{תשעה}$  nine, which was abbreviated to  $\text{ט}$ , and subsequently misinterpreted to stand for 400 (the numerical value of the letter  $\text{ט}$ ). For a parallel development, see Midrash Shir Ha-Shirim, ed. Grünhut, 7B note 8,  $\text{ט} = \text{ט}$  and cf. Yalkut Exodus section 175, in the name of Midrash "Avchir". Finally the scribes wrote out  $\text{ארבע מאות}$  (= 400) in the full. These examples are evidence of a clear tradition and development in the writing of numbers. See also Reuben Margaliot's Mecharim be-Darkei ha-Talmud ve-Hidotav (Jerusalem 1967), a study 10, pp. 51-61 for many other examples of this process. Also compare Lev. Rab. 21.9 (ed. Margulies p.488) and J. Yoma 1.1 (38c) with B. Yoma 9A, etc. On number corruptions, see Baron's remarks in his Social and Religious History of the Jews, vol. 3, p.284, note 48.
2. During this same period however, "maneh" still sometimes meant 100d. and dinar unqualified, 1 silver denarius. See Talpiot, last note, for example. There is thus no hard and fast rule for interpreting these terms, and each case must be examined individually. I still have no satisfactory explanation as to why maneh should have come to mean denarius (a debased one). If we discount the example of J. Megila 4.1 (see above) then this change takes place only in the late III cent. when the denarius was very debased and had very little value. Perhaps the old use of maneh (= λεπτον) meaning a minute coin (minuta, Vulgate, Septuagint, Peshitta to Mark 12.42 = Luke 21.2, but note Peshitta reading in latter) was adopted to describe the almost worthless devalued denarius. The key to the problem still hangs on the interpretation of J. Megila 4.1. Cf. my article in Novum Testamentum 9 (1967) pp. 178-90 on the "maneh" in Mark XII.42.



CURRENCY TERMINOLOGY II

1. ANTONINIANUS

In J. Ketubot 11.2 (34B5), R. Abbahu in the name of R. Johanan in order to illustrate a certain legal point gives the example of a (Jewish) man who borrowed (from a Jewish woman) 12,000<sup>1</sup> on condition that he pay it back within one year in instalments of one gold dinar (= aureus) per month. Now Jewish law does not permit a Jew to take interest on a loan from a fellow-Jew; hence, the sum paid back cannot be more than the one borrowed, nor is it likely to be less. It follows, then, that in this example 12,000 d. = 12 aurei, or 1000 d. = 1 aureus. R. Johanan died 280 (or 289),<sup>2</sup> so that this must be the terminus ante quem for this text.<sup>3</sup> During the period of Diocletian there were 800 d.<sup>4</sup> in a aureus. Yet it is known that from the period of Aurelian's monetary reform (c.272) till that of Diocletian the inflation had increased,<sup>5</sup> so that at Aurelian's reform there must

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1. The Korban Ha'edah (a commentator on the Jerushalmi Talmud) ad. loc. reads 1000/d., but has no manuscript basis for this reading. It is merely a hypothetical correction of his own to make the text more 'plausible'. Likewise Sha'are Torath Eretz Israel, p.397.
  2. On this problem see sources cited in my article in Archiv Orientalni, vol. 31 (1966), p.57, note 11. I accept the earlier date, for reasons stated there.
  3. I have discussed the dating of this text in an article in JRS LVI 1966, entitled "Denarii and Aurei in the time of Diocletian" (pp. 190-5).
  4. I have brought new evidence to prove this in my article in JRS Ibid.
  5. See e.g. R.A.G. Carson's paper, read at the International Numismatic Conference, Israel 1963, entitled "The Inflation of the Third Century and its Monetary Influence in the Near East", published in INCP pp. 231-45. I have drawn upon it frequently in this section.



have been less than 800d. in an aureus. Hence R. Johanan's example is pre-272. During the reigns of Aurelian and Claudius II (c.268-72) the so-called silver coinage seems to have reached its highest point of debasement, and the antoninianus had a silver content of only 2-2.5% (see Table A).<sup>6</sup> It seems likely therefore that this text of R. Johanan is evidence from the relationship of the denarius to the aureus during the years c.268-72. However, at that time there were no denarii actually being struck, only antoniniani. The relationship of antoniniani to aurei must have been expressable in a simple round-numbered equation. Now there has been considerable argument as to the value of

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6. This table is based in part (weights of d. ant. and their fineness) on the table compiled by Carson at the end of his article, INCP. p. 245. d. and ant. weights: Caracalla - Septimius Severus from British Museum Catalogue (= BMC).

Gordian III - Gallienus from L.C. West, Gold and Silver Standards in the Roman Empire (New York 1941).

(Cf. Roman Imperial Coinage [=RIC] vol. V, part 1, pp. 250-1).

Diocletian = G. Mickwitz, Geld und Wirtschaft im römischen Reich etc., pp. 401 (Soc. Scient. Fen. Commentationes Humanarum Litterarum IV. 2, Helsingfors, 1932).

aureus weights: West ibid., and S. Bolin, State and Currency in the Roman Empire (Uppsala 1958) pp. 252-4, 260, 293 etc.

d. and ant. fineness: J. Hammer, "Der Feingehalt der griechischen und römischen Münzen", Zeitschrift für Numismatik, 1908 pp. 1 et seq.

P. Le Gentilhomme, "Le jeu des mutations de l'argent en III<sup>e</sup> siècle," in Métaux et Civilisations I, p.127.

Also Mickwitz ibid (Cf. Bolin ibid, p.211). Also cf. British Museum Catalogue of Coins of the Roman Empire (=BMC), Vol. 6, Carson (London 1962), pp. 16-21.

All weights are given in grammes. See also A. Ravetz, in Archeometry 6, p.50, for some other III cent. analyses.

Caracalla denarius 32% silver; Valerian I, Salus Augg. 17.1%;

Gallienus, Marti Pacifero 4.9%; Aurelian, Oriens Aug 4%;

Probus, Victoria Aug. 3.7%; Diocletian, Iovi Conservatori Augg. 1.3%.

See also Num. Chron. 1965, pp. 175-6, nos. 7-11 (R. Reece).



antoninianus (see below), but the only two suggestions that really deserve to be considered are  $1\frac{1}{2}d = 1 \text{ ant.}$  or  $2d. = 1 \text{ ant.}$  If in 268-72, there were  $1\frac{1}{2}d$  in an ant., the relationship between the ant. and the aureus would have been  $666\frac{2}{3}:1$ . This seems highly unlikely as so complex a number would cause innumerable accounting difficulties etc. If, on the other hand,  $2d. = 1 \text{ ant.}$  then there were 500 ant. in the aureus c.268-72. This seems to be a far more plausible equation.

According to our argument the antoninianus was certainly equal to 2 denarii during the period of Aurelian, and it seems most likely that this was its value right from its first introduction by Caracalla in 215. Its being a double denarius is borne out by the fact that it is a radiate coin - a radiate coin is usually the double of a laureate coin<sup>7</sup> (a denarius). Furthermore, if it were really to have been worth only  $1\frac{1}{2}d$ . and its purpose was to take the place of the old denarius (as has been most recently reaffirmed by Carson),<sup>8</sup> then one can see little point in the introduction of this new piece (or denomination).<sup>9</sup> The denarius could as easily have been re-struck, repriced at  $\frac{1}{36}$  aureus according to Carson's system)<sup>10</sup> or at

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7. BMC *ibid.* p.20, note 5, also BMC, vol. 5, p. XVIII. See also JRS **LI** (1961), C.H.V. Sutherland's article "Denarius and Sestertius in Diocletian's reform", p.95, note 16.

8. *Ibid.*

9. Was a smaller denomination needed at that time of inflation?

10. *Ibid.*

whatever tariff was fixed. However, the introduction of a coin weighing about  $1\frac{1}{2}$ d - his d. weight on an average 3.17, his ant. 5.02 (see Table A) - but valued at 2d. meant that in the ant. the silver was now overpriced by 25%, so that it bore a relationship to gold of about 9.1,<sup>11</sup> while in the denarius the silver-gold ratio was about 12:1.<sup>12</sup> In this way Caracalla would be gaining for himself some 25% silver to play about with.<sup>13</sup>

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1. 25 ant. of 5.02 at 48% fineness = 1 aureus of 6.5. Cf. Bolin *ibid* pp. 267 et seq.
  12. 50 d. of 3.1 at  $\pm$  50% fineness = 1 aureus of 6.5.
  13. The real problem with this interpretation is why (bearing in mind Gresham's law) should the denarii have continued subsequently (after the new silver-gold ratio had been established) to be struck at  $\frac{2}{3}$  the weight of the ant. and not  $\frac{1}{2}$  its weight. Yet Caracalla continued to strike such denarii, so did Macrinus, Elagabalus, Balbinus and Pupienus. Moreover, for the case of Elagabalus, where we have metallic analyses, it appears that both the d. and the ant. were struck at around 40% fineness. Why was the silver content of the d. reduced by 25%? While I cannot really answer this question, I should like to point out that the exact application of Gresham's law to Roman economics is by no means clear and straightforward. Thus the drachm was often heavier than half the weight of a didrachm,  $\frac{1}{3}$  didrachm,  $\frac{1}{4}$  tetradrachm. Eg. Commodus' didrachm: 4.53; his tridrachm: 7.07, (West, *ibid*, p.110). See also below. It may be that the Emperors did not want to change the official silver-gold ratio from 12:1. (For if the price of silver officially went up by 25% they would be gaining relatively little). In order to support the official standard they had therefore to strike some coins at the old weight and fineness, i.e. at the official standard. The denarius was chosen for this for several reasons: (a) not to change a long-established denomination; (b) it was the keystone of the monetary system, hence more exemplar; (c) it was smaller; (d) less denarii were struck. See also C. Oman in *Numismatic Chronicle* (=NC) 1916, pp. 37 et seq. and Bolin *ibid*, chap. XI. On my whole interpretation, cf. however, L.C. West, in *American Numismatic Society Museum Notes* (=ANSMN) VI (1954, pp. 6-9.



In fact, then, Caracalla's ant. was a didrachm, insofar as the denarius was identified with the drachm (except of course, that it was worth only  $\frac{1}{25}$  aureus, not  $\frac{2}{25}$ ). The relative weights of these two sets of coins bear this hypothesis out well. Thus:

Average denarius : 3.17

Average drachm : 3.11

Average ant. : 5.02 (heaviest 5.72). Average didrachm: 5.5<sup>14</sup>

From this it seems most likely that the ant. equalled 2d., and as the d. was originally  $\frac{1}{25}$  aureus,<sup>15</sup> and the ant. apparently came to take its place, Caracalla's new system would appear to be as follows:

20 sestertii = 50 denarii = 25 antoniniani = 1 aureus.

It has already been mentioned above that there have been a number of suggestions as to what exactly Caracalla's system was. These may be set out in tabular form as follows:<sup>16</sup>

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14. His tetradrachms weigh 13.15, giving a dr. of 3.3. Of course, all these are only average weights, and therefore by no means necessarily accurate. Weights are from West, *ibid*.
  15. Dio Cassius 55.12 (see W. Kubitschek, *Rundschau über ein Quinquennium der antiken Numismatik* [1896], p.104). Bolin *ibid*, p.269, note 2). B. Baba Mezia 448, T. Baba Mezia 3.13 (377.5-8). B. Bechorot 50A. See my article in the *Jewish Quarterly Review*, LVI (1966) entitled "Palestinian Currency Systems in the Second Commonwealth", p.275, notes 9 and 10. For the earlier period (Augustus) see Suetonius, *Vita Caesarum*, 8.7; (Bolin *ibid*, p.265, note 2). See also T.V. Buttrey in *JRS* LI (1961), p.41, who cites other sources for the I and II cent. and discusses the whole Dio Cassius text.
  16. A-C are taken from N.C. 1941, p.30; (G.C. Haines, "The Decline and Fall of the Monetary System of Augustus"). D. is Carson's system E. my own. For different opinions as to the value of the ant., see also *RIC*, vol. 5, part 1, p.6.

	A	B	C	D	E
Aureus	1	1	1	1	1
Antoninianus	20	15	25	24	25
Denarius	30	30	37½	36	50
Sestertius	120	120	150	144	200

Now in a recent article Richard Duncan-Jones has set out a long and exhaustive list of dedication prices found on monuments etc., in Roman Africa.<sup>17</sup> These dedications are almost always reckoned in sestertii,<sup>18</sup> but by and large they make up a round number of aurei (in which denomination they were no doubt paid). Thus, out of some 402 sums listed, (dated) before 215, only 27 do not give round numbers of aurei.<sup>19</sup> Of these 11 are undated and some are special cases,<sup>20</sup> while others again are too small to make up round sums of aurei;<sup>21</sup> so that there are in fact only about 15 (some undated) sums out of 402 which do not constitute round sums of aurei, or 4%.

Now in Table B I have set out a list of 12 inscriptions dated c.213-37, recording donations of various kinds and magnitudes.<sup>22</sup>

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17. "Costs, Outlays and Summae Honorariae from Roman Africa". Papers of the British School at Rome, vol. 30 (New Series, vol.17), 1962, pp. 79-108.
  18. On reckoning in sestertii during the III cent. see Sutherland in JRS LI, p.94.
  19. I exclude sums under 100 sest (= 1 aureus), nos. 244, 291-305, 389, 396, 425, 426.
  20. Eg. nos. 83, 139, 420, 424.
  21. Eg. no. 212, 115d; no. 297, 35d; nos. 273-7, 60, 62½, 72d; no. 287, 135d.
  22. Taken from R. Duncan-Jones article *ibid.* The numbering is according to his numbering. See also his article in Papers of the British School at Rome, vol. 33 (N.S. vol. 20) "An epigraphic Survey of Costs in Roman Italy". Nos. 674 and 697, foundations of 50,000 and 8,000 HS from the years 230/40 and 234. See also nos. 1055, 1066, 1151 and 1358, from this period which further bear out our suggestions. I exclude from the discussion reference to the sportulae, (nos. 841, 892, 893); concerning these, see the discussion *ibid.* pp. 210 et seq. and 306.



It is highly improbable that sums such as 104,000 sest (= 26,000 d.) or 82,000 sest. (= 20,500 d.) would be paid up in anything less than aurei. Thus, these sums too should be translatable into round numbers of aurei. Yet according to systems A and B only 33.3% can be translated into such round numbers, according to system C only 25%, and according to system D, 00%. According to our system E 100% sums may be translated into round numbers of aurei. This appears to me to be a very strong argument in favour of the ant. being double-denarius and part of system E. It is further borne out by the evidence frequently cited from Ulpianus<sup>23</sup> who writing c.225 states that a certain fine known from the II cent. lawyer Gaius to be 10,000 sest.<sup>24</sup> is 50 aurei. This too suggests that c.225 there were 200 sest. (= 50d.) in an aureus.<sup>25</sup> Carson calculates that the ant. of 238 (Gordian III) is 1/20 aureus.<sup>26</sup>

Bolin<sup>27</sup> has shown on the basis of two inscriptions from Nubia<sup>28</sup> that during the reign of Philipp the Arab (244-9), the relationship

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23. Digesta, 2.4.24. Corpus Iuris Civilis, I. 1902, p.21.

24. Gaius. Institutionum juris civilis commentarii, I. 46; ed. Huschke, 1886, p.361.

25. See Mickwitz *ibid*, p.37; Heichelheim, *Klio* 26 (1932). p.104; Bolin *ibid*, p.269. But see West *ibid*, pp. 132-3, 136 et seq. Also Buttrey in *JRS* LI, p.41.

26. BMC *ibid*, p.20, note 5.

27. *Ibid*, pp. 278-81.

28. Corpus Inscriptionum Graecarum 5008, 5010, ed. J. Franzus 3, (1953), pp. 468 et seq. For earlier discussions of these inscriptions, see sources cited in Bolin *ibid*, p.278, notes 3 and 4.

of denarius to aureus was 42-45:1. I would suggest 40:1 as being a more workable equation, divisible by 2 (which 45 is not) and thus easily reckoned in antoniniani. Thus Philipp kept the same relationship as had been (re)introduced by Gordian III, (see below).

On the basis of the above information we may now reckon (for those periods for which we know the number of ant. per aureus) the actual ratio of silver to gold (actual though probably not official, see note 13 above).<sup>29</sup> But here it must not be forgotten that the value of the copper in the coin should also be taken into account,<sup>30</sup> reckoned as it was at  $\frac{1}{100}$  the value of silver.<sup>31</sup> The formula for this computation may be expressed as follows:<sup>32</sup>

$$\frac{N(100 PQ + PR)}{10,000Y} : 1 \text{ where: } N = \text{number of ant. in aureus}$$

$F = \text{weight } \frac{33}{100} \text{ of ant.}$   
 $Q = \% \text{ of silver in ant;}$   
 $R = \% \text{ of copper}^{34} \text{ in ant;}$   
 $Y = \text{weight of aureus}^{35}$

29. According to our suggestion in note 13 above, the purpose of continuing to mint limited amounts of denarii was in order to preserve official silver-gold ratio (thereby keeping the price of silver down). Caracalla continued striking d. throughout his reign. Macrinus and Elagabalus struck some at the beginning of their reigns and then no more. The next four Emperors (Severus, Alexander, Maximinus and the Gordiani) struck no ant. Balbinus and Pupienus struck both d. and ant., but were the last to strike denarii (cf. BMC *ibid*, p.103). From Gordian III onward only ant. were struck. Does that mean from Gordian III onwards a new official standard was established?

30. Carson in his computations apparently did not.

31. Bolin *ibid*, p.303, note 6.

32. This is a simplification of the more explicit  $\frac{PQN}{100} + \frac{PRN}{100 \times 100} = Y$

33. These are, of course, only average weights.

34. More accurately the non-silver remainder of the coin, of whatever combination of metals (primarily copper) that be. See, for example, RIC, vol. 5, part 1, p.252.

35. (see next page)



The weights of ant. and aurei and the fineness of the ant. are given in Table A. According to this data, during the reign of Caracalla the actual ratio (in the ant.) was 9:1 (see above). Assuming that there were 50d. to the aureus during the reign of Severus Alexander (222-35)<sup>36</sup> the ratio was 9.2:1 (or 9:1, at an aureus of 6.4  $\underline{= 1/50}$  libra aurei), while Elagabalus' ratios at the same tariff are 7.55:1 for the ant., and 7.07 for the denarius!

Maximinus' ratio at 50 d. per aureus is 11.2:1, or, if the aureus was  $\underline{1/50}$  libra aurei (= 6.4), the ratio would be 10.9:1. If, however, there were in his system only 40 d. per aureus, (as in that of Gordian and Philipp I), then at an aureus of 6.13, the ratio is 9:1 (at an aureus of 6.4, 8.7:1). The latter alternative seems the more likely, namely that already in Maximinus' time the relationship between the denarius and aureus had been changed from 50:1 to 40:1.

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35 (From previous page)

These are again only average weights. The result should be a simple fraction of the libra aurei, (or possibly as a round number of scripula). For the sake of convenience, I have consistently reckoned the libra aurei as 325, whereas, in fact, it is closer to 327.45. The scripulum is  $1/288$  libra = 1.137. (Cf. RIC, vol. 5, part 1, pp. 11-12, note 3). See, however, West in ANSMN I (1945), pp. 59-63, article entitled "Determination of gold standards by use of the carat".

36. Buttrey (IN JRS LI p.45) thinks that Dio Cassius' statement (above note 15) indicates a (theoretical?) relationship of 25 d to the aureus during the reign of Severus Alexander. Whatever the correct interpretation of Caracalla's monetary reform may be, it seems most unlikely that in Severus Alexander's reign the relationship should have been a pre-Caracalla one.

However, this would surely suggest that Balbinus and Pupienus also employed the same system (which continued under Gordian III and Philipp I). But in the case of Balbinus and Pupienus such a relationship yields a silver-gold relationship of 6.6:1, which is, to say the least, highly unlikely. A relationship of 50 d. per aureus, on the other hand, yields the more probable silver-gold ratio of 8.27:1 (at an aureus of 6.4, or 8.3:1 at an aureus of 6.35). Thus we must assume either that Maximinus improved the situation somewhat, or that he changed official tariff, but that the old system was subsequently reverted to, until the time when Gordian III brought back the 40 d. = 1 aureus system (c.238). Gordian's own system yields a ratio of 7.3:1; (or if the aureus was  $\frac{1}{70}$  libra aurei  $\left[ = 4.6 \right]$  then the ratio was 7.7:1). At 40 d. per aureus<sup>37</sup> in the reign of Philip the Arab (244-9), the ratio was 7.5:1 (or 8.2:1 at a fineness of 44% - Mickwitz's date). Thus far, we note a tendency to progressive overvaluation of silver.<sup>38</sup>

There is some (rather ambiguous) evidence suggesting that Trajan Decius altered the relation of the ant. to the aureus to 50 or 60:1

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37. If 40 d. = 1 aureus, and 3000 d. = 1 libra aureus, then  
75 aurei = 1 libra aurei.  $\therefore$  1 aureus weighs 4.33.

38. Note the sudden jump from around 9.1 to around 7.5:1. If Gordian III really recognised a new actual silver-gold ratio, the effect would have been to drive the price of silver up suddenly and sharply. This is what seems to have happened (see above, note 29). Note also West's remark in ANSMN I, (1945), p.62, that with Gordian III there is a complete change in the regulation of standards.



(perhaps even 80:1), giving a silver-gold ratio lying somewhere between 8 and 9:1.<sup>39</sup>

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39. Carson (in *Rev. Num.* 6 serv. vol. VII, p.230) notes that Trajan Decius' ant. are frequently found overstruck on denarii of the period from Septimus Severus to Severus Alexander. (See H. Mattingly, "The Great Dorchester Hoard of 1936", *Num. Chron.* 1939, pp. 41-3). He concludes that the ratio of ant. for Decius was not the same as the earlier ratio of denarii. Thus if 1 aureus = 40 ant. = 80 d. (Philip's equation), there would now be 80 ant. = 160 d. in an aureus. This, however, does, I think, not follow. For the earlier aurei were far heavier, at least one third more. Thus in Philip's time these earlier denarii were probably reckoned at 20 (= ant.) to the aureus of their time, i.e. of 6.5 grammes. Hence there were only about 13.5 to an aureus of Decius weighing 4.5 grammes. If they were then overstruck and declared to be ant. there would be only about 27 of them to the aureus. It is difficult to know exactly what the ratio was meant to be, as the overstriking is on coins of very different weights: Mattingly records overstrikes on coins of Sept. Sev. weighing 2.5 and 3.4 grammes, of Elagabalus of 2.9, 3.2(?) gr., of Sev.Alex of 2.4, 3.1 gr. (two specimens of this latter). (Furthermore they all have different degrees silver content). Thus it may well be that Trajan Decius still kept (or rather reverted to) the ratio, 1 aureus = 50 d., or perhaps he set up a new standard, 1:60. He probably considered the metallic contents of these coins equal in a sufficiently approximate degree to his ant. to permit such overstriking. (His ant. have about 1.62 gr. silver, 40% of 4.05 gra. and those which he overstruck had likewise around 1.5 - 1.4 gr. silver, cf. Mickwitz, *Geld und Wirtschaft*, p.40). Depending on what the silver contents of these coins were meant to be, and what was the precise ratio of ant. to aureus, we get a gold-silver ratio lying somewhere between 8.3:1 and 9:1. Of course, it may be that this was a government ruse to combat the hoarding of these earlier coins, and thus find a relatively cheap way to circulate more currency. People would then have handed in their hoarded denarii, being only too pleased to get back what was at least nominally worth twice as much. Now, though all these overstruck coins must have been officially assigned the same value, in point of fact their metallic values varied considerably, as we indicated above. Hence it is likely that on the market they passed at different rates, and each would be individually valued by the money-exchangers. This may be the meaning of a very difficult passage in the *Jerushalmi*. For in J. Ma'aser Sheni I.2, 52d 10, we read that R. Jacob b. Zavdi in the name of R. Abbahu (flor. c.260-320) said that anyone that had DISGNIM money (variants: DISCNIM, LSGNIM) could substitute (the Second Tithe) by them at their value with the banker or money-exchanger,



Dr. J. Kent points out to me that Gallienus' gold coinage cannot be classed together under one category, (as Bolin apparently has).<sup>39a</sup>

He distinguishes four definite periods:

- 1) Early laurels, weighing around 3 gr. (with radiates of about 5.2 gr.), 261. These derive directly from the joint reign aurei.
- 2) Radiates of around 4.6 gr; going down to 4.1. 261-2.
- 3) Late laurels of around 1.3 gr. (ranging from 2.6 to 8 gr.) 263-6.
- 4) Schufkranz (reed-crowned) type. Around 3.3, 6 gr., in several groups. 266 onwards.

He suggests that the diminution in the size of the aureus was, so to say, in sympathy with the debasement of the ant., in order to keep a fixed and unchanging ratio between them. Thus, if in his early reign, c.261, there were 50 d. (= 25 ant.) to the aureus, with an aureus of 3 gr., and an ant. of 2.8 gr. with 25% fineness, the resultant silver-gold ratio is 6:1. When the ant. dropped to 20% fineness, the aureus dropped in sympathy to 2.6 gr., keeping a ratio of 6:1 (or at 2 gr., 7:1). And when the ant. dropped to 10% fineness, the aureus likewise

39. (cont. from previous page)

(θερμωάριος, Lieberman, Tosefta ki-fshutah, Zera'im I, p.26, II, p.716, notes 25 and 29). DISGNIM is generally taken to be "dusignum" -- Doppelzeichen (see Krauss, Lehnwörter II, p.208b, and bibliography ibid. Jastrow's interpretation of "dextans", in Dict. p.302b, is most unlikely). As "signo" can mean to coin, strike (Lewis & Short, p.1697b s.v.), could dusignum not mean overstruck, double-frappé; (duo signatus. See Krauss Lehnwörter II, p.605a, s.v. referring to Jost III Noten p.183, who suggests duo signa (dopplegeprägt)? R. Abbahu would then be referring to such coins of Decius, or later overstrikes (West ANSMN VII, pp. 117-23), and from his statement, thus interpreted, one could learn that these coins did not have a fixed market-rate, but had to be individually valued.

39a Bolin ibid, p.254, diagram 20, p.260, Table 21, and pp. 259-61, 286-7.



drops to .85 gr., giving a ratio of 7:1 (at 50 d. to the aureus).<sup>40</sup>

Then came the great collapse. Eg.: a 3 gr. ant. at 4% fineness, 250 of which make an aureus (i.e. 500 d. 1 aureus) of 5.4 gr. ( $=\frac{1}{60}$  libra aurei) gives a ratio of 7:1. One thousand 3 gr. ant. at 2% fineness to an aureus of 6.5 ( $=\frac{1}{50}$  libra aurei - Schufkranz type) keeps to our silver-gold ratio of 7:1.

From this time, then (c.266 onwards), no longer was an attempt made to keep a constant relationship between the denominations. No doubt these values were declared by official decree. Thus in Claudius' reign the possibilities are (for an ant. of 2.88 at 2% fineness, and an aureus of 5.4  $=\frac{1}{60}$  libra aurei):

800 d. = 1 aureus. Ratio 6.4:1	(48,000 d. = 1 libra aurei)
850 d. = 1 aureus. Ratio 7 :1	(51,000 d. = 1 libra aurei)
900 d. = 1 aureus. Ratio 7.5:1	(54,000 d. = 1 libra aurei)
1000 d. = 1 aureus. Ratio 8.3:1	(60,000 d. = 1 libra aurei)

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40. The few available analyses seem to bear out this suggestion. Cf. L.C. West in ANSMN VII (New York 1957) pp. 96-101. On p.106 we find the following material:

253-6	Rome	37%	Western	36%
257	Cologne	40%	Western	31%
259	Cologne	20%		
262	Rome		Western	Antioch
		12%	19%	12½%
266		7%	11%	9%
267		2½%	5%	8.7%

Cf. Revue Belge 1951, p.85 et seq. Rev. Numismatique 1945, p.15 et seq., Gallia 1947, p.239.

At some time such as this, post-266, R. Johanan made his statement giving the equation of 1000 d. = 1 aureus. Dr. Kent also points out that hoard analysis bears out this suggestion that the major break comes c.266 and that Claudius and the "Schufkranz" Gallienus aurei are part of a new system.<sup>41</sup>

We now come to the problems posed by Aurelian's coinage.

For Aurelian's pre-reform period, when we have shown that there were 500 ant. to the aureus (c.268-272), if we assume that the aureus was struck at  $\frac{1}{60}$  libra aurei (=  $5.4 \overline{325} \div 60$ ),<sup>42</sup> the ratio would be 7.94:1 (at  $2\frac{1}{2}\%$ ) or 8.18:1 (at  $2.5\%$ ). However, if we assume that the aureus was struck at 65 to the libra aurei (= 5), the ratio (at  $2\frac{1}{2}\%$ ) would be 8.58:1.<sup>43</sup>

According to Diocletian's reformed system (post c.295) the aureus was struck at  $\frac{1}{60}$  libra aurei, and hence had a (theoretical ideal) weight of 5.4.<sup>44</sup> In his time there were 800 d. per aureus.

41. Dr. Kent further drew my attention to the fact that in the Gallic Empire this break seems to have come somewhat earlier so that the aurei of Postumus are all large, while the state of the ant. is more or less the same as in the central empire. Thus, in the West the shifting denarius-aureus relationship was probably established c.260. Note also that it is around this time that the term *καὶνὸν νόμισμα* first begins to appear in Egyptian papyri. See Segrè, *Metrologia*, pp. 433-40 etc.; idem *Chronique d'Égypte* 40 (No. 79, Jan. 1965), p.205, note 4. (Cf. P. Herm. 86 = Wilken *Chrest*, 195 etc.).

42. See above note 35 ad fin.

43. Claudius II's aurei weigh 5.02 on an average.

44. Bolin *ibid*, p.306. In the discussion I reject most of what had been suggested by Hamburger, in *Israel Numismatic Journal* II/3-4 (1964), pp. 21-5.



He struck a coin marked XXI ( or XX.1, or KA, or K.A) weighing 10,<sup>45</sup> with a fineness of 4.18%<sup>46</sup>. It is now generally held that this coin was a 5 d. piece and that XXI (or XX.1 etc.) means that 20 (= XX) sester-tii (=  $\frac{1}{4}$  d.) equals one of these, i.e. equals 5 d.<sup>47</sup>. For the sester-tius as a unit of reckoning can be found as late as 297 (Panegyrici Latini, V(IX) ii.2). Further evidence for this interpretation is to be found on the folles of Antioch (from c.300-1), bearing the notation  $\overline{K/V}$ , which Sutherland convincingly argues means 20 (sestertii)  $\overline{=}$  5 (denarii).<sup>47a</sup> According to this Diocletian's post-reform silver-gold ratio was 14.7:1.<sup>48</sup> Thus part of Diocletian's reform consisted of

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45. Mickwitz *ibid*, p.61. Most recently Sutherland in *RIC*, 6 (1967), p.98; (contra Bolin p.247: 10.52).
46. *Ibid*, p.83. Cf. *Archeometry* 4, 1961, pp. 56-61, especially p.60.
47. This has again been reaffirmed by Sutherland in *Archeometry* 4, 1961, p.59, and in *RIC*, 6 (1967), p.98, note 2. See also Brambach, *Frankf. Münzzeit*, 1920, p.204 et seq. Against this view see Pearce in *JRS* 23 (1933) p.87.
- 47a These two observations are made by Sutherland in *RIC* 6 (1967), p. 98 note 2. The Antioch folles are further treated *ibid* p.602, vii.
48. Cf. Mickwitz *ibid*, p.62. But note that according to Bolin there are post-reform pieces (= 2 d.) of pure copper (Bolin *ibid* p.318). This gives the impossible ratio of 3:1. However, here he is probably mistaken, and the silver-wash in all probability had come off. (See Adelson in *ANSMN* VI, 1954, pp. 111-29, article entitled "Bronze alloys of the late Roman Empire", and further sources cited at the end of this note). The argenteus was struck at 1/96 libra aurei (= 3 scripula, Bolin, p.303, cf. *ibid*, p.295; West, p.186) = 3.4. At the same silver-gold ratio it was probably 1/25 aureus, the old denarius (Bolin, p.303), rather than 23.3 to the aureus, which result the equation yields. According to *PSI* 310 (dated 307), 8328 d. = 1 libra argentei. If at this date 1 libra aurei = 120,000 d., the silver-gold ratio = 14.4:1. *P.O.* 2106 (which is variously dated 293-308 or 317-24) states that 100,000 d. = 1 libra aurei. It would seem that this is pre-307 and post 301, and related to the reduction of the nummus to half its value, sometime post 300. See *P. Oslo* III, 63., *P. Ryl.* IV. 607, *PSI*. 965, Jones in *Econ. Hist. Rev.* vd. 5 (New Series 1958), pp. 317-8, *Segrè Byzantion* in vol. 15, pp. 252-5. (But see our detailed discussion of the whole problem below). See also Sutherland, in *JRS* LI



restoring the silver-gold ratio (actual and official) to a more reasonable balance.<sup>49</sup> This means that now silver was worth only half as much as it had been around c.268-72. Prices in the time of Diocletian should have gone up to at least double what they had been in the preceding few decades, in order to maintain the same price-level. In fact, Mickwitz, basing himself primarily on Egyptian papyrological evidence, has shown that this was indeed the case.<sup>50</sup> However, he thought that this indicated a rise of prices in time of Diocletian, whereas according to the above interpretation they, quite to the contrary, no more than maintain their level(in terms of gold).<sup>51</sup>

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48. (cont. from p.101).

pp. 96-7. Here I follow Mickwitz (above) and P. Strauss (Rev. Numismatique, ser. 5, VIII, 1944-5, pp. 4-5), and Mattingly (Roman Coins, pp. 232-3) in regarding these coins as non-fiduciary. See, however, Adelson, referred to above in this note. See also Sutherland and Harold, in Archeometry 4, 1961, pp. 56-61; A. Ravetz, in Archeometry 6, 1964, p.214, and note 4 ibid; E.S. Hedges and Dudley A. Robins, in Num. Chronicle, 1963, p.237 et seq. The evidence of Sutherland, Ravetz, Adelson etc. (above) makes it completely certain that all folles originally had a surface layer of silver. See most recently Sutherland, RIC, 6 (1967), p.94, who gives the silver content of folles as 4.3 to 3.4%, giving the average of 3.87%. See also Carson in INCP (1967), p.250.

49. Bolin (ibid, p.308, note 1) cites two IV cent. sources that give a ratio of 14.4:1;(Ammianus Marcellinus, 20.4.18; Cod. Theod. 13.2.1 of the year 397). This then was probably Diocletian's standard too. P. Oslo 162 (IV cent.), Cod. Theod. 13.4.27 (422), and Cod. J. 78.1 (VI cent.) give the same ratio. See Currency, p.108.

50. Mickwitz, ibid, p.73. Cf. Bolin ibid, pp. 321-5.

51. Above I have pointed out that Roman prices were naturally far higher than Egyptian ones. Thus, their being in this case the same (i.e. papyrological prices equalling those of Diocletian's Edict of Maximum Prices) in actual fact constitutes a reduction in the Roman price-levels. See also Helen H. Tanzer's The Common People of Pompei (Baltimore 1934) p.94, for a I cent. piece of bread, (Panem libram 1S, "One sest. for 1 lb. bread") and compare our price lists for Palestine and Egypt above. See, however, CIL XI. 6117, (Italian II cent.), 1 d. per mod. wheat. That Diocletian's Edict actually brought prices down is asserted by Szilágyi in AAH XI (1963), p.332, (and note 41 ibid).



We must now return to the problems posed by Aurelian's reform: what was the new system he introduced? Here we may do little more than suggest the various possibilities, and state what seems to us to be the most likely one. If we assume that his reform did not change the silver-gold ratio, then (bearing in mind that his ant. weigh 3.77 and have a fineness of about 4.5%) we arrive at the equation of 300 ant. = 1 aureus (or at a fineness of 4%, 350 ant. = 1 aureus). However, the rather more likely relationship of 250 ant. (= 500) = 1 aureus, gives the very reasonable result of a silver-gold ratio of 7.2:1 (at 4%, or 7.9:1 at 4.5%). The possibilities for Aurelian's reformed system may then be expressed as follows:

- (a) 500 d. = 250 ant. = 1 aureus. 1 libra aurei = 25,000 d.
- (b) 600 d. = 300 ant. = 1 aureus. 1 libra aurei = 30,000 d.<sup>52</sup>
- (c) 700 d. = 350 ant. = 1 aureus. 1 libra aurei = 35,000 d.<sup>52</sup>

In CIL 1489<sup>53</sup> there is a dedication dated 276-82 of 28,000 HS = 7000 d. This makes 10 aurei, at 7000 d. to the aureus, or 14 aurei at 500 d. per aureus. But it does not make up a round number of aurei (11.6) at 600 d. per aureus, and this fact argues perhaps against system (b). Of the remaining two systems (a) seems to be a little more likely, as it would make it very easy for people to reckon the old currency in terms of the new (see below).<sup>54</sup>

52. For Sutherland's view that Aurelian's XXI coins are worth 55 d. see JRS LI p.95. See also Mattingly, in *Numismatic Chronicle*, 1927, p.221 (cited in JRS *ibid*, note 25). This argument assumes that the XXI coin was equal to 20 libellae = 2d. See Mattingly, *Roman Coins* (1928) p.130. See also D. Magie, *Roman Rule in Asia Minor* (Princeton) 1950, vol. 2, p.1576 note 47.

53. Richard Duncan-Jones *ibid* (note 15), no. D.403.

54. Note also that Zosimus (1.61.3) says that Aurelian relieved business transactions from confusion by delivering out good money for bad. This too argues for a simple straightforward exchange rate between the 'bad' (pre-reform, I suggest) and 'good' (post-reform) money. Cf. Segrè, *Metrologia*, p.435, note 3, and Percy H. Webb, in *Num. Chron.* 1919, pp. 235-43, and Magie *ibid*.

## 2. FOLLIS

Now A.H.M. Jones in an essay on "The Origin and Early History of the Follis" stated that the follis<sup>1</sup> "is first attested in 308-9<sup>2</sup> but (that it) was probably introduced at an earlier date, somewhere between the great debasement of the antoninianus by Gallienus and the reform of the coinage by Diocletian (c.260-95) when the antoninianus or Aurelian's piece XXI were the only coins in circulation and their value had sunk so low that some higher denomination was essential."<sup>3</sup> Therefore the "follis" was introduced, being a bag or purse containing a certain set sum of money,<sup>4</sup> not in denarii as these were no longer being struck. Around c.301 it contained 25,000 d. or 1000 nummi κατὰ τὸν ἀργυρίον (hereafter: KTA) or 250 d. or κατὰ τὸν δηναρίσιον (hereafter: KTD). Shortly afterwards, the imperial government cut the value of the nummus to 12½d., so that the follis was worth 12,500 d.<sup>5</sup>

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1. JRS LI (1959), pp. 34-8.
  2. Scriptores Historiae Augustae, Elagabalus 22 (Loeb ed. vol. 2, pp. 148-9); CIL V, 1880; 1973 2046, (JRS ibid, p.35, note 4). Add. CIL IX, 4215, 338.
  3. JRS ibid. p.34.
  4. Ibid, pp. 34-5. See Jones in Economic History Review 5 (1953), pp. 317-8. See also P. Ryl. 607, p. Oslo III 83, PSI 965. Epiphanius in Hultsch, Metrologicorum Scriptorum Reliquiae (Leipzig 1866), vol. 1, p.276; Cf. p.144, note 4, and vol. 2, pp. 151-2, also vol. 1, p.269. Also P.A. Boetticher (= Lagarde) Symmicta II (1880), p.197 and I (1877), p.224.
  5. Evidence for these "purses" is found in N. Lewis' article in Numismatic Notes and Monographs no. 79, pp. 17-21. P. Oxy. 1917 (cf. Currency, p.137). CIL V.1880(? cf. CIL VIII 5333), G. Finlay Greece under the Romans (1906), p.127, note 1, who notes that in Turkey people still speak of a purse of 50 piastres. Presumably he is referring to the term كيسه اچه (kèyssé àkcha), (Redhouse, Turkish Dictionary, London, 1880, p.249A sv. purse). See Adelson, in ANSMN VI (1954) pp. 118-9.



Jones' surmise that the follis was introduced prior to 301 is borne out by Talmudic evidence. For in B. Baba Mezia 47B we read:<sup>6</sup>

"Asemon" acquires coined [metal]. What is asemon? Said Rav (d.247): Coins that are presented as tokens at the baths. An objection is raised: The second tithe may not be redeemed by 'asemon', nor by coins that are presented as tokens at the baths; proving that 'asemon' is not [the same as] coins that are presented as tokens at the baths, (M. Ma'aser Sheni 1.2). And should you answer that it is a definition (i.e. 'coins that are presented etc.' is not a separate clause, but a definition of 'asemon'), surely the Tanna (= teacher) does not teach us thus; [for we learned:] The second tithe may be redeemed by 'asemon', this is R. Dosa's view. The Sages maintain: It may not. Yet both agree that it may not be redeemed with coins that are presented as tokens at the baths. (M. Eduyot 3.2). But said R. Johanan (d.280 or 289), what is 'asemon'? אסמון = follisa. Now R. Johanan follows his views [expressed elsewhere]. For R. Johanan said, R. Dosa and R. Ishmael both taught the same thing. R. Dosa: the statement just quoted. And what is R. Ishmael's dictum? - That which has been taught: 'And thou shalt bind up the

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6. See Heichelheim in Economic Survey, Vol. 4, p.215, note 19, and p.223 note 56, Klio XXVI, p.98. He cites as parallels of usage Ulpian and Paulus in Digesta XVI, 3. 29; XL, 7, 3, where follis means a purse filled with a certain number of coins. See also Schrötter, Wörterbuch der Münzkunde (Berlin & Leipzig, 1930), p.199B, SV. follis.

money in thine hand,' (Deut. 14.25); this is to include everything that can be bound up in one's hand - that is R. Ishmael's view. R. Akiva said: It is to include anything that bears a figure, (i.e. a stamped image.  $\sqrt{77\aleph}$  - 'and thou shalt bind up' - is connected with  $\sqrt{77\aleph}$ , 'to form a figure', By contrast then R. Ishmael must refer to metal not stamped with a figure, i.e. unstruck metal: and R. Johanan equates that with R. Dosa's dictum. This agrees with his interpretation of 'asemon' as 'follsa').<sup>7</sup>

That is to say R. Johanan regards 'follsa' as money insofar as it is 'bound up in the hand', despite the fact that it was not stamped (uncoined). In that it is uncoined it is less money-like than coined metal, and could therefore acquire it; (see M. Baba Mezia 4.1). There is no doubt of the identification of 'follsa' with 'follis', as in the Syriac version of Epiphanius' treatise on weights and measures (written in 392) the term 'follsa' appears several times,<sup>8</sup> translating the Greek  $\phi\acute{o}\lambda\lambda\acute{o}\varsigma$ , Latin 'follis', and explained there as meaning a purse etc.

From the context one may see that R. Johanan's statement was made after Rav's death (and obviously before his own - a few years

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7. Cf. Soncino translation, (H. Freedman), London, 1935, p. 281-2, and notes ibid. Cf. also Sifré Deut. 107. Ish-Shalom ed. p. 96A. For correct readings, see Rabbinowicz, *Variae Lectiones in Mishnam et in Talmud Babylonicum* etc., tractate Baba Mezia p.133.

8. Epiphanius on Weights and Measures, ed. James Elmer Dean (Chicago 1935), sect. 53, p.61, fol. 69B (p.109 lines 22- fol. 69 c (p. 110) line 16. Cf. source cited in note 4.



before as he died a very old man); hence it may be dated c.247-79. Add to this the numismatic evidence (Jones' suggestion) and the dates are further narrowed down to c.260-79. According to R. Johanan's statement the "follsa" consisted of a bag (= 'bound up in the hand') of blanks (hence equatable with *ῥοῦνον*) of either bronze or silver - this point is not altogether clear.<sup>9</sup> As it did not consist of actual coins it must have been reckoned by its weight or the number of standard-size pieces in it. As long as the official relationship between silver and gold (and that of bronze to both of them) did not change, the value of the follis would not change, and would so remain unaffected by fluctuations in the value of coins.<sup>10</sup> Its value would only

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9. *ῥοῦνον* can be silver or bronze but never gold. It is most usually silver; see *Currency in Roman and Byzantine Egypt* by L.C. West and S.C. Johnson (Princeton 1944) pp. 119, 139, and Bolin *ibid*, pp. 89-90, note 7. (See also Bosk in JJP, 1, 1946, p.10, referring to P. Thead. 33, 19, 25-6, 33-5. P.O. 1524, 2). Sifré *ibid* (cited above note 7). J. Measer Sheni 1.2 (52c bottom - d top). That asemon can only be of bronze may be seen from the fact that Rav identifies it with the 'tessarae' which are invariably of bronze. Concerning these tessarae, see S. Lieberman, *Tosefta ki-fshutah*, order Zera'im part 2, pp. 715-6 (New York 1955), where he shows that they sometimes had a market-value as coins, and were therefore not considered (by R.Johanan etc.) as asemon. See also Mickwitz in *Numismatic Chronicle* XVII (1937), p.142, note 2, who states that asemon meaning silver is not found before the IV cent. See also the very interesting statement in the Palestinian Byzantine (?) text, *Sefer ha-Ma'asim li-Vnei Eretz Yisrael*, published in *Tarbiz* 1.1 (Oct. 1929), p.95 (fol. 30A), according to which asemon could be either of silver or gold. (On the dating of this text see below). Cf. the very strange LXX to Job 42.11. But cf. Lieberman's remark in *Tosefta ki-fshutah*, Zera'im vol. 2, p.715, note 19. See also Sachs, *Beiträge zur Sprach und Alterthumsforschung* vol. 2 (Berlin 1854), p.80, note 76. See also Lagarde, *Beitraege zur Baktrischen Lexicographie* (Leipzig 1868), pp. 13-4.

10. The existence of such a kind of 'stable currency' other than gold at such a time of progressive inflation must have been invaluable. The introduction of the follis appears to have been part of a currency-reform programme. See below.

be affected by a change in the official silver-gold ratio.

There is, I believe, yet another reference in the Talmud relating to the follis, also from this period. This time, however, it is not the actual "sack" that is being referred to, but the "blanks" contained therein.

In B. Baba Mezia 45B we find the following discussion:<sup>11</sup>

It has been stated: Rav and Levi - one maintains: Coins can effect a barter; the other rules that they cannot. Said R. Papa: what is his reason who maintains that a coin cannot effect a barter? Because his [the recipient's] mind is set upon the legend thereof, and the legend is liable to cancellation, (i.e. the figure which is stamped on the coin, and which gives it its value. Now, when an ordinary object is used as halifin,<sup>12</sup> the recipient accepts its own intrinsic value as symbolical of the whole. But when a man receives a coin, he does not think of the intrinsic value of the metal, but merely of its worth on account of the legend it bears<sup>13</sup>)...

And ibid 46A the discussion continues: [to revert to the original discussion:]

And Ulla said likewise: Coin cannot effect a barter, and R.

Asi said likewise: Coin cannot effect a barter; and Rabba b.b.

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11. This translation is based on that of the Soncino ed. (H. Freedman) with some slight changes. The explanations in brackets are found in the notes of the Soncino ed.
12. Halifin= barter, makes the property pass immediately. On the whole issue, see Isaac Herzog, The Main Institutions of Jewish Law, vol. 1, (London 1936) pp. 171-2, 179-84.
13. (see following page)



Hanah said likewise in R. Johanan's name: Coin cannot effect a barter. R. Aba raised an objection against Ulla: If his carters or labourers demanded [their wages] from a man in the market place, and he said to the money-changer, 'Give me [copper] coins for a dinar, and I will pay them, whilst I return you a dinar-and-a-tressis' worth out of the money which I have at home': then if he has money at home, it is permitted; otherwise, it is not permitted. Now, should you think that coin cannot effect a barter, it is a loan and hence forbidden. (It was assumed that the reason is this: If he has money at home, immediately he takes possession of the coins, the money-exchanger acquires the ownership of the money at home by a process of barter; hence there is no usury, since theoretically the banker does not wait for his money. But this cannot be upheld if he has no money, in which case it is a pure loan upon which the tressis is interest). Thereupon he was silent. Said he (R. Aba) to him (Ulla): Perhaps both [that which is given by the banker and that which is returned] refer to פרוטטות 14

(13) from previous page:

Cf. Rashi ad loc. for a slightly different exposition of the argument, and Herzog ibid, pp. 182-4, especially p.183, for a penetrating analysis of the problem, and criticism of Rashi's explanation. See also other commentaries ad loc., and the Digest of Commentaries compiled by Zacharia b. Judah Aghnati (London 1961) fol. 95B.

These differing explanations do not affect our argument.

14. See Jastrow, Dictionary etc., p.1219B, SV פרוטטות, and Aruch Completum, vol. 6, p.422B, SV. פרוט. Also cf. Raphaelo Rabbino-witz, Variarum Lectiones in Mishnam et Talmud Babylonicum etc., vol. of Baba Mezia, p.129, note 2, for correct reading.

coins of copper that are as yet without an imprint like of silver (Rashi, ad loc.) -<sup>15</sup> so that they rank as produce, and therefore may be acquired by barter.

The terminus ante quem for this discussion is sometime shortly before c.279 when Ulla died.<sup>16</sup> As for R. Aba, he was a Babylonian scholar who came to Palestine c.275.<sup>17</sup> I would suggest, though without any definite proof, that this discussion took place in

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15. The printed text reads: perhaps both refer to "protetot" (which have on them no imprint), but the bracketed words are a later gloss. See Rabinowitz ibid, p.129, note 1.

16. Ulla died in R. Eleazar's lifetime, (B. Ketubot 111A). R. Eleazar died in the same year as did R. Johanan, i.e. 279. See Iggeret R. Scherira Gaon, ed. Benjamin Lewin (Haifa 1921), pp. 84 and 85, and notes ibid. Cf. my remarks in Archiv Orientalni, vol. 54 (1966), p.57, note 11. Ulla died in Babylon, (B. Ketubot 111A, and J. Kila'im 9.3 ad fin).

17. The argument for this is rather complex and has been set out in greater detail elsewhere. Briefly, it is as follows: R. Aba arrived in Palestine some time after his friend R. Zera I had arrived there (also from Babylon). Isaac Halevy, in his Dorot Harischonim vol. 2, page 302 (Berlin & Wien 1923) argues that R. Zera I arrived in Palestine C.280. However, while his reasoning is undoubtedly correct, his reckoning depends in a large measure upon his emendation of the reading in Iggeret R. Scherira Gaon to read that R. Johanan died 289 and not 279, (see above note 16 and Archiv Orientalni ibid.) But as we accept the date 279 as correct, and in no need of emendation - no other readings appear in the Mss. cited by Lewin, ibid, p.79 - we must backdate R. Zera I's arrival to c.270. Thus R. Aba who came a few years later, probably arrived c.275.



Palestine,<sup>18</sup> hence sometime between c.275 and c.279. In it are mentioned unstruck copper disks (coins) which are regarded nonetheless as money in some respects and hence to which the term *מָנָא* (money or coins) can be applied. Surely, here too, we may see a reference to the institution of the follis, probably during the post-Aurelianic period, c.275-9.

Now we know that during Diocletian's post-reform period there were 25,000 d. in a follis, and that then the silver-gold ratio was about 14.7:1 (or more probably 14.4:1 - see above). Thus it was worth  $\frac{1}{2}$  libra aurei. According to one of our suggestions (a) in Aurelian's reformed system there were 500 d. in a libra aurei, and the silver-gold ratio stood at about 7.2:1; that is to say, silver was worth about twice as much in Aurelian's time than it was in Diocletian's time. If we assume for the moment that Aurelian introduced the follis as part of his monetary reform, and that its weight was then the same as in Diocletian's time, the follis would have been worth twice as much as in Diocletian's time, though still 25,000 d. KTA or 250 d. KTD.<sup>19</sup>

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18. Ulla (b. Ishmael) was a Palestinian scholar who moved backward and forward between Palestine and Babylon (see W. Bacher, *Agada der paläst. Amoräer*, pp. 93-7, *Jewish Encyclopaedia*, vol. XII, p.340). R. Aba was certainly acquainted with Ulla in Babylon, and thus there is no proof that this conversation did not take place in Babylon, i.e. pre c.270. See also A. Hyman, *Toldoth Tannaim Ve'Amoraim* (London 1910), p.5A, who suggests that Ulla encouraged R. Aba to immigrate to Palestine.

19. Epiphanius speaks also of a unit of 25 denarii, called a *kod-rantes*, "because it is bound up in a bag ... for they call a bag of silver a kodarion" (*ἡ κωδάριον* - a false etymology, of course). (Epiphanius, *Syriac ed.* Dean, p.59 and note 412). It is tantalising to see this as yet a further unit in this

As according to this same system (a) there were 500 d. in an aureus and 25,000 d. in a libra aurei, the follis would have been KTD exactly equal to half an aureus, and KTA exactly equal to one libra aurei.<sup>20</sup>

It stands to reason that the follis at its introduction must have fitted neatly and simply into the then current monetary system. The above suggestion would appear to satisfy this requirement particularly well. The follis would have served as a kind of 'stable currency'

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"follis-bag" system, a tenth of the follis KTD. See also Boetticher (= Lagarde), *Symmieta* II, p.195.

20. Note also that the gleba, surtax, imposed by Constantine on senators was levied at the rate of 8, 4 or 2 folles, according to the wealth of the tax-payer, (Zosimus 11.19; the figures come from Hesychius, below, but the minimum scale of 2 folles is confirmed by Cod. Theod. 6.2.13). However, Hesychius of Miletus, who wrote under Justinian, about a century after the gleba had been abolished by Marcian, states that the tax was of 8, 4 and 2 lbs. gold, (Hesychius, fr. 5; FGH IV, 154; see A.H. M. Jones in JRS XLIX, (1959), p.35, notes 19 and 20). This leads one to identify the follis with the libra aurei; (See Mommsen, *Histoire de la monnaie romaine* III, [Paris 1873] pp. 162-3; L. Incarnati, *Moneta e Scambio nell' antichita' e nell' atto medioevo* [Rome 1953] pp. 212-3; P. Petit, *Les Senateurs de Constantinople dans l'oeuvre de Libanius*, *L'Ant. Class.* 26, 1957, pp. 247-82). However Jones (JRS *ibid*) followed by Lelia Ruggini (in her basic article, "A proposito del Follis nel IV Sæcolo", *Rendiconti dei Lincei*, XVI [Rome 1961], p.306a and pp. 317-8) demonstrates convincingly (by a comparison with Cod. Theod. 6.2.15 etc.) that Hesychius' statement cannot be correct. Be that as it may, for our purpose it is significant to note that Hesychius (rightly or wrongly, in this particular case), identified the follis with the libra aurei. Presumably, he did so on the basis of some metrological tradition, now lost to us.



other than gold, (the excessive use of which the government would not be keen on encouraging), easily reckonable in terms of aurei and libra aurei. Such an interpretation of the purpose of follis bears out the suggestion that it formed part of a programme of currency reform.<sup>21</sup>

Above we have seen that the 'follsa' was a bag of blank coins, probably silver, but not certainly. There is however further Talmudic evidence of the early IV century to indicate that the term 'follsa' was used for a single stamped copper coin. Thus, in B. Shabbat 65A we read:

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21. This interpretation seems to me to fit all the facts best. Other suggestions are possible, however. (Systems (b) and (c) suggested above for Aurelian's reform system yield no satisfactory results in this context, but) if we apply the same method to Aurelian's pre-reform system of 200 d. = 1 aureus, assuming the silver-gold relationship of 7.94:1 as being twice as high as that of Diocletian, we arrive at a follis of 500 or 50,000. While the former equals  $\frac{1}{2}$  aureus, the latter bears no clear relationship to the libra aurei which was then equal to 60,000 d. (5:6). Throughout I have assumed a fixed relationship between copper and silver and a fluctuating one between silver and gold as the most likely situation. It is however possible that copper had a fixed relationship to gold and fluctuated in its relationship to silver, or that both copper and silver had fluctuating relationships to one another and to gold, based upon who knows what!

See below section on "Gold and Silver Standards".

..... What is a tzinit? A growth caused by the soil. And

why particularly [can one go out on a Sabbath with] a  
'sela' (= tetradrachm) [if one suffers from a tzinit]?

Shall we say anything hard is beneficial thereto? Then

let a shard be prepared for it? Again, if it is on account

of the rust [of silver]<sup>22</sup> (which softens the callus), let

a [silver] be used? But if it is on account of the figure  
(stamped on the coin which may protect the growth) let him

use a 'follsa'?<sup>23</sup> Said Abaye (flor. 334/5-89): This proves

that all [these things] are beneficial for it, (viz: the

hardness, silver-rust, and the figure, and only a coin pos-  
sesses all three).<sup>24</sup>

Thus some time before Abaye, i.e. early in the IV cent., the term

'follsa' was already being used to describe a copper struck coin

22. Here I follow the interpretation of Rashi ad loc. See Jastrow, Dictionary etc. SV שוכתא p.1534A; Kohut, Aruch Completum, S.V. שוכתא vol. 2, p.210 A-B; Levy, S.V. שוכתא, vol. 4, p. 519A. See also Lieberman, Tosefta ki-fshutah, Zera'im, vol. 2, p.715, note 18, and Brockelmann, Lexicon Syriacum, p.778A, SV שוכתא.

23. On the connections between 'sela' and 'follsa' see below.

24. Cf. Soncino translation (H. Freedman), London 1938, p.310. For the correct readings see Rabinovicz, op. cit., tractate Shabbat p.138; also B.M. Lewin, Otzar Ha-Gaonim, vol. 2 (tractate Shabbath, Haifa 1930), p.63.



It was furthermore in some way comparable with the 'sela' (= silver tetradrachm).

Now this connection between the 'follsa' and the 'sela' is surely not fortitious. In Epiphanius' treatise on weights and measures (Syriac versions) we find the following statement:<sup>25</sup>

In accordance with another statement (of the follsa) among the Hebrews the term sela is used; this<sup>26</sup> coin is entirely of silver the weight half an ounce. And the 'sela' is interpreted as 'follis' because of the roundness of the form of the coin. The round scales of reptiles are also called folides (  $\phi\omicron\lambda\iota\delta\epsilon\varsigma$  , singular  $\phi\omicron\lambda\iota\varsigma$  )<sup>27</sup>...It has the name of bag<sup>28</sup> among the Romans but among the Hebrews and Greeks that of snake scales.

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25. Ibid, pp. 62-3, fol. 69d, (p.110). See also Lagarde's ed. 2.14, p.3, lines 37-8.
26. The English translation reads: 'but this coin is entirely of silver', suggesting that the follis is not of silver. But the Syriac does not warrant this 'but'. All that is stated is that: this coin is entirely of silver (lines 27-9). Cf. Lagarde ed. p.56, ll. 20-1).
27. Note that the spelling of the coin follis with a single lamda appears in Byzantine Greek texts. Eg. Hultsch, MSR, vol. 1. p. 306 line 19, p.320 lines 6 and 11 (the latter being from Fragmenta ex Hesychio Excerpta). Cf. Sophocles, vol. 2, p.1149A, SV.  $\phi\omicron\lambda\iota\varsigma$  ; also Preisigke, Wörterbuch der Griechischen Papyruskunden (Berlin 1927), vol. 2, p.700, line 1. This "defective" spelling is even found in some Epiphanius Greek texts, and seems perhaps partly to have led Lagarde (in Symmicta II, p.103) to regard Epiphanius' etymology well-founded. (His argument is based on the Persian pisez). It is interesting to find the same mistaken etymology presupposed in a little-known Midrash published in A.J. Wertheimer's Batei Midrashot (Jerusalem 1954). There (Vol. 1, p.303) we come across a small coin called a  $\sigma\upsilon\phi\omicron\lambda\iota$ . The

This passage is an incredible confusion of mistaken etymologies.  $\chi\sigma\omicron$  (sela) has been transliterated into Greek as  $\sigma\alpha\lambda\alpha$  and then back into Syriac as  $\text{ܣܠܐܐ}$  (Sal'a'a), meaning 'baskets', and hence identifiable in some measure with 'follis' bag. But at this stage it seems to have been realised that a single sela could hardly have made up a basket or bag (of coins), and therefore an etymological jump was made to identify the follis with the singular  $\phi\omicron\lambda\acute{\iota}\varsigma$  <sup>29</sup>, meaning snake-scale.<sup>30</sup> In order to re-establish a connection between the point of departure (sela) and the stage so curiously arrived at ( $\phi\omicron\lambda\acute{\iota}\varsigma$ ), it is stated that the identification of sela with  $\phi\omicron\lambda\acute{\iota}\varsigma$  is due to the 'roundness of form' of both. As all coins are more or less round, this hardly constitutes a distinguishing feature. However, if we read "smoothness of form", meaning the blank

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editor (ibid, p.243) is at a loss to explain this term. And yet it is really very obvious.  $[\text{ܬ}]ܣܩܣܩ$  means a fish-scale, and is thus a translation of  $\phi\omicron\lambda\acute{\iota}\varsigma$ . See my articles in *Le Muséon* LXXX 1967, pp. 267-8, entitled "Numismatic Hapax-Legomena", and in *Leshonenu* 31 (1967), entitled "follis -  $\chi\sigma\omicron\lambda\alpha$  -  $\text{ܣܠܐܐ}$ ", pp. 185-8.

28. Cf. Isid. Etymology XVI, 18.12: Follis dicuntur a sacculo quo conduntur, a continente id quod continentur appellatum.

29. It can only have been derived from the singular, for the plural is  $\phi\omicron\lambda\acute{\iota}\delta\epsilon\varsigma$ . The plural of  $\phi\acute{\omicron}\lambda\acute{\iota}\varsigma$  is of course  $\phi\acute{\omicron}\lambda\lambda\epsilon\iota\varsigma$ . Another possible explanation for the statement of "the Hebrews" is as follows: Sela (a Rabbinic word) in Biblical Hebrew is 'shekel'. In the Targum (= Aramaic translation) to Ezekiel 4.10, the Biblical 'shekel' is translated  $\text{ܫܩܠ}$  - Piles. The word 'shekel' comes from the Hebrew root  $\text{שקל}$  (shakol) - to weigh. The root  $\text{סל}$  (pales) means the same thing. Hence the identification of follis (= files) with sela (= shekel). I have discussed this whole problem in an article in *Leshonenu*, 31 (1967) pp. 183-8.

30. See editor's notes, ibid, nos. 440 and 443.



face of the coin, which is comparable to the smoothness of a snake-scale, the passages make a little more sense.<sup>31</sup>

Despite all this muddle what seems to emerge is the following: that a follis is a single unit (thus comparable with the single sela, and etymologically derived from the singular  $\phi\lambda\gamma$ ) probably of silver<sup>32</sup> (thus comparable with a sela - a silver tetradrachm), probably with a blank face (thus comparable with a snake-scale). We know that there were two kinds of follis-bags, one KTD and one KTA. Presumably the latter consisted of silver blanks and the former of copper ones. Epiphanius' statement seems to suggest that the single units of silver that went to make up the follis-bag KTA were also called folles. Presumably the copper units were likewise called folles (aeris). At a slightly later stage, some time at the beginning of the IV cent. this same term follis was further applied to certain small bronze coins, presumably because they were similar in size to the blank follis-bits.<sup>33</sup>

The philological development of the term follis seems then to have been in three stages: (a) follis, a bag containing a set number of blank metal (copper or silver) pieces (c.272 onwards); (b) follis, the individual blank units, either silver or copper (c.280-300); (c) follis a copper struck coin<sup>34</sup> (c.300 onwards).

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31. Just as the root  $\text{סלל}$  can mean "to smooth" or make even, see Jastrow, *ibid*, p.1041A, SV  $\text{סלל}$ .

32. See above note 26.

33. See source above note 2. In all these cases small single units are meant. Thus in the Script. Hist. Aug.: 'centum aureos et mille argenteos et centum folles aeris', where the folles are expressly

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33. (cont. from previous page)  
stated as being copper; CIL V 1880; "denariorum folles sexcentos",  
where (perhaps) it has to be clearly stated that the follis is a  
coin, or of what denomination it is, etc. Concerning the follis  
as a bag see Studi in Onore di A. Calderini e R. Paribeni, vol. 2,  
p.329, JRS ibid notes 2 and 3.
34. For the identification of this coin see below.



### 3. FOLLARION

However, the issue is further complicated by the fact that there appears in Rabbinic literature yet another monetary term, which is similar in form to "follis" and indeed often confused with it, namely the "follar" or "follarion". This term appears considerably earlier than the earliest mention of the follis. Thus in Canticles Rabbah to Cant. 1.1 (chapt. 1, sec. 9)<sup>1</sup> we read:

R. Pinhas b. Yair opened his exposition with the text "If thou seek her as silver", (Prov. 11.4) If you seek after words of Torah (= the law) as other hidden treasures, the Holy One, blessed be He, will not withhold your reward. If a man loses a sela or a follarion<sup>2</sup> in his house he lights lamp after lamp, wick after wick, till he finds it...

The "follarion" here is of silver ("If thou seek her as silver") and presumably less than a tetradrachm (= sela). It suggests itself that it is either a tridrachm or a didrachm.<sup>3</sup> As R. Pinhas

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1. Cf. Soncino translation (Maurice Simon), London 1939, pp. 10-11.

2. The text reads כִּילְרִין (kilrin) which should be amended to (follarin). See Jastrow, Dict. SV pp. 633A, 146B; Kohut, Aruch Completum SV vol. 4, p.243B, vol. 2, p. 106B, Levy Wörterbuch SV vol. 2, p.343A, vol. 2, p.200B. Follarin = follarion, according to Jastrow and Kohut, to βολάριον according to Levy. See also translator's note ibid, p.11, note 1. See also M. Sachs, Beiträge zur Sprach- und Alterthumsforschung, vol. 2 (Berlin 1852), p.169. See addenda pp. 335.

3. The didrachm was also called "tib'a" (M. Shekalim 2.4), and the tridrachm "ragia" (B. Bechorot 49B). See my article in JQR LVI (1966) entitled: "Palestinian Currency Systems during the Second Commonwealth", p.294.



b. Yair flor. c.170-200, the text must be from this period, when both tridrachms and didrachms were being struck.

The next mention of the follaron is in J. Pe'a 1.1 (15D 57)<sup>4</sup> where we are told that "Our Teacher Rabbi (= Judah the Prince) sent Artabanus a mesuza worth (only) one "follar". Jacob Neusner has shown<sup>5</sup> that the historical background to this story took place c.215/6, the year in which Caracalla introduced his so-called "antoninianus", which we have shown above to have been equal to a didrachm, (except of course that it was worth only  $1/25$  aureus). We do not know when this story or version of events was actually formulated, probably later in the III cent. However, it is likely that the author used terminology related to Caracalla's reign in describing events that supposedly took place at that time, in order to give his account greater apparent historicity. I would therefore suggest that the "follar" here mentioned is Caracalla's new double-denarius, the antoninianus.

It next appears in texts from between 290-350. Thus according to Genesis Rabba 70. 15<sup>6</sup> a man's daily wage was from 6 to 10

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4. Parallels in Genesis Rabba 25.3, ed. Theodore p.333 in the apparatus to line 10; Yalkut to Josh. sect. 31 (ed. Venice 80), Proverbs sect. 934.

5. A History of the Jews in Babylonia, vol. 1 (Leiden 1965) pp. 82-3. The identification of "Our Teacher" with R. Judah the Prince, is not accepted by all (e.g. Kohut in The Aruch Completum, S.V. ארבעין, vol. 1, p.280B); see Neusner ibid p.85. Kohut thinks that "Our Rabbi" = Rav, in which case this episode would be of a slightly later date, but this in no way affects our identification of the "follar" with the antoninianus. (Rav comments on Artabanus' death in B. Avoda Zara 10B). The identification of Artaban (?) in Yalkut Zacharia II, par. 1579 is problematic; see Kohut ibid, and also

Neusner ibid. p.86 note I for a view (Guttman's) that "Artaban" is merely a high official we can no longer identify.

6. Ed. Theodore, p.814. Cf. Lekah Tov. Buber ed. p.147, an anonymous text, but maybe of R. Ammi, flor. c.290-320.



follarin, while in Genesis Rabbi 49.4<sup>8</sup> R. Azaria in the name of R. Judah [b. R. Simeon b. Pazi] (flor. 290-350) tells us that one xestes of wine, one loaf of bread and one pound of meat cost 10 follarin each.<sup>9</sup> Here it is clear that the follarin is a small single coin, and not a silver one. According to Diocletian's Edict of Maximum Prices of 301<sup>10</sup> prices of daily wages fall between about 30d. and 50d. A xestes of wine cost about 50d. c.320-30.<sup>11</sup> Thus it seems likely that 10 follarin equal 50d., and that a follar was a five-denarius piece. As we have suggested above that earlier in the III cent. the follar denoted the antoninianus, it would appear that the five-denarius piece of the early IV cent was evolved out of the antoninianus. This is in fact borne out by numismatic evidence, for Diocletian's XXI coin (= 5 denarii) appears to have developed out of Aurelian's antoninianus (= 2 d.) which bore the same XXI mark.<sup>12</sup>

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8. Ed. Theodore, p.503, line 3.

9. For a discussion of these prices see above in the section on price-relationships.

10. Chap. 7, lines 37-42.

11. See my article in JRS, p.192, note 31, which should be corrected in the light of what I have shown below in the section on "nummus". Cf. P. Rylands 629, line 41 (c.317-23), a xest. wine in Antioch 75 d. See also my remarks in Talpiot.

12. Bolin, State and Currency etc., p.291. See however JRS LI, pp. 95-7 for Sutherland's view that Aurelian's XXI coin equalled 5 d. Against this see L.C. West in ANSMN VII (1957), pp. 112-3, who points out that there is a mark of value 1A, which would seem to anticipate the XXI mark of value. He suggests that this is 1 d. (10=1), in which case the XXI coin equals 2 d. (20=1). The argument is persuasive if not conclusive, especially in view of the apparently resultant AE: AR ratio (ibid, p.113) and other marks of value there cited.



In the previous section we saw that the follis in the beginning of the IV cent. denoted a small copper coin, and that in Epiphanius it is linked up with the sela. I would suggest that follis in these cases also means antoninianus, having been confused with follar. Indeed the follis of the early IV cent. inscriptions is usually taken to be a 5 d. piece.<sup>13</sup> A possible philological explanation for the identification of these two terms is that in Greek there is a word *φάλαρον*, meaning disk or boss,<sup>14</sup> which is almost exactly the same as follis in its second stage (of a single blank, see above).<sup>15</sup> The term follarion does not appear in Greek and Latin literature until a century or two later, but then too it appears to be equated with the follis.<sup>16</sup>

A complete discussion of the etymological problems concerning these two terms, their philological relationship to one another

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13. Eg. Mickwitz, Geld und Wirtschaft etc. p.87. Bolin, op. cit. p.302, note 3.
14. Liddell & Scott<sup>2</sup> 1914A. Latin: Lewis and Short 1367B, SV phalerae.
15. Cf. Jastrow, Dict. SV *φάλαρον* p.1142A; 'circular plate...' or... 'disks'. Another possible connection between sela and follis (= antoninianus) is as follows. When the antoninianus as a double-denarius took the place of the denarius as 1/25 aureus, the sela (= tetradrachm) must have been reduced in value to 2 d. (= didrachm). May be it also was confusedly called a follar, which we have seen equalled a didrachm, in one sense at least. When follis and follar were confused, the follis was identifiable with the sela.
16. A Souter, A Glossary of Later Latin (Oxford 1949), p.151A SV *follaris*, (where he also states that a follis - SV follis - is a copper coin worth 2 d. /from about 320/). Marcell. Chron. 2, p.45, 498.3. Sophocles 1149, SV *φάλαρον* = Joann. Mosch. 2913C, 2941C, 2976A. Leont. Cypr. 1709. 1736C. Mal. 400.20.



etc. would go beyond the scope of this study. However, already at this stage some general conclusions may be drawn.

(a) That follarion is derived from follis cannot be correct,<sup>17</sup> as follarion is attested earlier than follis. If the classical etymology of follis - from the Latin follis = bellows - bag - purse etc. - is correct<sup>18</sup> - and it seems to be backed up by very early Talmudic evidence - the follarion must have quite an independent etymological source.

(b) Alan Cameron<sup>19</sup> has cited an Egyptian Greek text of 391 (Anth. Pal. IX 528), which reads: 'Those who inhabit the halls of Olympus have turned Christian and dwell there unharmed; for not even them will the melting pot which provides the life-giving follis put in the fire'. From this he concludes that 'there cannot be the slightest doubt that it (the follis) means the sort of coin that could be struck from the bronze obtained from melting down of bronze statues'.

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17. Kohut, Aruch Completum, vol. 6, p.353B, Levy. Wörterbuch, vol. 4 p.14A.

18. See Liddell & Scott<sup>2</sup> SV φῶλλος, Lewis & Short SV. follis. Sources cited in section on follis, note 4. Add: Hultsch op. cit., vol. 1. p.320, lines 6 and 11 (from Fragmenta ex Hesychio Excerpta). See also my article entitled 'Numismatic Hapax-Legomena', Le Muséon LXXX, 1967, p.268.

19. Numismatic Chronicle, 1964 (7th series, vol. 4). p.135.

This however can hardly explain the meaning of the term follis in these early Talmudic texts, which are from long before Christians began melting down Roman pagan statues etc.

(3) Payne-Smith in his Syriac Dictionary<sup>20</sup> states that the Syriac ܟܠܕܐ is derived from ὀβολός via the Arabic. This again can hardly be correct as we have found it in at least one pre-Islamic text<sup>21</sup> (Epiphanius - even the MSS are very early, the earliest being c.648-59) and in III and IV cent. Talmudic texts. All that may be said with certainty is that in a later period the follis was identified with the ὀβολός<sup>22</sup> - perhaps mistakenly.

It would appear that originally these were two completely separate terms which at some early stage, perhaps around the beginning of the IV cent. were identified and confused with one another.<sup>23</sup>

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20. p.437B SV (Cf. Brockelmann, Lexicon Syriacum<sup>2</sup> (1928), p.575A SV. See also Sachs, Beiträge zur Sprach- und Alterthumsforshung, vol. 2 (Berlin 1852), p.149, note 1.)

21. There are others, e.g. Hnana d'Adiabene, in Patrologia Orientalis, vol. 7, p.62, line 8, of 540-2 ܟܬܐܬܐ ܟܠܕܐ ܟܠܕܐ ܟܠܕܐ of an obol or a follis or a dinar. Here clearly a follis is not the same as an obol. See also sources cited in Brockelmann, Lexicon Syriacum<sup>2</sup> SV ܟܠܕܐ p.575A.

22. Eg. K. (= Lex. Georgii Karmsedinoyo Maronitae) in Payne-Smith's Thesaurus Syriacus, 1191: ܟܠܕܐ ܟܠܕܐ ܟܠܕܐ ܟܠܕܐ ܟܠܕܐ - it is [the same/a] lumma, follsa, lepton, ma'ah (= obol). See my article entitled: 'Mark 12.42, and its Metrological Background', in Novum Testamentum 9 (1967) pp. 178-90. Cf. Also Procopius Anecdota 25, where the follis and the obol are equated.

23. For possible etymologies see Dictionaries, Jastrow, Kohut, Levy, (see above notes 2, 15, 17 and section 2 note 22). See also my article in 'Leshonenu' 1967, pp. 183-5, and my remarks in Le Muséon, LXXX 1967, pp. 267-8. For later philophological developments, see also S. Fraenkel, Die Aramäischen Fremdwörter im Arabischen (Leiden 1886), p.192.



SUMMARY

Let us summarise the conclusions (at least tentatively reached) at this stage: In the first section I have tried to demonstrate that the antoninianus was a double-denarius, and to show the part it played in the III cent. monetary system. I also tried to reckon the relative values of silver and gold throughout this century. Here I set out what appears to me to be the most probable pattern of these ratios:

Caracalla	9:1
Elagabalus	7.5:1
Severus Alexander	9.2:1
Maximinus	11:1 or 9:1
Balbinus & Pupienus	8.3:1
Gordian III	7.7:1
Philipp I	7.5:1
Trajan Decius	8.3 or 9:1
Aurelian, pre-reform	8 or 8.5:1
Aurelian, post-reform	7.2:1
Diocletian, post-reform	14.4:1

The period between Aurelian and Diocletian remains highly problematic, but provisionally (and in the absence of further analysed material) I would suggest that Aurelian's post-reform ratio remained the official one until the time of Diocletian's reform, when silver was reduced to half its former value (in terms of gold). This reduction had considerable effects upon prices reckoned in terms of silver coins, etc.

In Section Two I have tried to show that the follis was introduced as a bag of blanks as part of Aurelian's reform. Its value was fixed (by weight and/or tally) at half an aureus (KTD) or one libra aurei (KTA). Later this same term came to denote a single one of these blanks and later still (early IV cent) was identified with a coin, a five-denarius piece. It may be that this final stage was brought about a confusion of the term follis with another similar earlier term 'follar' (section three) which originally had meant a didrachm or antoninianus.



Date	Emperor	Weight of Denarius	Weight of Antonin.	Fineness of d. in %	Fineness of ant. in %	Weight of Aureus
215-17	Caracalla	3.10	5.02	+ 50	48	6.5
219-22	Elagabalus	2.98	5.31	+40	40	7.14
222-35	Severus Alex.	2.48	-	41	-	6.16 or 6.39
235-38	Maximinus	3.06	-	45	-	6.13
238	Gordiani	3.16	-	-	-	6.35
238	(Balbinus & Pupienus)	3.09	-	-	44	5.75
238-44	Gordian III	-	4.38	-	40	4.86
244-9	Philipp I	-	4.16	-	40	4.5
249-51	Trajan Decius	-	4.05	-	38	4.3
253-60	Valerian	-	3.67	-	)	3
253-66	Gallienus (joint)	-	3.37	-	)25-13)	3.62
266	Gallienus (sole)	-	2.81	-	1	4.5
268-70	Claudius II	-	2.88	-	2	5.4
270-72	Aurelian (pre reform)	-	2.81	-	-	5.4
272-5	Aurelian (post reform)	-	3.77	-	4-4.5	6.5
295	Diocletian (post reform)	-	4	-	4.18	5.4

TABLE A (see Section I, note 6)

at 50 d. per aureus.

<u>No.</u>	<u>Sum in Sestertii</u>	<u>Date</u>	<u>Source</u>	<u>Sum in Denarii</u>
102	1,200	213-17	1 LAlg II i 570	6
373	2,200	After 217	C.19122	11
94	30,000	217-22?	1 LAlg II i 10	150
325	82,000	217-22	1 LAlg II i 10	410
393	400	After 217	1 LAlg II v 186	2
400	60,000 and 30,000	225-35	c.2645B	(300 (150
221	12,000	222-37	c.2764	60
74	4,000	225	1 LAlg II i 37	20
58	12,000	225	c.15497	60
30	104,000	226-8	AE, 1908, 244-5	520
378	10,000	230-1	IRT 43	50
265	10,000	post 230	c.26275	50

KEY:

AE

Année Epigraphic

Corpus Inscriptionum Latinarum, vol. VIII

c.

1 LAlg II

S. Gael & H.G. Pflaum, Inscriptions latines de l'Algerie, 1957

1 Laf

R. Cagnat, A. Merlin, L. Chatelain, Inscriptions latines d'Afrique, 1923

IRT

J.M. Reynolds & J.B. Ward Perkins, Inscriptions of Roman Tripolitania, 1952.

TABLE B (see section I, note 22).



A Note on the Scriptores Historiae Augustae

Elagabalus XXIV 3, Loeb ed., vol. 2, p.152, (= Hohl ed. [Leipzig 1966] I.240) note: 100,000 sestertii - 30 silver pounds.

Mommsen in *Ges. Schr.* VII, p.316, states that the sest. here is confused with the debased denarii of Diocletian. 800 d. = 1 aureus, in the system of Diocletian, and there are 60 aurei to the libra aurei. Thus there were 48,000 d. to the libra aurei. The relationship between silver and gold during this period was 14.4:1. Therefore 30 lbs. silver =  $\frac{48,000}{14.4} \times 30 = 99,990$ . This result is very close to

the *Scr. Hist. Augustae's* 100,000 sest (= denarii), and constitutes independent, if oblique, evidence in support of our metrological arguments, outlined above.

Severus Alexander XXII 8, Loeb ed. 2, p.220 (= Hohl ed. I. 268) note 1: price of 1 lb. beef and pork is 8 minituli. Mommsen (*Röm. Münzwezen* p.783) equates the minitulus with the debased denarius. According to the Edict of Diocletian (IV 1a-2), 1 lb. pork costs 12 d. and 1 lb. beef 8 d. But in Aurelian IX 7, Loeb ed. 3, p.211, (= Hohl ed. II, 156) notes 1 and 2, we read: *argenteos Philippeos minitulos ... aeris denarios ...* Thus "aeris denarius" = denarius; (in Diocletian's time some of the so-called "silver" coins had almost no noticeable silver content). Thus minitulus arg. probably refers to the antoninianus (= 2 d.). Hence the price of beef and pork was 16 d., and therefore above the maximum price. It was subsequently reduced to 2 or 3 minitulus per pound, (= 4 or 2d.), (see Severus Alex, *ibid*).

For the latest discussion of the S H A, see *Studies in Historiography*, by A.D. Momigliano (London 1966), pp. 143-81, and most especially p.168-9, note 6, and bibliography *ibid*. (Peter White's most recent article in *JRS*, 57, 1967, pp. 115-33, on "The Authorship of the *Historia Augusta*" does not touch upon these problems).

CURRENCY TERMINOLOGY II Cont.

4. LUMMA-NUMMUS

Now in B. Avoda Zera 35B<sup>1</sup> we find the following episode:

Once a shipload of muries reached the port of Akko and R. Aba of Akko placed a guard by it, (to watch it, lest wine be mixed in with the brine).<sup>2</sup> Said (Rava ( X17 ) to him: "And who watched the ship till now?" "Till now", he replied, what cause for suspicion? As to mixing the brine with wine, a xestes of muries costs a lumma (in the place <sup>from</sup> where the cargo came), while a xestes of wine cost four lumma." Said R. Jeremiah to R. Zera: "Might they (the ship) not have come by way of Tyre where wine is cheap?"

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1. Cf. Ms. of the Jewish Theological Seminary (New York). "Tractate 'Avoda Zarah", ed. and annotated by Shraga Abramson, (New York 1957), [= MS JTS], fol. 30A line 24 et seq.: R. Zera said to him: "Till now what need one suspect? The mixing in of wine? A xest. of muries costs 1 lumma, a xest. of wine 4 lummas. And perhaps they came by way of Tyre, where wine is plentiful, and there they mixed it in. That could not be, for there there are narrow bays and shallow waters". This is a slightly telescoped version of our text. The printed edition's text seems to be the more accurate, (especially in view of B. Hulin 57A).
  2. Wine was cheaper than muries in Palestine, hence the danger of admixture. (Rashi ad loc.). Wine was usually mixed in with muries for different purposes (see below). See S. Lieberman, Tosefta ki-fshutah, Zera'im I, (New York 1955), p.203. On muries in general see Darenberg et Saglio, Dict. des Antiquités Romaines, vol. 3, part 2, p.2046, SV, muria, and Pauly-Wissowa R.E. Vol. 16, part 1, p.661-2.



He replied: "There are narrow bays and shallow waters"<sup>3</sup> (on that route, and the pilot would not risk taking that course).<sup>4</sup>

All the printed editions and Mss read Rava - רבא in this text.<sup>5</sup> However, it is clear that the correct reading should be R. Aba - ר' אבא, as Hyman has already noted.<sup>6</sup> For (the Babylonian) Rava never left Babylon throughout his whole life.<sup>7</sup>

The mistake from ר' אבא to רבא probably came about in the following manner. Originally the text read ר' אבא. This was copied at some stage as רבא : which was in turn mistakenly understood to refer to רבא, as this plena form

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3. Jastrow, Dictionary etc., p.1074A, עקולי ופשוטי - cf. B. Ketubot 107A. I have found no satisfactory explanation for this statement. Tyre continued to be a successful active port.
  4. Cf. Soncino translation, A. Mishcon (London 1935), pp. 166-7. Correct R. Aha to R. Aba, and xestos to xestes.
  5. R. Rabbinowicz, *Variae Lectiones in Mischnam et in Talmud Babylonicum* [= VL] to Avoda Zara p.79, MS JTS fol. 35A, lines 22-5.
  6. A. Hyman, *Toldoth Tannaim Ve-Amoraim* (London 1910), (= Hyman), pp. 5B, 55B.
  7. Ibid.

of spelling occurs not infrequently in Gaonic writings.<sup>8</sup> Numerous examples of such parallel changes can be cited. Eg. Iggeret R. Sherira Gaon ed. B. Lewin (Haifa 1921) [= Iggeret =] p.21 - the French version has Rava b. R. Aba = B. Gittin 49A etc., where he is called Rava b. Rava, and compare Spanish version ibid: or Ms. JTS, p.235, SV. Raba b. Zutra = Yuhsin [= Sefer Yuhsin ha-Shalem, ed. Filipowski, London and Edinburgh 1857] p.185A reading R. Aba b. Zutra = B. Avoda Zara 28B which in the Munich Ms reads Rava, etc.<sup>9</sup>

R. Aba<sup>10</sup> came from Babylon to Palestine, perhaps partly

8. See, for example, Gaonica I, S. Assaf, (Jerusalem 1933), p.130 lines 2,3; Ms. JTS fol. 65A, line 10, p.243, No.10 etc. See Sefer Halachot Pesuqot, ed. S. Sasoon (Jerusalem 1950), index of names, p.214, for numerous examples.
9. Ms. JTS, p.237 SV, Rava b. Shira, p.238 SV. Raba b. Zimuna, p.239, 241-2, 243, line 10 (Raava b. Ada, Iggeret p.63, French version has Rava), etc. In B. Nidda 11A we come across R. Aba b. Jeremiah, who elsewhere in the Babli is called Rava or Rabba b. Jeremiah, (e.g. B. Pesahim 36B, B. Mo'ed Katan 4A, B. Gittin 74A, etc. etc.). See also B. Berachot 34A Rava in the name of R. Hiyya b. Ashi = R. Aba in the name of B. Shabbat 73B according to Mss and Sefer ha-Ittim, (see VL p.71, note 80 and p.156 note 1). Also see Seder ha-dorot of Y. Heilprin (= SD) (Jerusalem 5716), part 3, p.109A.
10. On R. Aba's Biography see Hyman 3A-8B; W. Jaswicz, Die Geschichte Israels, (Berlin 1904) (Hebrew), vol. 7, pp. 203-4; Encyclopedia of Talmudic and Geonic Literature,<sup>4</sup> ed. M. Margalioth (Israel 5712) (Hebrew) 1-3, Added bibliographical material on this and other personalities discussed will be found in H.L. Strack, Introduction to the Talmud and Midrash. (Philadelphia 1939). (Articles in the Jewish Encyclopaedia are generally sound).



by way of the sea,<sup>11</sup> and his first point of arrival in Palestine was Akko.<sup>12</sup>

11. B. Rosh Hashana 35A, cf. 8. Eruvin 12A. But see Rabbenu Tam's explanation to ימא לטיגא, B. Kiddushin 44A, (Hyman, 390A). See next note. This may refer to a river journey from Pumbeditha northwards, or to some quite different journey from Palestine. See also VL to Rosh Hashana p.106, note 200, and VL to Eruvin p.34, note 9. The printed text would seem to have a good reading.
12. B. Ketubot 112A. When he arrived he kissed כיפי דעכו. Cf. J. Shevi'it 4. 35 c 17 that R. Jose b. R. Hanina kissed the of Akko as it was the boundary of Palestine. כיפתא = כיפי? (Jastrow 636A SV כיפתא). See also J. Shevi'it 6.36 c. 20, that in Rabbi's time (c.160-220) above (= north of?) the "kipta" was outside Palestine. The military road from the North from Keziv (= Ekdippa) formed the border, the narrow strip west of the road being outside Palestine. (T. Ohalot 18.14, = J. Shevi'it 6, 36B 68, B. Gittin 7B). But many places east of the road also belonged to the "land of the heathen", (ibid). If R. Aba came from the North by land from Tyre or Laodicea or Antioch, he would have first come across the "kipta" of Akko, which was traditionally the border, and had been kissed by R. Jose b. R. Hanina. But had he come by boat no sooner would he have stepped ashore than he would have been in Palestine, (T. Shevi'it 5.2 = J. Halla 4, 60B 33), and we would have expected him to kiss the "shore" or the "dust" - אפרא - or the sands of Akko. This suggests, albeit only slightly, that he did not come down to Akko by sea but by land. On the border situation round Akko, see Studies in Jewish History or by A. Büchler (Oxford 1956) pp. 203-6 (= JQR 13, 1901), Studies in the Geography of Eretz Yisrael, H. Hildesheimer and S. Klein (Jerusalem 1965) (Hebrew) p.153, M. Avi-Yonah in Quarterly of Dept. Ant. Palestine, 5 (1935), pp. 144, 199.

When he arrived R. Johanan was still alive and so indeed was Resh (= R. Simeon b.) Lakish, who died slightly before R. Johanan.<sup>13</sup> Thus he arrived before c.276 (approximate date of Resh Lakish's death<sup>14</sup>). It would appear when he arrived R. Johanan was already very old, and could not see him (at first?) direct;<sup>15</sup> However, he did come into some, albeit slight, contact with R. Johanan,<sup>16</sup> then in Tiberias. Thus he seems to have arrived during the reign of Aurelian (270-6). He first arrived at Akko, but soon moved to Tiberias where he took up permanent residence.<sup>17</sup>

To date R. Aba's arrival in Palestine more closely still, one should note that he arrived after his great friend (from Babylon) R. Zera I.<sup>18</sup> Isaac Halevy, in his (great) Dorot Harischoanim vol. 2, p.302 (Berlin & Wien 1923) suggests that Z. Zera I arrived in

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13. B. Hulin 19B, J. Nedarim 4.2, B. Shabbat 63B; cf. B. Baba Kama 117B.

14. He died shortly before R. Johanan (B. Baba Mezia 848), who died in 279 (Iggeret p.84). See below.

15. B. Hulin 19B.

16. B. Eruvin 46B; etc; Hyman p.5B.

17. B. Hulin 57A etc.

18. For his biography see Jaawitz ibid. p.190-9; Hyman pp. 386B-398B. From B. Hulin 57A we learn of his prior arrival.



Palestine c.280. His dating depends in a great measure upon his emendation of the reading in Sherira Gaon's Iggeret of the crucial date in Amoraic chronology, R. Johanan's death, which he takes to be 289<sup>19</sup>, and not 279 (599 Sel. era, instead of 590 as stated<sup>20</sup>). However, there is no manuscript (or printed edition) basis for this emendation<sup>21</sup>, nor indeed any internal chronological necessity, as we have indicated elsewhere.<sup>22</sup> Therefore, following the logic of Halevy's otherwise impeccable argument one would put R. Zera's arrival in Palestine some ten years earlier than did Halevy, i.e. C.270<sup>23</sup>. R. Aba, who as we have stated above, came some short time after

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19. Dorot Harishonim ibid p.306 etc.

20. Iggeret, p.84 and note 3. See Hyman's ed. p.70 and note 37 ibid.

21. Iggeret, ed. Lewin, ibid., apparatus criticus.

22. See my article in Archiv Orientalni, vol. 34 (1966) p.57 note 11. For a full bibliography on this discussion see H. Strack, Introduction to the Talmud and Midrash, Philadelphia 1931), p.319 note 2. I have discussed the matter with Prof. Shraga Abramson (of Jerusalem) and he agrees that there should be no emendation.

23. The argument is very complex and need not be restated here. However, it should be noted that his main teachers in Babylon were R. Huna (d.297) and R. Judah (b. Ezekiel) (d.299), and that he studied under them quite a while. He also received many traditions from R. Hisda (d.309), (Hyman, p.387B-8A). Also he cites R. Nahman (b. Jacob) (d.329) quite a number of times, (e.g. B. Ketubot 98A, B. Gittin 39B, 43B, B. Baba Batra 11A, B. Hulin 18A, J. Eruvin 7.5 (?), [Hyman p.388B]). See also Jaarwitz ibid. p.159 note 2. However, R. Aba must have lived a long time as he appears to have still learned a little directly from Rav (d.247) and Samuel (d.254); Hyman p.3AB.

R. Zera, probably came some time c.274-5. But as we have seen above he very soon moved to Tiberias where he took up permanent residence. Thus this episode must have taken place almost immediately on his arrival, i.e. sometime c.275.

The The lumma of our text is undoubtedly a νοῦμμος (nummus) as has long been (at least partly) recognised.<sup>24</sup> (The change from N to L is no by means uncommon in Aramaic and Syriac etc.)<sup>25</sup> Now according to a number of metrological authorities the νοῦμμος was a sestertius Romanus, quarto pars denarii.<sup>26</sup> As there had been

24. Krauss, Lehnwörter, vol. 2, p.311A, and bibliography ibid. Most recently S. Lieberman, in Tosefta ki-fshutah, Zera'im vol. 1 (New York 1955) p.229, (to T. Demai 3.12), though there נחם is probably νοῦμμιον. Cf. Brockelmann, Lexicon Syriacum<sup>2</sup>, p.361B, and 420B; also "A Mandaic Dictionary", Drower and Macuch (Oxford 1963) p.231A, s.v., LGT. JQR, NS. XII, p.366 et seq. Cf. Syriac Epiphanius נחמי fol. 69A line 60 = nummus = νοῦμμος.

25. Lieberman, Tosefta ki-fshutah, ibid, vol. 2, p.658 note 47; Brockelmann ibid, p.367A. Otzar ha-Geonim to Berachot, B. Lewin (Haifa 1928) part 1, p.112 note 4. Z. Fraenkel, Mevo ha-Yerushalmi (Breslau 5630) p.8. J. Kila'im 8.3, 31c 39-40 etc.

26. F. Hultsch, MSR, vol. 2, p.200, index sv. νοῦμμος 2. Also ibid. νοῦμμος 3 =  $1\frac{1}{2}$  obols (= 1 sest.). See also Dessau, Inscr. 7313, 8303, ("sestertio nummo uno").



24 d. in the aureus, in the classical system, the sestertius was  $\frac{1}{100}$  aureus,<sup>27</sup> and as such was a convenient unit for reckoning. In fact it was used as the standard unit for reckoning.<sup>28</sup>

We have stated above that in Aurelian's reform system there were 500d. = 250 ant. in the aureus. If the (= sestertius) was  $\frac{1}{100}$  in Aurelian's reform system, its value would have been 5d. This was a 5d. unit of value, not a coin of 5d. and not the XXI coin, which according to our calculations (above) was worth only 2d. (= 20 libellae, etc.).

Now we have seen above that Diocletian's reform currency there were two main types of copper (debased silver) denominations, (a) a 4 gr. piece<sup>28a</sup> - the weight of an Aurelian ant. with the same

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27. Hultsch ibid p.20

28. Sutherland in JRS LI (1961), p.94 et seq. Note that "the "nummi terentiani" of Anastasius I have been taken to be "terunciani", referring to the old valuation of the sestertius at 40 teruncii; the M = 40 - nummia piece, would be in question," (Mattingly, Roman Coins<sup>2</sup> [London 1960] p.217. Mommsen; Chron. Min. II. p.95, (Marcellinus); cf. Num. Chron. 1927, p.224).

28a This piece was of almost pure copper, as opposed to the 10 gr. piece which had on an average 3.87% silver (RIC, 6, p.94; see above section on antoninianus). It should be noted that the issue of this piece was discontinued after the Edict (301). Sutherland suggests that its valuation in relationship to the 10 gr. piece with its silver content proved to be unacceptable and unworkable (RIC, 6, pp. 99-100).

obverse design and radiate bust as the ant. but without the XXI legend, and (b) a new denomination weighing 10 gr. with a different design, but with several features borrowed from the old ant., especially its legend XXI.<sup>29</sup> We have also seen above that the former was worth 2d. (as had been the Aurelian ant. of the same weight), and the latter 5d. This 5d. piece was equal to Aurelian's nummus unit, and bore the legend XXI, which now meant: 20 sestertii (=  $\frac{1}{4}$ d) = 1 of these pieces (new sestertii, nummus,) = 5d.

That νοῦμμος ( during the early IV cent. meant the debased copper coin is borne out by several papyri. Thus:<sup>30</sup>

Wessely Pal. St. XX.85 (c.305/6): ἐν νοῦμοις ἰταλικοῖς (ταλ.)

line 9. ἐν ἰταλικῷ νομίσματι (ταλ.) v

29. There was a  $1\frac{1}{2}$  gr. piece too. See ANSMN VII (1967) p.113, suggesting that in Gallienus' time there was a unit,  $3\frac{1}{2}$  of which equalled the ant. See also Sutherland in RIC 6, p.98, who suggests that this very rare piece was the "denarius communis" of Diocletian's edict.

30. These sources are brought by Segrè, in Byzantion 15 (1941), p. 251, to prove this point. The identification of the νοῦμμος with the 5d. piece is also accepted by Mickwitz, in his article in Transactions of the International Numismatic Congress 1936, (London 1938) pp. 219-28 on Dessau 9420. See also his remarks in Geld und Wirtschaft, pp. 84-5, notes 21 and 22; (also on Ditt.<sup>2</sup> 900 and 901).



P. Grenf. II. 75 (308) line 7: ἀργυρίου Σεβαστῶν νομίσματος  
ἐν ν[ο]ύμμο[ι]ς τέλαντα εἴκοσι,

SB. 5676 (307) line 8. ἀργυρίου Σεβαστῶν καινοῦ νομίσματος  
τέλαντα δύο καὶ γ' δραχμαί.

According to our suggestion nummus in these cases refers to the  
10 gramme coin worth 5d.<sup>31</sup>

At this point however a grave difficulty arises. For this  
same term nummus occurs in a group of papyrii, where it appears to  
denote a piece worth not 5d. but 25d. The evidence has been best  
summed up by Jones, and so I will quote him in full:<sup>32</sup>

"As the question is important and controversial, it  
may be well to outline the evidence. P. RyI. 607 is a  
letter dated on various grounds to A.D. 300, from an  
official (who is evidently 'in the know') to a sub-  
ordinate, instructing him urgently to buy goods at  
any price with all his (the writer's) Italian money  
(Ἰταλικὸν ἀργύριον), the reason being that the  
emperors have ordered the Italian coin to be reduced

31. In *Economic History Revue*, 2 series, vol. 5 (1953) pp. 317-8.

32. Above we have stated that this piece was called a follis.  
Hence follis = nummus (on occasions). In later Byzantine  
writings one finds such an identification. Eg., Cedrenus  
1.801: φύλλαις ἦτοι νοῦμμοι. See Schrötter,  
*Wörterbuch der Münzkunde* (Berlin and Leipzig 1930), p.200B,  
Cf. *Glossarium Mediae et Infimae Latinitatis*, vol. 5, part  
2, p.623A, sv. nummus.

"to half a nummus (προσέταξεν ἡ θεία τύχη τῶν δεσποτῶν ἡμῶν το Ἰταλικὸν νόμισμα εἰς ἥμισυ νούμμου καταβιβασθῆναι )<sup>33</sup> It is generally agreed that το Ἰταλικὸν νόμισμα (or ἀργύριον ) means the normal imperial coinage by contrast with the local Alexandrine tetradrachms which ceased to be issued in 296, that is the Aurelianic XXI pieces. The most natural interpretation of the phraseology would be that the pieces had hitherto been known as nummi, but were henceforth to be tariffed at half nummi.

"P. Oslo, III. 83, also dated to about 300, is unfortunately fragmentary. It contains portions of three official letters, of which the third one alone concerns us. It is clearly concerned with the regulation of the currency, and alludes to the καθολικός or rationalis, the imperial minister who controlled the mints or his local representative in Egypt, and to a πρόγραμμα or public notice issued by some high authority (παρὰ τῆς μεγαλειότη[ος] ). The first line speaks of something having reached a 25 denarii (ἕως εἰς εἰκοσι πεντε Ἀττικῆς ) and the third of nummi (being reduced) to 12½ denarii (τῶν δὲ νούμμων εἰς δώδεκα ἥμισυ Ἀττικῆς ). It is hard to resist the conclusion that this document refers to the same operation as P. Ryl. 607, and states that the nummus which had previously been raised to 25 denarii, is now reduced to 12½.<sup>34</sup> PSI. 965 is also fragmentary. The opening four lines state that the emperors have issued the Edictum de Pretiis, lines 5 and 6 are concerned with currency changes. Line 5 alludes to "denarii" (Ἀττικῆς ),

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33. Cf. Mickwitz, Geld und Wirtschaft etc., p.104 note 2.

34. Cf. Symb. Osloensis XIV, p.85 (Heichelheim): West, Gold and Silver Standards etc., p.187, Segre in Byzantion 15, p.253; and Currency, pp. 131-2, 184-5.



"line 6 (τὸ δὲ μέχρι τῆς δευτέρας ἀντὶ τοῦ δύο καὶ δέκα [καὶ ἡμίονο]) may indicate that the coin hitherto current is to be valued at twelve (and a half denarii).

"It may be added that some half nummi of Licinius are marked XIIIS."

Thus, the νοῦμμοι of these papyri can hardly be the XXI coins of C.301. And yet the evidence of P. Oslo III. 83 is surely inescapable; there must have been a coin - on the evidence of PSI 965, post C.301 - worth 25 ATTIKES (= denarii). P. Ryl. 607 must also be post 301, as before then imperial denarii were, on the evidence of hoards, not circulating in Egypt.<sup>35</sup>

Jones' explanation is as follows:<sup>36</sup>

"Three papyri documents between them strongly suggest that at the end of the III or the beginning of the IV cent., the imperial government first raised the face value of the nummus, i.e. the Aurelianic piece and the similar radiate coins which succeeded it, by stages to 25 d., and then cut its value by half to 12½d."

However, this explanation, attractive though it be, takes absolutely no account of the gold-silver ratio. For if Diocletian's XXI coin of about 10 gr., and with a silver content of some 4% had

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35. See Currency etc., p.131; contra Segre in Byzantion 15, p.253, and also Sutherland, in JRS, LI 1961, p.97, note 38.

36. JRS XLIX (1959) p.34.

been worth 25 d (=  $1/32$  aureus, at 800 d. per aureus), the resultant gold-silver ratio would be something like 1:2.85 approximately, clearly an impossible result. Even at  $12\frac{1}{2}$ d. per XXI piece, we get the most unlikely gold-silver ratio of 1:5.7.<sup>37</sup> Thus, we must seek some other explanation for these papyri.

Now the only denominations current at that time were the two copper pieces worth 2 and 5 d. respectively,<sup>38</sup> and a good silver coin, ranging in weight from 2.4 to 4.4 gr.<sup>39</sup> with a silver content of around 90%<sup>40</sup> and averaging around 3.09 gr.<sup>41</sup> It is marked

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37. See P.A. Braun, in RIC VII (London 1966) who, on p.11, suggests that some time in the mid second decade, after the argenteus had been discontinued, the silver-washed follis, formerly worth 5d. was revalued to be worth 25d. This view is completely unacceptable. For even after the minting of argentei had been discontinued, such pieces must have continued to circulate. It is inconceivable that two such radically different coins should have circulated side by side with the same nominal value even for the briefest of periods. Furthermore, according to Braun, the law against counterfeiting would have had to be the same for argentei (silver) and folles. However, this is not the case as has been conclusively demonstrated by P. Grierson in his searching study on 'The Roman Law of Counterfeiting'. Essays in Roman Coinage, etc., ed. Carson & Sutherland (London 1956), pp. 241-2, 245 and particularly p.248.

38. Note that the lowest price in Diocletian's Edict is 2d. But see Pearce in JRS, XXIII (1933) p.87.

39. Pink, Num. Zeitschr. 1930, p.38.

40. Hammer ibid, p.110, West, Gold and Silver Standards etc., p.186, note 39 - 94% Cf. Bolin ibid. p.303. But see Howard L. Adelson, in Centennial Publication of the American Numismatic Society, ed. Harald Ingholt (New York 1938), p.2, note 6 - 98%; See also Sutherland in RIC, 6 (1967), pp. 98-9, who gives 90% as the silver content.

41. G. Mickwitz, Die System des römischen Silbergeldes in IV Jahrh. etc. (Soc. Scient. Fenn. Comm. Hum. Litt. VI, 21; Helsingfors 1933) p.42, based on 560 specimens.

check  
capital  
letter  
1/2  
Hilber



XLVI (= 96) and so was probably struck (al marco) at the theoretical weight of 3.4 gr. (=  $\frac{1}{96}$  libra aurei).<sup>42</sup> This piece, called the argenteus was probably worth 32d. =  $\frac{1}{25}$  aureus, (at 800 d. per aureus), and as such equal to an old denarius. This yields a gold-silver ratio of 1:14.4 (see above).<sup>42a</sup>

It may be that shortly after c.301 the value of silver, for some reason or other dropped (or that of gold went up) so that the relationship between the two metals stood at 1:18. For there is evidence of such a ratio in a papyrological source of the early IV cent., (SB. 6086 V).<sup>43</sup> The argenteus itself had not changed weight, neither apparently had the official number of denarii in the aureus. Hence there were now 25 d. to the argenteus, (3.4 gr. of 90% at 18:1 =  $\frac{1}{32}$  aureus of 800 d.).

This suggestion seems further to be borne out by the fact

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42. Adelson *ibid* p.7; Mattingly, *Roman Coins*,<sup>2</sup> p.217; Sutherland *RIC* 6, pp.98-9.

42A Contra Sutherland, *RIC*, 6, p.99, who follows Bolin to a large extent.

43. Cf. *Cod. Theod.* 8.4.27, of 422, yielding the same equation. Also *Cod. Theod.* 11.21.2 (396) suggesting this equation. Cf. Mickwitz, *Geld und Wirtschaft* p.105 etc., Bolin *ibid.* p.307 and note 7 *ibid.* Mickwitz, *Die System* etc., p.7 et seq. thinks that SB 608V is post 324. Cf. *Currency* etc., pp. 185-6; Adelson *ibid.* p.9 and note 34. However, see *ibid* Segrè in *Maia* 16 (1964) pp. 264-5. See further Segrè *ibid.* pp.266-8. See also Sutherland, *RIC*, 6, p.99, who suggests that such a ratio could have existed during or very shortly after the year of Diocletian's Edict.

that "in 323<sup>44</sup> we find 'siliqua' as a name of a coin, and the only such coin we know is this 96th of Diocletian. Now a siliqua is  $\frac{1}{1728}$  libra aurei, as a name of a silver coin representing that part of a pound of gold. This would give a ratio of gold to silver of 1:18"<sup>45</sup> Thus, our suggestion is that nummus was the name not only of the copper 5d. piece, but also of a silver coin (cf. Cod. Theod. 15.9.1, of 387) worth, sometime after 301, 25d.<sup>46</sup>

There is some evidence, albeit of a tenuous nature, for this identification of the nummus with a (silver?) coin worth 25 d. in a difficult passage in Epiphanius. For there we read<sup>47</sup> [Concerning the nummus] ... but the ancients called half of the silver (denarius) the dichryson. And the silver (denarius) is what the Romans call the miliarision." Now the miliarense was so called because it was

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44. Dessau, Inscr. 9420.

45. Mattingly, Roman Coins<sup>2</sup>, p.218; Mommsen, Römische Münzwesen, p.791. X

46. The nummus can also be a gold coin; e.g. SB.6222, P.O. 1165, Cod. Just. 11.29.1(?); Currency etc., pp. 131-2. Cf. P. Giess. Univ. Bible 22, lines 3-4, Heichelheim in Symb. Osloensis XIV (1935) pp. 82-3; Segrè, in Byzantion 15, p.251 note 11, and in the Journal of Egyptian Archaeology (= JEA) Vol. 31, (1945) p.113, (contra Heichelheim, JEA 29, 143, p.79).

47. Syriac version, ed. J.E. Dean (Chicago 1935), Par. 52, p.61 Cf. Hultsch, MSR vol. 2, p.105, and also Boetticher (= Lagarde), Symmicta II pp. 196-7.



$\frac{1}{1000}$  libra aurei.<sup>48</sup> Therefore the silver (denarius) =  $\frac{1}{1000}$  libra aurei, which according to the Edict of Diocletian was worth 50,000d. Hence 1 silver (denarius) = 50d., and a nummus = half the silver (denarius) = 25d.<sup>49</sup>

According to the above, then, some time post 301, the silver argenteus, which was officially tariffed at a nummus (= 25 ATTIKES) was halved in value so that it was now worth 12½d. (P. Oslo III.83). I understand this to mean that if a person handed in an old nummus formerly worth 25d., he would receive for it only 12½d. Thus in order to get a nummus - unit of value meaning 25d - he would have to give in two old nummi (50d). Thus in actual fact, there were now 50 d. in the new nummus, and (50 x 32 =) 16,000 d.

48. Syriac version, note 426 ibid. A.R. Burns, Money and Monetary Policy in Early Times (London 1927) p.242 note 5. Nomic gloss in Dindorff's ed. of Epiphanius, Vol. 4, part 1, p.128; O. Seeck, in Zeitschrift für Numismatik, XVII (1890), pp. 36-89, 113-66; E. Stein's Geschichte der Spätromischen Reiches, I (Wien 1928), p.178 note 109. But, cf. Jones in JRS ibid. p.36 note 27. Also Jones in "Essays in Roman Coinage presented to Harold Mattingly" (Oxford 1956), p.28 note 1. See further Adelson in ANSMN VII (1957) p.130, and note 12 ibid, for a discussion of this nomic gloss; also ibid. p.132 note 20.

49. Cf. Hultsch, MSR vol. 2, p.173, sv. δίσχρονον .

in an aureus. This latter equation is borne out by an undated papyrus of the early IV cent., which Segre dates to c.304.<sup>50</sup> P.O. 2106. For there it is stated that 1 libra aurei = 100,000 d. As this is exactly twice the sum mentioned in the Edict of Diocletian (cf. 301), one may assume (approximately) twice the number of denarii per aureus, i.e. 16,000.<sup>51</sup> And with the devaluation of the denarius (and nummus)

50. Byzantion 15, p.276. See also Adelson in ANSMN VII (1957) p.133.

51. As to the Licinius XIII coin, this belongs to a group of coins bearing this mark of value from 318-24, and weighing about 3.14 grammes, (Currency, p.101). Its meaning is unclear (see Mickwitz, Geld und Wirtschaft, pp. 103-4, note 18), as are most other marks of value on IV cent. currency, (Currency, p.102). Whatever its meaning, it probably has nothing to do with the reduction of the nummus to half its value, an operation which had taken place perhaps more than a decade and a half earlier. (However, see Studies in Roman Economic and Social History etc., ed. Coleman Norton, p.301 note 13, [West]). If the reduced nummus (10 gramme piece) was of pure copper, the bronze-gold ratio would be about 1185:1, which is considerably above the more usual 1440:1 (Currency, p.98). It appears therefore that there was (at least in theory) a slight percentage of silver in or (washed) over the coins which affected their value. This is borne out by metallic analyses; cf. for example, Adelson in ANSMN VI (1954) pp. 111-29, article entitled "Bronze Alloys in the late Roman Empire", bibliography cited *ibid*, and below. Most recently this has been categorically stated to be the case by Sutherland, in RIC 6 (1967), p.94. (See above section on antoninianus for fuller bibliography). See also Carson in INCP (1967), p.250. If we do wish to see a connection between the mark of value XIII and the halving of the nummus, we may explain it thus: 10 (x) sest. =  $2\frac{1}{2}$  (11r) d., i.e. this piece is worth  $2\frac{1}{2}$  and not 5 d. (Cf. Pridik, in Num. Zeitschr. 1929, pp.64-9, article entitled "Miliarense, Follis und Centenionalis.")



to half its former value, the follis (= sack) was also likewise devalued. As we have calculated that according to Diocletian's reform system the follis was worth 25,000 d. ( $= \frac{1}{2}$  libr. aurei), it would now be worth only 12,500 d. This suggestion is borne out by the evidence first called to our attention by Jones,<sup>52</sup> namely that in one of the mosaics of the villa at Piazza Armerina (early IV cent.), which depicts a table on which are prizes, crowns and palms, there are also bags labelled  $\overline{\text{XII}} \overline{\text{D}}$ , i.e. 12,500 d.<sup>53</sup> These then are the "reduced folles". Jones's conjecture that the follis was worth 12,500 d. has since been confirmed by P. Beatty, Panop. 2, line 302, where 4 folles are equated with 33 talents (= 49,500d.) + 500d.<sup>54</sup> Jones also sees this stage of the follis' devaluation reflected in Epiphanius' varying statements. For in one passage he states that the follis  $\kappa\alpha\tau\alpha\ \tau\acute{o}\nu\ \alpha\pi\alpha\rho\alpha\gamma\epsilon\iota\sigma\mu\acute{\epsilon}\nu\omicron\nu$  equals  $2\frac{1}{2}$  silver coins, which

52. JRS *ibid.* p.35 and note 1.

53. Incorrectly described on p.42 of G.V. Gentili's *The Imperial Villa of Piazza Armerina* (1956); cf. the photograph of the mosaic (no.26); see also *idem. La Villa Erculia di Piazza Armerina, I mosaici figurati* (Rome 1959) p.1 XLI.

54. See Jones, *The Later Roman Empire*, vol. 3, (Oxford 1964), p.2, note 18. See also Segrè, in *Chronique d'Egypte* 40 (No.79, Jan. 1965), pp. 198-9.

are again equated with 250 denarii, whereas in another he states that "the follis has 125 silver coins, and it is called among the Romans 'a sack'".<sup>55</sup> These "silver coins" were surely miliarenses<sup>56</sup> (= 100 d., see below), hence the follis equalled 12,500 d. The follis was now worth  $\frac{1}{8}$  libra aurei; (100,000d. = 1 libra aurei).

The fact that the follis declined in value with the fall of the denarius is evidence of yet another stage of its development, namely that it was no longer a bag of blank metal disks, a specific weight of metal according to a fixed unit of value - 1 or  $\frac{1}{8}$  lb. gold - but a bag of actual coins, whose value sinks with the devaluation of the coins it contains.

The fluctuations in the price of silver must have been rather erratic during this period; but they were soon more or less balanced by the introduction of a new denomination called the miliarense, struck at  $\frac{1}{72}$  libra aurei,<sup>57</sup> and valued at  $\frac{1}{16}$

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55. JRS. *ibid.* p.35. Hultsch *ibid.*, vol. 1. p.269, Par. 17

56. See Lellia Ruggini's article in *Atti della Accademia Nazionale dei Lincei, Rendiconti*, vol. XVI (Rome 1961), entitled "A proposito del Follis nel IV secolo", p.306 b, (hereafter referred to as Ruggini).

57. *Currency*, p.106; cf. Adelson p.7.



aureus (at a gold-silver ratio of 1:14.8, with a 90% fineness).

No doubt it was tariffed at 100d., and as such was  $\frac{1}{1000}$  libra aurei; hence its name miliarense, (see above note 48). The argenteus would be worth 75d. =  $\frac{1}{24}$  aureus at the restored gold-silver ratio.

In 307 the 10 gr. piece fell in weight by approximately one-third to 6.64 gr.<sup>58</sup> Its value fell by slightly less than a quarter, it would appear - this is indeed to be expected - so that there were 2000 d. per aureus. The gold-silver ratio continued to stand at 1:14.4. This may be seen from PSI 310 (dated 307) (discussed above) according to which 3 oz.  $22\frac{1}{2}$  grammata are valued at 10930 $\frac{1}{2}$  dr., each oz. being worth 2776 dr. Segrè and Mickwitz both suggest that the 3 oz.  $22\frac{1}{2}$  grammata are silver and not gold. Thus the aureus was worth either 7992 or 9590 dr., depending on whether the gold-silver is 18:1 or 14.4:1. Probably these figures indicate values of 8000 dr. (= 2000d.) and 9,600 dr. (= 2400d.) respectively.<sup>59</sup>

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58. Currency, p.76. An average based on 353 specimens. For the patterns of the weight reduction of the follis in different mints, see most recently Sutherland, RIC, 6 (1967), pp. 101-3.

59. See the discussion in Currency, p.158. Segrè, Metrologia, pp. 438-9, Bolin, p.324. See also Ianda inv. 315, of 3-4-7, which according to R. Rémondon, in Chronique d'Égypt 31, (1956), p.146 yields an equation of 115,000 sol. to the libra aurei.

Now in J. Ma'aser Sheni 4.1, 54<sub>D</sub>19, (a text of the early IV cent.) we read that: a [gold] dinar (= aureus) here (Tiberias ?) is worth 2,000 [denarii], and in Arbael (nearby) 2,000 [denarii] and a leukon, (a silver [?] coin or unit of unknown value).<sup>60</sup> This seems to bear out the former interpretation of PSl.310 which, as we have seen, also gives the equation 2000d. = 1 aureus.<sup>61</sup>

Now "a papyrus of 308-9<sup>62</sup> appears to indicate (its language is very obscure) that a fine of 5 folles, equivalent at that date to  $\frac{1}{2}$  lb. gold was levied on villagers who left their own villages", so writes Jones.<sup>63</sup> We have seen that in 307 the aureus was 2000d.

60. I have discussed this text in greater detail, and examined the difficulties in it, in Archiv Orientalni, 34 (1965), p.63; see also above. See also S. Lieberman, Tosefta ki-fshutah, Zera'im, vol. 2, (New York 1955) p.752, (to T. Ma'aser Sheni 3.8). See below for a further discussion of this text.

61. Of course J. Ma'aser Sheni may be referring to a stage between 1600d. to the aureus, and 2,400d. to the aureus. However, such an explanation would necessitate a change of the gold silver ratio between c.305 and 307; thus I prefer to follow the explanation given in the text here.

62. Studi in onore di A. Calderini e R. Paribeni, vol. 2 (Milano 1957) p.329.

63. JRS ibid. p.35. He compares it with Cod. Theod. 5.17.2 (cf. 386), a fine of 6 oz. of gold on those who harboured a runaway colonus of a private landlord. But cf. the view of the editors of this papyrus, Boak and Youtie, Studi etc., p.327, who think that 5 foll. = 20d.!



( $\frac{1}{60}$  libra aurei), and 1 lb. gold 120,000d. If 5 folles were exactly  $\frac{1}{2}$  lb. gold, and the follis was worth 12,500d. (as suggested above), then there were, c.308-9, 125,000d. per libra aurei, a very reasonable result.<sup>64</sup> At this time 10 folles = 14.4 lbs. silver and 1 follis = 1.44 lb. silver.

Not long after, around 314, the copper piece was again reduced in weight to 3.57/3.36 gr.,<sup>65</sup> i.e. half again. The value of the denarius dropped likewise, and at first I believed we could reckon approximately how much. For in Cod. Theod. 11.36. 2.3, of 315,<sup>66</sup> we find a fine of 30 folles, while in a law of 341 (Cod. Theod. 11.36.5) fixes the penalty for the same offence at 30 lbs. of silver. This implies (though no more than that) that c.315 1 lb. silver = 1 follis.<sup>67</sup> If the follis were still equal to 12,500d., then 1 libra aurei (= 12,500 x 14.4) = 180,000d., and the aureus ( $180,000 \div 60$ ) = 3000 d., again a very attractive result.<sup>68</sup>

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64. Actually PS1 310 yields a libra aurei of 124,920d. (at 14.4:1). See Ruggini *ibid.* p.311, Bolin *ibid.* p.324. For c.312, see P. Ryl. 616, and Rémondon's remarks in *Chronique d'Égypt* 31 (1956) p.146.

65. Currency, p.97. RIC 6, pp. 101-3.

66. For the dating, see O. Seeck, *Regesten der Kaiser und Päpste* (Stuttgart 1919), p.54.

67. Jones, in JRS *ibid.* p.35.

68. See page 152.



However, P. Roll. Princ. IV. 31, of 313-4, yields an equation 1 aureus = 7116d., and an analysis of the metallic contents of the contemporary coinage bears out this equation (see below).<sup>68a</sup>

Shortly afterwards, the situation of the copper coins grew a little better (see below), and it is possible that in 315 there were only about 6000d. per aureus. In that case, the follis was worth approximately  $\frac{1}{2}$  lb. silver, and by 341 the fine had been doubled.

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68. Mickwitz, Geld und Wirtschaft, p.105, thinks that in 315, 1 libra aurei = 1,400,000d.! Ruggini *ibid* p.311, gives for 314-6, 1,500,000d. per libra aurei. Segrè, in Byzantion 15, p.250 and note 7 derives (from very scanty evidence) an equation for 1 sol. = 3500d., (based on P.O. 2113), which is very close to P. Roll. Princ. VII. 6., of 316, which yields an equation of 1 sol. = 3472d. See also Mickwitz, in Transactions of the International Numismatic Congress 1936 (London 1938) p.221, note 1, who brings (speculative) evidence for 314-6, based on PER E 2000, P.O. 2114, (and P.O. 84). Mickwitz' and Ruggini's conclusions are unlikely in view of the evidence of P.O. 1430, of 324, yielding the equation: 1 libra aurei = 313,488d. (cf. Currency pp. 158-9). The pattern, though not a clear curve on a graph does not seem to warrant the conclusions of Ruggini and Mickwitz. The P. Roll. Princ. papyrii cited (IV.31, and VII.6, yielding 437,000d. and 250,000d. per libra aurei respectively) argue against their conclusions. See P. Bruun's remarks in RIC VII (London 1966), p.11 note 2. The high price P. Roll. Princ. IV. 31 may be explicable in terms of the very debased coins then current. (See below).

68a It is a great temptation to interpret notations (marks of value?) on the coins of this period. Thus folles of Lyons from 308-9 bear the notation  $\text{CIS}^H$ , (RIC, 6, p.104). One might interpret this as meaning that 1 (follis) = 100(c) sestertii (HS), i.e. 25d. This would give an aureus of 4000 d. for the years 308-9. However, this does not fit in well with the evidence of the papyrus of 308-9, cited above (note 63), nor of metrological evidence cited below in the section on IV cent prices, 2. Finally, how would we interpret the notation on the folles of Nicomedia of 308-11:  $\text{CMH}$  (RIC, 6, p.104)? Could the value of the follis have varied so radically from Egypt to Asia Minor and the West? Below we have shown that this cannot be the case. In the meantime these notations remain a puzzle.



There are several other sources usually quoted in discussions of these terms "nummi" and "follis". However, I find them too ambiguous and problematic to be able to draw from them any clear conclusions.<sup>69</sup> Let us therefore leave awhile the fortunes of the follis (to which we shall return below) and examine the economic implications of the J. Avoda Zara text that we cited at the beginning of this section.

From that story we learn that muries in Palestine was more expensive than wine, though by how much we do not know. We only know that it would pay to dilute it with wine. In the

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69. The other sources cited by Jones in JRS *ibid.*, have been thoroughly re-examined by Ruggini in her article referred to above. See further: Cod. Theod. 11.36.2 (of 315), Cod. Theod. 13.3.1 (of 321), (cf. Mickwitz, Geld und Wirtschaft etc., p. 91), Cod. Theod. 14.21.1 (of 328), Cod. Theod. 6.4.5. (of 340), (cf. Ruggini *ibid.* p.313). Cod. Theod. 7.20.3 (cf. ed. Mommsen p.351, A. Segrè, *Metrologia e Circolazione Monetaria degli Antichi* [Bologna 1928] p.462, Ruggini *ibid.* p.311, Mickwitz *ibid.* pp. 86-7. Kubitschek in Num. Zeitschr. 1909, p.60, Santo Mazzarino, *Aspetti sociali del Quarto Secolo* (Roma MCMLI) pp. 112-3); Augustin Sermo 389.3 (cf. Mickwitz *ibid.* p.88, Ruggini *ibid.* p.317). See also Pearce in JRS XXIII (1933) p.87. I have also not discussed the famous Feltre Inscription of 323, (= Dessau 9420) because of its ambiguity, (cf. Segrè, *Metrologia* etc., p.461f, Mickwitz *ibid.* p.84 and note 21, *idem* in Proceedings of the International Numismatic Congress of 1936, pp. 219-28, article entitled "Über die Kupfergeldinflationem in den Jahren der Thronkämpfe nach Diocletians Abdankung", Kubitschek in Num. Zeitschr., 1909, pp. 47-66, especially p.56 note 1. Mommsen in CIL. V.2787, Mattingly, *Roman Coins*<sup>2</sup>. pp. 219-20 etc. Likewise I have not discussed Ditt<sup>2</sup> 901 (of 312-5) from Delphi, and 900 (311) from Panamara in Caria, (cf. Mickwitz *ibid.* p.85 note 22, Segrè, *Metrologia* p.452 note 2).

place from which the muries came, on the other hand, wine was four times more expensive than was muries. The ship's route seems to have come from the North, past Tyre - so we may deduce from R. Zera's question - rather than from Egypt, for example. It must have come from a place famous for its muries, so that R. Zera could automatically assume that the ship's route had been past Tyre. Moreover, it probably came from a place known to export kosher fish primarily, as muries was a fish product. Now in B. Avoda Zara 39A, we read that R. Abbahu (flor. second half of III cent. in Caesarea) announced: "The oil of fish and fish eggs may be bought from anyone, (i.e. Jew or non-Jew, even though in this state there can be no indication as to whether they come from kosher or non-kosher fish). For they are certain to come from either Aspamia or Plusa."

Plusa is Pelusium in Egypt<sup>70</sup>, south of Akko and therefore excluded from being the source of our muries. Aspamia, on the other hand, is almost certainly Apamaea in Syria, as may be seen

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70. Neubauer, *La Géographie du Talmud* (Paris 1868) p.408; Hirschensohn, *Sheva Chochmoth* (London 1912), p.196; and cf. *ibid.* p.231.



from a careful examination of Mss. variants.<sup>71</sup>

The "Sea of Apamaea" in Syria was both in Roman times,<sup>72</sup> and even during the Islamic period,<sup>73</sup> famous as a centre of fisheries. But even more than that, in Talmudic times it was the

71. Neubauer *ibid.* pp. 28, 304; Sheva Chochmoth, p.40; Kohut, in *Aruch Completum*, vol. 1, pp. 188B, 298A etc.; Buber, *Tanhuma* Exod. p.28 note 111; I.S. Horowitz, *Palestine and the Adjacent Countries* (Vienna 1923) pp. 323-4, 66-7, (Hebrew); Bacher, *Aggadat ha-Tannaim*, 1/2 p.54. It should be noted that both Apamaea and Pelusium produced non-kosher fish too, but apparently did not export it to Caesarea. Now Caesarea was by no means a "Jewish city", and it may well be that the fish trade was monopolised by Jews!

72. Aelian XII.29, *Gen. Rab.* 5.8 (ed. Theodore p.38 line 2).

73. Abu al-fida (c.1321) tells us that the "sea of Apamaea" was famous for its "ankalis" fish, which looks like a snake, clearly an eel - ἔγχελος. See *Palestine under the Moslems*, Guy le Strange, pp. 70, 420. This has nothing to do with the "Spanish Kolias" (contra Horowitz, *ibid.* p.327A, note 3). See Talmudic dictionaries. For Aelian's, see Löw, *Aramäische Fishnamen*, apud Noldeke *Festschrift*, ed. Carl Bezold (Giessen 1906), sv. (שִׁיבִיטָא קוֹלִיָּס and σιλύπες). It is clearly a "sheat fish", as in Liddle & Scott<sup>2</sup> (p.1599A sv), as is evident from Syriac sources, e.g. Jacob. Edess. Hex. 45v (= Bar Kepha Hex. 13Or; cf. Menarat K. ms. 48b). (Cf. also Athenaeus VII, 309-12). The Loeb translation of "large perch" (Aelian, vol. 3 p.44) is quite mistaken. See also Ritter, *Syrien II*, 1075, (cf. *ibid.* 1004, 1201, 1208, 1617, 1619), cited by Löw *ibid.*

most famous muries-producing district. Thus in Exod. Rab. 9.6 we read: "Normally one brings merchandise to a place where there is a demand for it. Would one bring muries to Aspania (= Apamaea) or fish to Akko?"<sup>74</sup> (the equivalent of our "coals to Newcastle").

The sea of Apamaea was an inland lake 45 kilometres east of Laodicea,<sup>75</sup> its nearest major port, which was in turn some 270 kilometres north of Tyre, and a further 40 kilometres from Akko.

Surely our muries came from there, and R. Zera's very reasonable question was: could not the boat have put into Tyre on its way down to Akko? To which the reply (which I confess, I do not understand) was that this was unlikely in view of the "narrow bays and shoal waters" - (of a major port?).<sup>76</sup>

With this information we may now reckon the approximate prices of wine and muries in Akko and Apamaea, c.275. In Apamaea we have seen that muries cost 1 numma per xest. (= 5 d per pint). In Palestine, taking into account cost of transport (45 kilometres

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74. Cf. Tanhuma, Buber, Exod. p.28 note 111; Sifré Ekev 39, ed. Friedman, p.78A, note 12; Gen. Rab. ed. Theodore p.38 line 2.

75. Horowitz ibid. p.324.

76. Perhaps if one hugged the coastline, as one might when going from Laodicea to Akko, there were these dangers, but not if one came in from the open sea(?).



overland, loading, unloading, 310 kilometres of sea journey etc.)<sup>77</sup> and a good margin of profit,<sup>78</sup> it would probably have to be sold at not less than  $2\frac{1}{2}$ -3 lunmas (=  $12\frac{1}{2}$ -15d) per xest. The price of muries in Akko must have been very cheap as it had to undercut the local muries trade in Tiberias (note 78), not so far from Akko, and well-connected by a major road.<sup>79</sup> Wine must have cost less - hence the danger of admixture - perhaps even less than 2 lunmas (= 10d) per xest.

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77. Such a journey might take about four days. See Jean Rouge, *Récherches sur l'Organisation du Commerce Maritime en Méditerranée sous l'Empire Romaine* (Paris 1966), pp. 101-5, especially p.103, citing durations of journeys (North to South): Antioch to Alexandria (about 800 kilometres) 10 days, (sources *ibid*). On the speed of travel in general and difficulties in calculating it, see *ibid*, pp. 99-101. See also L. Casson, *Speed under Sail of Ancient Ships*, in *TAPA LXXXII* (1951) pp. 136-48; also *Byzantine Egypt: Economic Studies*, p.141. For eastern Mediterranean routes in general, Rouge *ibid*, pp. 86-7, 91; *Byzantine Egypt etc.*, pp. 140-1. For eastern Mediterranean coastal ports, Rouge *ibid*. pp. 127-8.
78. It had to compete with a local market round the sea of Galilee, which was within easy reach of Akko. See J. Shabbat 11A 54 = J. Pesahim 37c 45, B. Pesahim 109A. For fishing round Tiberias, see Reichelheim in *Econ. Surv.* 4, p.154. Note the name *Taricheae* (dried fish), a place near Tiberias, Cf. S. Krauss, *Kadmoniot ha-Talmud*, vol. 2 part 2. (Tel-Aviv 1929), p.217. *Tarichaeae* is also called *Migdal Nunia* (= tower of fishes) in B. Pesahim 46A, and in the *Kalir*. See *Sefer ha-Yishuv*, vol. 1, ed. S. Klein (Tel-Aviv 1939) p.136, and M. Avi-Yonah in *QDAP* (next note) *ibid* p.36.
79. The distance from Akko to Tiberias is about 50 kilometres. There was a good road connecting these two cities. See *Quarterly of the Department of Antiquities in Palestine* (= *QDAP*), vol. 5 (1935), M. Avi-Yonah, *A Map of Roman Palestine*, p.179 [ = p.41 ], and also his *Historical Geography of Palestine*, etc. (Jerusalem 1962, Hebrew) pp. 84-6 (no 1a [2]).



In Apamaea on the other hand, it cost 4 lummas (= 20d) per xest. These price variations are in themselves very revealing, but let us see whether we can place them into any kind of historical context.

Starting from a (conjectural point of departure that muries in Akko cost  $12\frac{1}{2}$ -15d. per xest. c.275, wine probably cost around 10d. or less at this time, and muries a little more than 15d. We may now compare these prices with those recorded in the Edict of Diocletian. However, as the value of the denarius changes so radically during the intervening quarter century, it would perhaps be sounder to translate these prices into fractions of the aureus (even though this too is an ever shifting point of uncertainty). If we accept our suggestion that the lumma here (=  $\nu\omicron\mu\mu\alpha\varsigma$ ) = sestertius in that it is  $\frac{1}{100}$  of Aurelian's reformed aureus of 500d.<sup>79A</sup> then we may state that muries cost approximately  $\frac{1}{33}$ - $\frac{1}{40}$  aureus, and wine about  $\frac{1}{50}$  aureus.<sup>80</sup>

When we now compare these necessarily very approximate and conjectural results with prices recorded in the Edict of Diocletian (cf 301), we find that ordinary wine (probably of the sort of quality one might mix in with muries) costs 8d. per xest.<sup>81</sup> i.e.  $\frac{1}{100}$  aureus, while garum (fish-sauce, the nearest thing to muries there recorded)<sup>82</sup> of the first quality costs 16d. per pint, and of the

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79A Note that R.A.G. Carson, in *Revue Numismatique*, 1965, p.255, has dated Aurelian's monetary reforms, and his introduction of the XXI coin to the beginning of 274. This tallies very well with our dating of this "lumma" text. The "lumma" was no doubt a new term connected with the reform, useful (as it took the place of the sestertius as a unit of reckoning) and likely to be used then.

80. Note that above we reckoned 1 xest wine:  $13\frac{1}{2}$ d in a text probably of this time.

81. II.10, Graser, p.322.

82. See p.159.



second quality 12d. per pint,<sup>83</sup>, i.e.  $\frac{1}{50}$  -  $\frac{1}{66}$  aureus. Thus Palestinian prices of some 25 years earlier are slightly higher than those of Diocletian's Edict. No doubt prices continued to rise rapidly in Palestine - we know them to have done so in Egypt - so that Diocletian's edict would have indeed reduced considerably the "licentiam pretiorum" mentioned in his prologue, (contra-Mickwitz, as above). Moreover, we should also bear in mind the change in the gold-silver ratio between Aurelian and Diocletian's time, which in a way makes for even greater reductions than a comparison of the plain figures themselves might suggest (see above).

Looking back to the Zarai inscription of the beginning of the century, 202,<sup>84</sup> we may reckon that wine and garum both cost 40 sest. (= 10d) per amphora (= 48 sextarii), i.e. about  $\frac{1}{5d}$

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82 (from p.158). Muries is, in fact, inferior to garum; see Mart. XIII.103; Aur. Vict. De Vir. ill.66. On garum's price in Ashcalon, c.317-22, see P. Ryl. + 637,428, and compare Antiochene prices of wine in P. Ryl. 629. 44, 363. 267, + 631 ii 91. The material is assembled in the price lists above.

83. III. 6, 7. Graser p.323. L. Casson in TAPA 70 (1939), p.15, shows that in Byzantine Egypt from the IV to the VII centuries, there were three grades of wine, (1) cheap wine costing from  $\frac{1}{500}$  to  $\frac{1}{792}$  sol. per sextarius, (2) medium priced wine costing from  $\frac{1}{150}$  -  $\frac{1}{336}$  sol. per sextarius, and (3) expensive wine costing  $\frac{1}{50}$  solidus per sextarius. The cheapest wine in the Edict of Diocletian (II.10) costs  $\frac{1}{100}$  aureus per pint (= sextarius) again showing that Egyptian price-levels are consistently lower than those of the Edict (and those of Palestine).

84. CIL. VIII. 4508; JRS IV (1914) pp. 143-6; Econ. Survey, vol. 4, pp. 80-2. On this tariff, see material cited above.

per pint. This is an African price, but one from Egypt, undated, but probably from the early III cent. (P. Lips.II.V) records that 1 jar (= xest.? or chous? = 2.9 litres) of pickled fish cost 1 dr.  $1\frac{1}{2}$  obols (=  $\frac{5}{12}$ d.).<sup>85</sup> The Zarai tariff price reduced to a fraction of the aureus. Thus, the so-called enormous price-revolution of the (later?) III cent. when reduced to gold values is seen to be little more than a doubling or trebling of prices till the beginning of the last quarter of the century. Then it would appear prices climbed quite steeply.<sup>86</sup> Still the difference between the price  $\frac{1}{5}$ d. per pint of wine recorded at Zarai in 202, and about 8d. per pint of 301 (Edict of Diocletian) is not a forty-fold rise in cost, but almost an identical price, when reckoned in terms of gold.

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85. Cf. Martial (d.106) 12.76; 20 asses per amphora wine =  $\frac{1}{30}$ d. per xest; Columella (c.50) 3.310, ordinary Italian wine, 60 asses per amphora, =  $\frac{1}{10}$ d. per xest. See Econ. Survey, vol. 5, p.273 note 1. Of course, wine prices are particularly deceptive as they vary so radically according to place, type and season.
86. Johnson in his article on "Roman Egypt in the Third Century" (JJP 4, 1950), writes: "The extraordinary expenditure on public works during the Third quarter of the century is clear evidence of prosperity", (p.151, referring to P.O. 1450 of 249-50, P.O. 54 of 261, Archiv f. Papyrusforsch. 4.115, Antinoopolis 258). "There was no apparent cause in Egyptian internal economy for the sudden rise in prices under Aurelian. Presumably Mediterranean price-levels had risen, due to inflation in the imperial currency under Gallienus or Claudius, and this was speedily reflected in the Egyptian open market for grain," (ibid. pp.156-7).



PART 3

GOLD AND SILVER STANDARDS

GOLD AND SILVER "STANDARDS" - I

We now turn to some purely legal texts which may cast further light and the pattern of III cent. monetary development, and thus give added body to the skeletal framework outlined in the preceding chapter.

The Mishna Baba Mezia 4.1 and its implications has long been the subject of numerous Talmudic discourses. More recently, however, it has been studied by a number of scholars who have tried to explain it and the difficulties arising out of it on the basis of historico-economic arguments. While this approach was undoubtedly correct, the detailed reasoning was rather less so. Let us then first set out the Mishnaic text(s) and the Talmudic discussions on it in the two recensions which have come down to us - in the Babylonian and Palestinian (= Jerushalmi) Talmuds.

J. BABA MEZIA 4.1 (9B-C)

Mishna: Silver acquires gold but gold does not acquire silver; copper acquires silver, but silver does not acquire copper; cancelled coins acquire current ones, but current ones do not acquire cancelled coins; uncoined metal acquired coined, but coined metal does not acquire uncoined; movables acquire coins, but coins do not acquire movables ....

B. BABA MEZIA 44A-B

Mishna: Gold acquires silver, but silver does not acquire gold; copper acquires silver, but silver does not acquire copper; cancelled coins acquire current ones, but current ones do not acquire cancelled coins; uncoined metal acquires coined, but coined metal does not acquire uncoined; movables acquire coins, but coins do not acquire movables ....



Gemara [90]: This is the principle of the matter; all which is lower in value acquires its counterpart [which is higher in value]<sup>1</sup>. Said R. Hiyya b. Ashi: Who formulated our Mishna? R. Simeon the son of Rabbi. His father said to him (to R. Simeon): Retract and declare that gold acquires silver. He (R. Simeon) replied to him (Rabbi): I cannot retract, for you yourself, whilst you were [young and] strong stated that silver purchases gold. According to Rabbi, gold is produce. But the Mishna states that silver is like produce.

The daughter of R. Hiyya Raba lent Rav [gold] denarii. She came and asked her father [how he should repay]. He answered her 'Receive

Gemara: Rabbi taught his son R. Simeon: Gold acquires silver Said he to him: Master, in your youth you did teach us, Silver acquires gold; now, advance in age, you reverse it and teach Gold acquires silver. Now, how did he reason in his youth, and how did he reason in his old age? In his youth he reasoned: Since gold is more valuable, it ranks as money;<sup>1</sup> whilst silver, which is of lesser value is regarded as produce; hence [delivery of] produce effects a title to the money. But at a later age he reasoned: since silver [coin] [44B] is current, it ranks as money; whilst gold which is not current is accounted as produce, and so the produce effects a title to the money ...

Now, R. Hiyya too regards gold [coin] as money. For Rav once borrowed [gold] denarii (= aurei) from R. Hiyya's daughter.

1. It will be noted that such statements are taken as descriptive of a situation rather than explanatory. Subsequent discussion will demonstrate conclusively that such can hardly have been the complete reason, either legal or economic.



from him current and full-weight gold denarii.' From the story of the daughter of R. Hiyya one can learn (that gold is money).<sup>1a</sup>

R. Idi said: Abba, the father of Samuel, also asked of Rabbi, 'May one borrow gold denarii gold denarii? He replied one may. (Hence, gold denarii are money).

R. Jacob b. Aha said: Both R. Johanan and Resh Lakish also stated that one may borrow gold denarii for gold denarii, a karat<sup>2</sup> for a karat, but it is forbidden to borrow a silver leukon<sup>2a</sup> for a silver leukon ...

Subsequently the gold denarii having appreciated, he went before R. Hiyya. Go and repay the current her current and full-weight coin, he ordered. Now if you agree that gold ranks as money, it is well. (Notwithstanding its appreciation, he would be returning money of the same nominal value as that which he borrowed). But should you maintain it is produce, it is the equivalent of borrowing a se'ah (= a certain measure) for a se'ah (to be repaid later), which is forbidden (lest it appreciate in the meantime, and he would be infringing the prohibition of interest).

That<sup>3</sup> does not prove it. For Rav himself possessed gold

1a. The commentators ad loc. understand this statement thus: And we can learn from the story of the daughter of R. Hiyya (that the law is) that gold is money? - a rhetorical question. However, it is fairly clear that this indeed was R. Hiyya's opinion; cf. Ridba's ad loc.

2. See below.

2a. See Krauss, vol. 2, p.319A, SV., Zuckermann, Talmudische Münzen und Gewichte (Breslau 1862), p.29, and see below.

3. This latter part is a typical piece of (Babylonian) Talmudical argumentation and is of no historical importance



denarii [when in incurred the debt],  
and that being so, it is just as  
though he had said to her 'lend me  
until my son comes,' or 'until I  
find the key'. (Cf. B. Baba Mezia  
75A).

Now even the most cursory perusal of these versions reveals the following clear fact, namely that Rabbi (= R. Judah the Prince I) in his youth stated that silver acquires gold, while in his old age he said that gold acquires silver. There must have been some reason for him to change his mind, and it is with this problem that we shall occupy ourselves. But before so doing, let us note a few further points. Not only did Rabbi in his youth consider that silver acquires gold, but so did his son too (B. and J.), even while he (Rabbi) was old and held the reverse opinion. Furthermore, this was also the opinion of R. Hiyya, when Rav borrowed money from his daughter (B. and J.), and this opinion was likewise held by R. Johanan and Resh Lakish (J).

The chronology of these opinions may be calculated approximately thus: Rabbi was born C.135,<sup>4</sup> so that any time c.170 would probably qualify to be called the period of his youth. He changed his mind when "advanced in age". The specific term used in the Talmud is בין שבעים ושישים - בין ששים ושישים, which usually means between 60 and 70

4. See Jewish Encyclopaedia (=JE) Vol. 7, p.333B, SV. Judah I (W. Bacher), and see below note 16.

(See M. Avot 5.21: <sup>ה'שש'ס' לזקנה</sup> - 'sixty years for mature age'). Thus he probably revised his opinions c.195. At this time, however, his son R. Simeon disagrees with him; presumably then the issue was not clear-cut and hence disputable. But by the time Rav borrows money from R. Hiyya's daughter there appears to be no argument. Certainly Rav is not said to have disputed the decision of R. Hiyya, though it would have been in his financial interest to do so. Rav left Palestine (where R. Hiyya spent his remaining years)<sup>5</sup> in 219, hence this incident took place pre-219.<sup>6</sup> The same opinion, namely that silver acquires gold, persists through the period of R. Johanan and Resh Lakish, i.e. c.230 onwards. There is no change of opinion recorded for either of these authorities who lived on till late in the III cent. - R. Johanan died 279 - so that, in effect then, throughout the period c.170-c.280 the opinion was that silver acquires gold, with the exception of a (presumably) brief spell c.195, when Rabbi held the view that gold acquires silver. Our first question may now be restated and elaborated, thus: What were the specific causes c.195 that made Rabbi change his mind? Why did his son then not accept this reversed opinion? Indeed why did no one (recorded, at any rate) subsequently take up this view?

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5. A. Hyman, *Toldoth Tannaim Ve'Amoraim* (London 1910), p.431.

6. JE vol. 1, p.298 (S.V. Abba Arika, W. Bacher). Rabbi himself may have changed his mind again when he indicated to Samuel's father that gold is coin. However, this may equally well have been an event of Rabbi's youth. The chronology is as yet unclear. We know only that Samuel himself died in 254. See addenda pp. 335-7.



Scholars who have hitherto dealt with this question have suggested the following explanations:

(a) Heichelheim<sup>7</sup> proves from a Palmyrene inscription (dated April 193)<sup>8</sup> that after the time of Commodus the denarius - the commonest silver coin - fell into disrepute.<sup>9</sup> He goes on to state that: "In the light of these inscriptions it is clear that it was not by chance that the famous Talmudic authority Rabbi in his old age, which was contemporary with the inscription mentioned above, reversed his earlier principle 'silver buys gold' into 'gold buys silver'."

Heichelheim here appears to have completely ignored the basic legal principle upon which this whole law is based, or else he would have seen that this Talmudic reference actually gets closer to refuting his statement than to corroborating it. For the principle (clearly expressed in the Talmuds)<sup>10</sup> is this: 'Coin' is more current than 'produce'. 'Coin' cannot acquire, i.e. actually effect a legal purchase or transfer to property; only 'produce' can. It can at most commit a person morally to go through with the transaction. Thus if gold is

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7. Econ. Survey, vol. 4 (Baltimore 1938) p.221.

8. Ibid. p.210. Cagnat 1 E.R.R., III, 1050 = C.I.S., II, 3, I, No. 394B. Also Cooke, North Semitic inscriptions (Oxford 1903), p. 273 No. 115 (= Vog. 6).

9. Cf. Econ. Survey, vol. 5 (Baltimore 1940, Tenney Frank), p.93 idem JRS XXVII 1937, pp. 286-7. But see West, Gold and Silver Standards in the Roman Empire, p.118.

10. Cf. also T. Baba Mezia 3.14 (377, 9-13).

11. For further discussion of the problem of 'kinyan kesef' (= purchase by money), see Isaac Herzog's The Main Institutions of Jewish Law, vol. I, "Law of Property" (London 1936), pp. 163-6, 182 etc., also Yesod Hamishpat Ha-Ivri, vol. 1 (Berlin 1922), by Asher Gulak, Para. 36, p.107 et seq.



said to acquire silver, it follows that gold is produce while silver constitutes coin and has the user's confidence. Therefore when Rabbi said 'gold acquires silver', silver must have been more current than gold, and not less current, in greater use, and presumably confidently used.

Heichelheim cites further Talmudic evidence to support his contention. He writes: "and in addition to the Talmud (J. Ketubot 1.2., 25B) states expressly that the silver coins of Septimus Severus had less value". However, this is the opinion of R. Johanan. What he implies there - he does not "state expressly" - is that סלעים סבירניות Severan tetradrachms were already considerably debased.<sup>12</sup> Yet R. Johanan

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12. Does 'Severan tetradrachms' mean tetradrachms of Septimus Severus or those of Severus Alexander? If those of Sev. Alex., they are probably Antiochene. The rights of Antioch had been taken away after Niger's defeat by Severus, (Scr. Hist. Aug., Sev. IX. 4, Loeb ed. 1.393). They were restored by Caracalla, probably when he received the Toga viriles and assumed his first consulship, 202, (ibid. Sev. XVI, 8, Loeb ed., 1.409; Caracalla 1.70., Loeb ed. II 4, note 1). In Severus' reign, therefore, relatively few tetradrachms could have been struck at Antioch, (cf. British Museum Catalogue of Roman Coins, [- BMC/ vol. 5 /Mattingly, London, 1950/], p. XVI, note 1). Only very few tetradrachms were struck at the beginning of his reign. (BMC, vol. 6 /Carson, London 1962/ pp. 5.8; Dura Final Report 6, Coins /A.R. Bellinger, 1949/ pp.205-6). Caesarea in Cappadocia produced a few (BMC, 5, p.XVI), and so did Laodicea and Tyre (ibid, p.202). Septimius' coins seem the more likely for the comments of R. Johanan, (BMC 5, p. XVI). See also Bellinger's Syrian Tetradrachms of Caracalla and Macrinus, Numismatic Notes and Monographs, Nos. 3 (New York 1940), pp. 21, 30-2, 86. Incidentally the correct interpretation of this Jerushalmi text was realised by Zuckermann (ibid. p.15) and was followed by all the Dictionaries, (Kohut, Levy, Krauss) except for Jastrow (Dictionary, p.519B סבירניא ) whose emendation to טברניא (= Tiberian) is not only unnecessary but impossible as Tiberias (the city) never produced silver currency. (See e.g. Arie Kindler, The Coins of Tiberias, Tiberias 1961). The denarii of Sept. Sev. were only 58.3% silver. See Sture Bolin, State and Currency in the Roman Empire (Uppsala 1958), p.211, Table 17.



himself (in the Jerushalmi) is of the opinion that gold is coin, or in other words that "silver acquires gold" despite its (silver's) debasement.

(b) A Marmorstein<sup>13</sup> offers a different solution to the problems presented by our texts. He writes that "according to the ancient law before Caracalla 'silver acquires gold'. But in the period of Rabbi, according to his son, 'gold acquired silver'." The reason he offers for this change is as follows: "As long as gold was the current currency it served as money and silver served only as merchandise (= produce). It was after 211 that gold was taken out of circulation and replaced by silver, then gold became merchandise and silver served as money. This confirms the date of Rabbi's death as given by Sherira Gaon, 219. The modification of the Mishna only makes sense after Caracalla's time."

This explanation, convincing as it appears to be, is open to a number of objections: (1) already in 193 we see that the merchants of Palmyra were refusing debased silver denarii and demanding payment in "old gold denarii" (see above). Some twenty years later with the debasement still further advanced<sup>14</sup>

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13. REJ vol. 98(1934), pp. 36-7 ("Dioclétien à la lumière de la littérature rabbinique").

14. See, for example, Mickwitz, Geld und Wirtschaft etc., pp. 40-1. It is interesting to note that according to CIL VI 29691 of 206 there is already some indication of the mistrust in minted silver and copper. For there we find a record of a distribution of 10 libra of silver and 100,000 sest. Thus, first the unminted silver is mentioned, and only then the minted coins.



one would expect less confidence in silver making it less "coin-like"; (2) Already before 219, i.e. (according to Marmorstein) less than eight years after 211, R. Hiyya and Rav regarded gold money as 'coin'; (3) There was indeed plenty of gold coin circulating both from the mint of Rome and the Eastern mints (Antioch etc.)<sup>15</sup>; (4) It should furthermore be noted that Sherira Gaon does not explicitly give Rabbi's date of death as 219. This is the result of an (interpretative) emendation which has no real basis in any of the manuscripts.<sup>16</sup>

(c) Finally Louis Jacobs, approaching the problem from a completely different angle writes the following:<sup>17</sup> There can

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15. Cf. BMC 5, index 'gold'.

16. See Iggereth Rav Sherira Gaon, ed. A. Hyman (London 1910), p.65 note 5, (chap.3, section 2); ed. B. Lewin (Haifa 1921) p.76, line 15 and p.78 line 5 (variants and notes); Dorot Harischo'nim of Halevy, vol. 2, part 3, chapt. 2-4, 5-6. See also A. Guttman's article in Hebrew Union College Annual, vol. XXV (1954), pp. 244, 54 for Rabbi's birth-date, (c.135), and pp. 256-61 for the date of his death, which remains unclear. See Ginze Schechter vol. 2, p.397 and Otzar ha-Geonim to Sanhedrin (97B) (Jerusalem 1966), p. 499, note 1. However it does seem clear that Rabbi lived till c.220 (= 150 years after the destruction of the Second Temple in 70 C.E.). See Nissim Gaon's introduction to the Talmud. The text in Yalkut Zacharias II, Para. 579 is highly problematic. See below pp. 335-7.

17. Journal of Semitic Studies (= JSS) vol. 2 (1957) pp. 355-6, note 3. This has to be seen in a wider context of the problems of Mishna editing, Mishnaic sources, etc. See, for example. S. Lieberman, Greek and Hellenism in Jewish Palestine (Hebrew ed., Jerusalem 1962), pp. 217-8, and note 49; E. Schachter, Hamishna ba-Babli uba-Yerushalmi (Jerusalem 5719), p.305, 735 (to M. Avoda Zara 4.4). [cf. Rapaport in Kerem Chemed. 7, letter 9, sect. 4, pp. 157-60], ibid, introduction pp. 17-36, and pp. 1, 42, 171, 305; L. Ginsberg, A Commentary on the Palestinian Talmud, vol. 1 (New York 1941), Hebrew introduction p.51; J.N. Epstein, Mavo le-Nusah Ha-Mishna (Jerusalem 5708) pp. 673-726, especially pp. 707-30. Z. Fraenkel, Mevo ha-Yerushalmi (Breslau 5630) fol. 20A et seq.



be little doubt that the two Talmuds were influenced by the currency conditions of their respective lands. In Palestine silver money had long been adulterated and after the reform of Diocletian, the standard was gold. Consequently silver was in the nature of a commodity (= produce) in relation to gold. In Babylon, where silver coins were far more current than gold, the latter would be the commodity.

In this way he wishes to explain the very interesting problem why the two Talmuds adopted varying Mishnas, the Babli that of Rabbi, the Jerushalmi that of his son. But according to this argument, there should have been a gold-standard in Palestine during Rabbi's youth, (c.170), R. Hiyya's later years (pre-214), R. Johanan's life (c.250) etc., as they all held the opinion that "silver acquires gold", (meaning that gold is coin). Yet, as he himself says, there was not a gold standard in Palestine until the reign of Diocletian.

Jacob's incorrect explanation of why the Talmuds chose their respective Mishna versions, has the positive effect of clarifying for us a point of cardinal importance, namely that the criterion here involved is not whether there was a gold or silver standard.

For it is quite certain that "the Roman Empire was not on a gold standard; in it gold was a commodity whose price expressed in normal currency, the denarius, might vary like that of wheat."<sup>18</sup> That metallic standard (alone) cannot be the criterion here is most clearly evident from the Mishna of the Jerushalmi, i.e. that of R. Simeon son of Rabbi. For in this Mishna we read that "silver acquires gold" and also that "copper acquires silver". If it were only a matter of metallic standards, the first statement would suggest a gold standard (for if "silver acquires gold", gold is coin), whilst the following, one of the same period, would suggest a silver standard - an absurd conclusion.

However, there was a sense in which there was a "gold standard" during this period. Thus Bolin writes<sup>19</sup> that "from the time of Nero

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18. A.H.M. Jones, in *Economic History Review*, New Series, vol. 5, (1952-3), p.300. Cf. also P. Mich. 111 verso 1.6 (42 C.E.) where 11 and 21 gold pieces are referred to, but their value is expressed in silver ( ἀργυρίου χρυσῶν ). See *Currency* p.70. See also P. Baden 37 (C.110 C.E.), where the price of gold is given in dr. (?), *Currency* pp. 181 and 90-3.

19. *State and Currency* etc., p.59; cf. *ibid*, p.63. See also the comment in *Currency*, p.164 that "In the earlier period the gold piece whether aureus or solidus seems to have been equated with amounts expressed in drachmae or denarii, in the later period the solidus was equated with myriads or talents but the customary practice was to express sums less than a solidus as fractions of that coin or of the carat."



onwards the value of the denarius was not determined by its metallic content, but by the fact that it corresponded nominally to a definite part of a gold coin, the aureus, which from this time onwards was the only full metallic value coin." Thus while it is true that gold as such may have been valued in terms of silver, or even silver coins (debased though they were), silver money was expressed in fractions of pure (stable) gold coins. Hence gold is, in this sense, coin, and cannot effect a purchase. This is indeed precisely what the Babylonian scholar Raba (early 4th cent.) says (in B. Baba Mezia 44B):

"This Tanna  $\overline{\text{too}}$  is of the opinion that gold is coin, for we have learned in a Mishna (M. Eduyot 4.7): A pruta ( = smaller bronze coin) that they spoke of is  $\frac{1}{8}$  Italian issar... (T. Baba Batra 5.12), the issar  $\frac{1}{24}$  silver dinar (= denarius) the silver dinar  $\frac{1}{25}$  gold dinar (= aureus)... This is understandable if you say that  $\overline{\text{gold dinar}}$  is coin, for then the Tanna (= Mishnaic authority) is reckoning  $\overline{\text{the silver dinar}}$  as part of something fixed; but if you were to say that gold is produce, then the Tanna would be reckoning against something unstable  $\overline{\text{which is impossible}}$ ... from here then you may certainly deduce that  $\overline{\text{gold}}$  is coin.

On the other hand, it could not be denied that there was officially a silver standard (at least when compared with copper); hence,

silver as opposed to copper was coin and not commodity or produce. In practice, then, the cheaper metal acquired the dearer one, and this is indeed exactly what the Jerushalmi says: "This is the principle of the matter: all which is lower in value acquires its counterpart [which is higher in value]". (Compare also the Babli's explanation for the opinion of Rabbi in his youth).

The question still remains, however, why should Rabbi have held the opinion around the year 195 that silver is more "coin" than gold. The answer is surely supplied by the Babylonian Talmud: silver was far more current than gold, hence Rabbi thought that from this point of view it qualified to be considered as "coin". If Rabbi suddenly reversed a former opinion, this must suggest that silver suddenly became far more current than it had been before. Numismatic evidence shows this to have been precisely the case. For between 193 and 196, 342 types were struck, meaning an average of about 176 issues per year. This is a most fantastic increase over the average for the preceding years of Antoninus reign of 17 issues per annum.<sup>20</sup> This circulation was so widespread that

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20. See Pekáři's "Studien zur römischen Währungs und Finanzgeschichte von 161 bis 235", in *Historia* 8 (1959), pp. 456-7; also Catalogue of Courtauld Collection of Roman Coins etc. T.F. Carney (Salisbury, S. Rhodesia 1963), p.XXIX. However sceptical one may be of Pekáři's methods in arriving at such precise results - dating and definition of types for this period is incredibly complex - the general conclusions are hardly to be doubted, so great is the discrepancy in number.



denarii circulated even in Egypt (which had its own currency and limited and discouraged the circulation of foreign coinage)<sup>21</sup> during the reign of Septimius Severus.<sup>22</sup> Aurei, on the other hand, may have been slightly less plentiful than usual, as Commodus had struck them less freely than had Emperors in preceding reigns.<sup>23</sup> This tremendous boom in the circulation of denarii is surely the background and cause of Rabbi's reversed decision.

At the same time, however, this flood of silver had an immediate inflationary effect. The Palmyra inscription of 193 (see above) may possibly be an indication of this, as the caravan leaders there demand payment in gold despite the fact that silver would be more practical. On the other hand, in view of the earliness of the date of this inscription (April 193), it may be that the caravaneers' attitude reflects earlier conditions, which possibly the silver boom was meant to have combated.<sup>23a</sup>

But if Palmyra does not offer any clear evidence of the immediate inflationary effect of this policy, Egypt does. For in

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21. Currency pp. 1-2, 89-90. Econ. Survey, Vol. 2, (Baltimore 1936), pp. 427, 432. Weber, Numismatic Notes and Monographs No.54, p.4; Egypt and the Roman Empire, A.C. Johnson (1951), pp. 11,14.

22. Dattari, *Revista italiana numismatica*, 1903, pp. 285-6; cf. Jones in *Econ. Hist. Rev.* *ibid*, p.297.

23. BMC. 4 (Mattingly) London 1940), p. XV.

23a Pekari dates the silver boom as beginning in 194-5 (*Historia* *ibid.*, p.443 et seq) and therefore rejects Heichelheim's interpretation. See his remarks in *Syria* 38, 1961, p.283 note 3. For a recent discussion of the whole Palmyra inscription, see J. Guey, *Syria* *ibid*, pp. 268-74, who thinks that "old denarii" refers to a unit of value.



P. Columbia 123 (Inventory 516) lines 43-4, dated 199-200 (Alexandria) we read the following ruling:<sup>24</sup>

αργυρίον αντί πύρου  
κατὰ βᾶλδιν ὑμᾶς ἐκώλυσμεν — "We have forbidden that you pay money in place of grain". People were apparently only too willing to pay in debased denarii. The government, on the other hand, were unwilling to accept them. The government, it would appear, preferred to keep the coins at their (unreal) nominal value, but receive payment in (full-value of) grain.<sup>25</sup>

This widespread lack of confidence in the silver coinage was apparently appreciated by R. Simeon, son of Rabbi, and for this reason he opposed his father's view, considering silver as no more than a (very unstable) commodity compared with the firmly based stable gold coinage.

We have seen above that there were various 'alternative?) factors governing the Jewish legal concept of "coin" (as opposed to "produce"), such as stability, currentness, and perhaps even value. Thus Rava (above) quotes that "a silver dinar is one twenty-fifth of a gold dinar" thereby wishing to prove that the denarius

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24. Apocrimata. Decisions of Septimius Severus in Legal Matters ed. Williams Linn Westermann, and Arthur Schiller (New York 1954), pp. 32-4, commentary p.89. (Idem in Chronique d'Egypt 30 (1955) pp. 327-45, with no significant changes). Note also that hoards were buried during this period; e.g. Numismatic Chronicle 1960, p.245, hoard buried c.194-5. For a list of such hoards, see Bolin, State and Currency etc., pp. 351-2 (Table 7, nos. 1, 2, 10, 12, 13, 15, all from 193-5).

25. This interpretation (the editors') is accepted and further borne out by MacMullen, in Aegyptus XLII (1962) p.100. Cf. p.99 for his graph.



was reckoned as a fraction of the (stable) aureus, and not that the aureus was reckoned as worth a certain number of denarii. His Tannaitic source is unknown other than from this reference to it. However, in J. Kiddushin 1.1 (58D 31-2) we read that "a dinar of silver is one twenty-fourth of a dinar of gold". Furthermore, a Mishna in Me'ila 4.7, dating probably from the early II cent. implies a ratio of 24d. to the aureus,<sup>1</sup> as does a later statement in B. Bechorot 50A.<sup>2</sup> Rava presumably knew of a Tannaitic statement similar to that of J. Kiddushin (ibid) but reading "one twenty-fifth" instead of "one twenty-fourth".

Heichelheim has already noted this difference in the value of the aureus according to Tannaitic statements, and has argued very plausibly that it reflects the drop in the value of gold following Trajan's gaining possession of the Dacian gold mines etc. in 106.<sup>3</sup> For in 97 a mneieion was worth 88d. in Egyptian money while

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1. "If he gave him a gold dinar (= aureus) and said to him: Buy me a shirt', and he went and bought him a shirt for 3 selas (= 12d) and a cloak for 3 selas (= 12 d.), they are both guilty of sacrilege" etc. For the context shows that the amounts are meant to be exactly equal. Hence 24d. = 1 aureus.
  2. R. Hanina (flor. c.220-50) says that eight Syrian istiras (= staters) are worth one aureus. The Syrian stater must surely be a cistophoric tetradrachm, worth 3d. Hence (3 x 8 =) 24d. = 1 aureus.
  3. Klio XXV (1932) p.124 et seq; Econ. Survey etc. vol. 4, p.215; ibid. vol. 2, p.425; ibid. vol. 5, p.91. See P. Baden 37. See also A.C. Johnson in American Journal of Archeology XXXVIII (1934), p.53; Mickwitz, Geld und Wirtschaft etc., pp. 32,42.



in 127, it cost only 84½. That is to say, pure gold had dropped some 4% in value. Hence, the aureus, formerly worth 25 d. would now be worth only 24d.

In point of fact then, a statement of the form "a silver dinar is worth one twenty-fifth or one twenty-fourth of a gold dinar" is no real proof of the stability of gold. Rava's statement is, however, evidence of his own attitude towards gold.

The story (cited above) in which Rav borrows gold money from R. Hiyya's daughter is an interesting case in point. For there it is stated (by the editor or reporter) that "the coins went up in value" - implying the instability of gold. R. Hiyya, however, declared gold "coin" and not "commodity" (or "produce"). On the basis of which criterion did he declare gold "coin"? Certainly not because it was more "current" than silver. (Were that to have been the case, it would have gone down in value in relation to silver, not up!) Was it then because he considered gold more stable? If so, he must have considered that silver had depreciated, while gold had kept its fixed standard.

It is moreover possible, even likely, that this "appreciation of gold" refers to Caracalla's currency reforms of 215,<sup>4</sup> when he

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4. This would be 4 years before Rav left Palestine (219). Perhaps we may see Rav's need to borrow money against the background set by OGIS 5 15. (Econ. Survey. vol. 4, p.897), an inscription of c.210, which mentions poverty and disruption of the markets through lack of currency. (Cf. B. Ta'anit 19B, B. Baba Batra 91B, reflecting such a situation?). Such a date, if accepted, is further proof against Marmorstein's explanation (see above). Cf. Numismatic Chronicle vol. 16, p.42 (West, Gold and Silver Standards in the Roman Empire, [New York 1941]) where it is stated that in the time  
(Note 4 cont. p.178)



introduced the new denomination, the antonin~~ian~~us, establishing a new ratio of: 50d. = 25 ant. = 1 aureus. We have shown above that officially silver was probably overvalued to a new relationship to gold (9:1, instead of the earlier 12:1), but in actual fact this was a simple inflationary ruse to slow up the rapid depreciation of silver coinage. People must have realised this (just as had the Palmyrene caravaneers some 20 years earlier) and therefore tended to see in the gold coinage (which were never actually debased) the real stable standard. They would seem to have disregarded or at any rate mistrusted the official explanations, and were no doubt very confused at the erratic and peculiar course of the inflation, at the irregular over-valuations of silver that took place throughout most of the III cent.

There is in the Talmud some interesting evidence of this economic bewilderment. In J. Kiddushin 1.1 (58D 37-9) we read that the ma'ah (= silver obol, 1/6d.) was first reckoned at 32 prutas (the smallest Palestinian bronze denomination)...."R. Zeira said: 'In the days of R. Simai (flor. c.210-40) they declared them (prutas) one twenty-fourth of a ma'ah.' R. Hanina [b. Hama] and R. Mana (both flor c. 220/50). R. Hanina [b. Hama] said: 'Copper stayed in its place; silver went down in price, silver went up in price'. And R. Mana said: 'Silver stopped in its place, copper went up in price, copper

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Note 4 (cont. from p.177)

of Caracalla there was so little gold that it ceased to be readily acceptable for silver. West (ibid) rejects this statement. Our texts, if correctly interpreted, are also evidence to the contrary, for if such were truly the situation, R. Hiyya could hardly have considered such money as "coin".

went down in price'." R. Mana seems to have had some kind of (naive?) confidence in the official concept of a silver standard, whereas R. Hanina [b. Hama], who saw in his own day the constantly shifting changes in silver values, regarded copper as the more stable metal.

This revaluation of the pruta in the days of R. Simai - a purely theoretico-legal procedure, as prutas were by now long non-existent as actual monetary units<sup>5</sup> - must surely reflect Caracalla's monetary reform of 215. We have seen above that silver was over-valued in relation to gold to 9:1, as opposed to the former 12:1. Thus if (according to the fiction of a silver standard) gold had gone down in value by 25%, and if the ratio between copper and gold had remained steady, a silver ma'ah would now be worth only 24 prutas, and no longer 32, (a drop of 25%) - this is the interpretation of R. Mana. If, however, we say that silver went up in relation to gold from 12:1 to 9:1, the rise in value would be 33%. Again, if the ratio of copper to gold had held fast and had not changed, the silver ma'ah would be worth around 40 prutas and not 24. (The only other alternative, namely that the relationship between silver and copper did not change despite the fluctuation in the gold-silver ratio, would not call for an alteration in the value of the pruta vis à vis the ma'ah). It would seem then that R. Hanina [b. Hama]'s

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5. See my article in JQR 56.



interpretation can hardly be correct.<sup>7</sup>

In actual fact, then, R. Simai's reckoning involves what seems to be an inner contradiction. It posits the fickleness of the silver-standard by adopting a constant copper-gold ratio (which implies the stability of the gold standard). At the same time, the new pruta is calculated on the basis of an official drop in the value of gold. Presumably this is in shrewd ironic deference to the fact that officially there was a silver standard. R. Simai saw through ~~this~~ transparent ruse of the governments, and was fully aware of the fact that really silver (coin) was going down in value, (through debasement, subsequent lack of confidence). Thus he calculated at the rate of a 25% fall in the price of silver. In this sense, then, R. Hanina [b. Hama]'s interpretation is correct.<sup>8</sup>

It appears then that at least among certain early authorities, (R. Simeon son of Rabbi, R. Simai etc.) there was a keen awareness and appreciation of current economic developments. If their rulings seem to run counter to the principle of a silver standard, it is only because they saw the weaknesses in it. At a time of

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7. Of course, the ratios 32 and 24 prutas to the ma'ah have their precedents in much earlier Palestinian monetary systems. See above section on "Currency Terminology" and my article in J.Q.R. 56.

8. Whatever be the precise interpretation of these opinions, they are all certain evidence of the growing instability of the Roman monetary system in the III cent.

economic stability when there really was a silver standard, it was recognised and legislation was based on this principle. Thus, for example, in T. Baba Mezia 3 (377, 21-29) dating from c.135-70, we read the following:

17. How defective should a sela (= tetradrachm = 4d) be and not fall within the rule of defrauding? 4 issars to the sela [that is] one issar per dinar, (i.e.  $1/24$ ) according to R. Meir (flor. c.135-70). R. Judah (flor. c.135-70) says: '[in] a sela 4 pundions,' [meaning] a pundion per dinar, (i.e.  $1/12$ ). R. Simeon says: '[to] a sela 8 pundions,' [that is] 2 pundions per dinar, (i.e.  $1/6$ ). If there is more than this [measure of defectiveness] he may use it according to its [weight] value.
18. [He may use it at its weight value from] a sela to shekel, (i.e. up to 50% defectiveness, shekel =  $\frac{1}{2}$  sela = 2d.) and a dinar to a rova (=  $\frac{1}{4}$  shekel, =  $\frac{1}{2}$  d.) [But if] it is worth less than this even by an issar, he may not make use of it at all. (Presumably he should melt it down, or flatten it so that it should no longer be a 'coin').
19. He should sell it neither to a peddler nor to a murderer nor to a robber, because they will cheat others with it, but rather he should pierce and hang it round his son's neck.... Which case are we dealing with? .. that of denarii



and selas (i.e. silver tetradrachms), but gold dinars (= aurei) and coins of copper they would (= can) [always] use (them) at their weight value.<sup>9</sup>

Without going into an analysis of the complexity of legal detail here involved, we may see immediately that a clear distinction is made between silver coins on the one hand and gold and copper ones on the other hand. The former keep their value despite their defectiveness within certain set limits. Thereafter, again within certain circumscribed limits, they may be valued according to their weight. However, gold and copper coins are always valued by weight, presumably according to current bullion prices reckoned in denarii. This is a clear exposition of the principle of a silver standard in Talmudico-legal terms.

The same principles seem to govern yet another text of approximately the same period dealing with a completely different subject. In T. Ketubot 5.5 (267, 20-1): (With regard to the laws of a marriage-settlement) gold dinars are like silver coins. R. Simeon b. Gamliel [II] (flor. c.135-70) says: "The matter is so: [in] a place where they are accustomed not to change gold dinars into smaller coins

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9. There are a number of different interpretations of these texts offered by the commentators. None seem to me as satisfactory as the interpretation here offered. The difficulties lie in the meaning of the phrases 'more than this' (end of 17), 'less than this...by an issar' (18), and the word 'value', which we interpret as 'weight value' as opposed to nominal value. Cf. Lieberman, Tosefta Ki-fshutah vol. II, p.753 to line 4. (T. Ma'aser Sheni 3.6). Cf. also J. Baba Mezia 4.4, 90 40-7, where the text appears to require several corrections.

(silver etc.), but to leave them as they are, (and) gold dinars are as goods." It seems then that according to this gold coins were only regarded as coins (with regard to the marriage settlement laws) if they were readily convertible into silver. If not, they were goods, and would presumably be judged according to their bullion value. This is indeed how the Babli quotes our Tosefta (B. Ketubot 67A): Gold dinars are like silver coins, R. Simeon b. Gamliel says: "In a place where they are accustomed not to change them into smaller money, they assess them according to their value"<sup>10</sup> - bullion value presumably, measured in terms of denarii.

From the above texts it becomes evident that we cannot automatically assign any text stating that "gold acquires silver" ... copper acquires silver" to Rabbi in his old age, as it might just as well come from the period c.135-70 and be a recognition of the principle of a silver standard. Perhaps T. Baba Mezia 3.13 (377, 5-8) is a case in point, and belongs to the same group of Beraithot quoted above (nos. 17-19). It reads thus:<sup>10a</sup>

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10. I have here not taken account of the Babli's reconstruction of this text (ibid). These texts try to establish the relative "fiduciaryness" of coins in this complex multi-metallic system. The common feature to coins of all metals is expressed clearly in M. Shevuot 6.3, of B. Shevuot 40A. Cf. West in ANSMN VI (1954) p.9.

10a See also J.N. Epstein, Mevo'ot Le-Safrut Ha-Tanna'im (Jerusalem 1957), p.243, note 10.



Gold acquires silver. How so? He gave him a gold dinar for 25 silver [dinars] then he has acquired [the silver dinars] wherever he be, (i.e. without his actually having taken possession of them). But if he gave him 25 silver [dinars] for one gold dinar, he has not acquired the [gold dinar] until such time as he shall take hold [of it]. Copper acquires silver. How so? He gave him 30 (copper issars) for a [silver] dinar then he acquires them wherever he be, (i.e. without actually having taken possession of them)...

This text presents a real difficulty. For it seems to posit an equation of 30 issars = 1 dinar (= denarius), while we know from numerous sources that there were only 24 issars in a dinar, (e.g. T. Baba Batra 5.12, 405, 20).<sup>11</sup> Can it be that we have in this text an indication that people who wanted to buy denarii with copper had to pay a premium. That this sort of thing went on is evident from Hadrian's famous letter to Pergamum. This letter relates "the abuses which arose in connection with a public lease to a group of Bankers of a monopoly of exchange between the denarius and the local bronze coinage."<sup>12</sup>

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11. See above, section on "Currency Terminology", beginning and JQR.56.

12. Econ. Survey, vol. 4, p.892. See *ibid* pp.892-4; 1 G.R.P. IV, 352; OGIS, 484 and p.552. Cf. West, *Gold and Silver Standards in the Roman Empire*, pp. 93-4. See also end of letter.



For although they (the bankers) should have accepted 18 asses per denarius from the merchants, small dealers, and fish dealers, who are accustomed to traffic for small bronze, and should have paid 17 asses to those who wished to exchange denarii, they were not satisfied with the exchanging of asses, but even in cases where a man bought fish for silver denarii exacted an ass for each denarius."

The denarius was equal to 16 asses, but the bankers were officially permitted to sell them for 18 asses.<sup>13</sup> So here also the denarius equalled 24 issars, but if one wanted to buy a denarius with issars, one would have to pay 30 issars ( $\frac{1}{4}$  more). The fact that our text continues "a dinar for 30 issars...", though in such a case there would obviously be no premium, is no refutation of our argument. For Tannaitic style demands as great as possible a parallelism between the various parts of a Mishna or Beraitha.<sup>14</sup>

We have already pointed out that there are several different

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13. West, *ibid*, pp. 867. BM 481 line 245 ff show 750d. divided among 1500 persons with a gift to each stated as 9 asses. This gives a denarius of 18 asses. But cf. bilingual inscriptions of 103/4, CIL, III, 14195, 4, 5, 6, 7 (West *ibid.*, note 140), giving 16 asses to the denarius. According to the *Gnomon* of the *Idiologus* it was forbidden to exchange money for more than its value, (Currency, p.92).
14. The stylistic form of the latter part of this Beraitha is dependent upon that of its former part. See B. Zevachim 91B; also B. Eruvin 16A, B. Ketubot 90A, B. Berachot 53A. The reverse is also true, namely that the stylistic form of the first part may be depended upon its latter part. Eg: B. Shabbat 30A, B. Pesachim 7B, B. Yevamot 98A, 102A, B. Nedarim 28B, 72A, B. Nazir 21B, B. Baba Kama 49A, 94B, B. Baba Mezia 62A, B. Sanhedrin 57A, B. Hulin 68A, 119B, B. Bechorot 46B. Cf. Tosafot to Baba Batra 20B, SV אֲדָמָה ad fin. Rashi in B. Hulin 15A, S.V. הָיָה ; Tosafot in Sukka 41A, SV וְשִׁירָה ; Ra"n in Sukka Chap.3, fol. 19B ad fin (in Ra"n's pagination).



considerations in the definition of the legal concept "coin", such as currentness, stability, etc. In some cases the emphasis upon these various considerations could be so manipulated as to permit of apparently contradictory results. A case in point is the very complicated Tosefta in Ma'aser Sheni (2.7, 88, 29-32):<sup>15</sup>

... because they (Rabbi) said that copper [coins] may be substituted by silver [coins], and silver [coins] by gold [ones], and silver [ones] by copper [ones] at need, but not gold [ones] by silver [ones]. R. Eleazar b. R. Simeon says: 'Just as one may substitute silver [coins] by copper [ones], so one may substitute gold [coins] by silver [ones]'. Rabbi said to him: 'And why can one substitute silver [coins] by copper [ones], because one can [also] substitute silver [coins] by gold [ones]; [but then] one should not be able to substitute gold [coins] by silver [ones], because one may not substitute gold [coins] by copper [ones].'

R. Eleazar b. R. Simeon says:

'The Second Tithe consisting of gold [coins] may be substituted by [copper]<sup>16</sup> coins that are in Jerusalem.'

The basic legal principle here is that one may substitute "produce" for "coin", and not vice-versa (cf. B. Baba Mezia 44B - 45A)

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15. Ed. Lieberman, p.250-1, lines 30-5.

16. See J.N. Epstein, Mevo'ot Le-Safrut Ha-Tanna'im, p.177.

Perhaps we may clarify the matter somewhat by tabulating the opinions in the above Tosefta in the following manner:

Rabbi (1)

- A. Copper is produce compared to silver which is coin.  
 B. Silver " " " " gold " " "  
 [At need] C. Silver " " " " copper " " "  
 D. Gold is never produce compared to silver.  
 E. Gold " " " " " copper.

R. Eleazar b. R. Simeon (2)

- C. Silver is produce compared to copper which is coin.  
 D. Gold " " " " silver " " "  
 [In Jerusalem] E. Gold " " " " copper " " "

$C^1 = C^2$   $D^1$  is the opposite of  $D^2$ . Rabbi's argument against R. Eleazar b. R. Simeon runs as follows:  $C^1$  is possible because  $B^1$  is possible; but  $D^1$  should not be possible, because  $E^1$  is not possible. R. Eleazar b. R. Simeon's very cryptic reply is that it is not correct in his own opinion that  $E^1$  is never possible. It is possible in Jerusalem, just as  $C^1$  is possible at need.<sup>17</sup> This argument appears to be very formalistic. Furthermore, how is it that  $C^1$  may contradict  $A^1$  - "at need", and what is "at need"?

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17. See S. Lieberman, Tosefta Ki-fshutah ibid, p.734 and note 16 ibid.



The principles underlying A and B are simple, as these are the views of Rabbi in his youth. Copper is produce compared to silver (A), because there was an official silver standard. Silver is produce compared with gold (B), because it is measured as a part of the gold coin. (See above, beginning of this section). But why should silver ever be produce compared to copper (C<sup>12</sup>)?<sup>18</sup> Neither of the principles hitherto mentioned are applicable here. The criterion must be that of currentness. Because copper is more current than silver, it may "at need" be considered "coin" as opposed to silver, when there is a notable dearth of silver coin. This principle of currentness is here used only "at need", but later on, as we have seen above, it becomes a factor of major importance, making gold (less current than silver but against which silver is measured) produce compared to booming silver. Here two principles are used against each other, as it were.<sup>19</sup>

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18. This proves conclusively that the Babli and Jerushalmi in Baba Mezia (quoted at the beginning of this section) are oversimplifying matters when they say that the principle is that that which is lower in value acquires its more valuable counterpart.

19. The explanation may however be slightly different. See Hadrian's letter to Pergamum end, (Econ. Survey, vol. 4, p.894; West, Gold and Silver etc. pp. 93-4): "In the case of food sold by weight, the price of which is set by the market-masters, I think it is right that even those who purchase several minas worth should pay the price in bronze coinage so as to preserve for the city the revenue from the exchange; so too, where several appear together in an agreement to make a purchase in silver denarii, and then to divide their purchases, they should pay the dealer in small bronze, so that he might bring it to the banker's table; and they should pay at the rate of 17 asses, since the traffic in exchange is supposed to refer to merchants only." (West transl.) In such a situation one can easily imagine silver being judged (legally) "produce" and not "coin". See also Lieberman, Tosefta Ki-fahutah ibid, p.733, line 19 on "at need".



R. Eleazar b. R. Simeon apparently finds currentness of prime importance. Thus the lower denomination, always more current, is coin compared to the higher denomination, which being less current is produce and exactly the opposite to Rabbi's opinion. According to this copper should be coin compared to gold at all times outside Jerusalem too. (Cf E<sup>2</sup>). Yet from Rabbi's argument, it is clear that he knew that R. Eleazar b. R. Simeon agreed with him on this point, that at least outside Jerusalem one could not substitute gold by copper. Here too then it is clear that there are other considerations to be taken into account, such as the fact that copper coins deteriorate more quickly than those of other metals, so that when one collects enough of them one changes them into gold.<sup>20</sup>

However for Rabbi E<sup>1</sup> always held good, even "at need". Hence it follows that at this stage he considered stability (meaning gold as a fixed point by which other metals are valued) the principle of primary importance, even more than that of currentness. Later, however, (c.195) as we have seen above he revised his views and it

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20. Lieberman ibid, p.735, note 16. Note also that according to Rabbi's argument, the premises of which would have to be agreed with by R. Eleazar b. R. Simeon, silver is produce compared with gold (B<sup>1</sup>). Yet R. Eleazar b. R. Simeon himself is of the opinion that gold is produce compared to silver (D<sup>2</sup>). This very difficult problem is dealt with by Lieberman ibid, pp. 734-5 to lines 33-4, 36.



appears that the currentness of silver coupled with the fact of there being officially a silver standard became a consideration of greater moment than that of gold's stability, now that it was relatively scarce. Thus Rabbi's reversal of opinion was due to a shift of emphasis within a complex interplay of contradictory principles.<sup>21</sup>

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21. The (legal) complications arising out of a bi- or tri-metallic system are remarkably demonstrated in this case.

SUMMARY

When viewed historically, there emerges out of this mass of very confusing material one remarkable and significant fact, namely that while in the II cent. there are many precedents for the view that silver is "coin" and gold is "produce" - not merely that of Rabbi in his old age - all the (foremost) authorities of the III cent. - R. Hiyya, Rav, R. Johanan, Resh Lakish - hold the view that "silver acquires gold", i.e. that gold, not silver, is "coin". This is evidence of a very radical change of attitude towards silver coinage, a progressive loss of confidence from the end of the II cent. onwards, to be understood against the background of a creeping inflation. The confidence has shifted to gold, which has become "money" par-excellence. Debts calculated in denarii have (by agreement) to be repaid in aurei,<sup>1</sup> or else only aurei are borrowed.<sup>2</sup> Securities are given in gold aurei or even gold ornaments.<sup>3</sup> The use of gold bullion becomes increasingly evident during this period.<sup>4</sup>

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1. J. Ketubot 11.2, 34B5; see above "currency Terminology", section on antoninianus.
  2. Deut. Rab. Re'e 10, ed. Lieberman, p.95, c.260-320.
  3. J. Shevi'it 10.9, 39D 49-52; cf. J. Baba Mezia 4.2, 9c bottom, c. mid.III cent.
  4. J. Ketubot 12.7, 35c 55; Gen. Rab. 63.3; Deut. Rab. 1.13 - all c.280-320; J. Baba Kama 8.8, 6c 15 - 250-60. See above section on "Currency Terminology". Cf. P. Theod. 33 (312), and P.O.1653 (307). These conclusions as to the growing importance of gold are, I think, borne out to some extent by those of Mickwitz, in his article "Ein Goldwertindex der römisch-byzantinischen Zeit", Aegyptus 13 (1933), pp. 95-106, especially pp. 105-6. For there he demonstrates that in the late Roman (and Byzantine) period gold went up in value. "Diese Steigerung hängt teils damit zusammen, dass die Inanspruchnahme des Goldes als Tauchmittel sich vergrößert hat..." (ibid, p.106)



Further evidence for this state of affairs is to be found in a difficult Jerushalmi text, hitherto insufficiently understood. The question under discussion is whether a certain kind of fine should be imposed on poor people. In the discussion on the reasons for the different opinions, we find the following statement:

J. Pe'a 1.6 ad fin., 16c bottom- d top. ... What is Rabbi's reason? He is of the opinion that a rich man can borrow money (i.e. can get credit), whereas a poor man cannot borrow (i.e. cannot get credit). For Rabbi Judah the Prince is of the opinion that a poor man can always borrow (i.e. can always find credit), while Rabbi says he cannot borrow (i.e. cannot get credit).

This statement as it stands makes little sense, since "Rabbi" almost invariably refers to Rabbi Judah the Prince. It is for this that some commentators read, instead of ר' יהודה נשיא (Rabbi Judah ha-Nasi - The Prince), ר' יהודה נסיה (R. Judah Nesiah), Rabbi's (i.e. Judah the prince's) grandson.<sup>4a</sup> According to their reading, in the time of Rabbi, i.e. late II and early III cent., a poor man could not get credit and could therefore not borrow money, while in the middle of the III cent. his grandson R. Judah Nesiah is of the opinion that a poor man could always find someone to lend him money.

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4a. See Pnei Moshe and Gilon Ha-Shass of R. Akiba Eiger ad loc. etc. Note the variant reading נשיא instead of נסיה in the Sirilio Ms. But this is clearly Sirilio's own emendation, forced upon him by the difficulty of the text as it stands. See Ratner, Ahavat Zion vi-Yerushalaim ad loc. Leiden Ms. has נשיא instead of נסיה, (not noted by Epstein).



Now this explanation hardly makes good sense in terms of the relative economic conditions obtaining during the respective periods of Rabbi and his grandson. For in Rabbi's time conditions were fairly good, and it is far more likely that a poor man would get credit then than in the mid III cent., a period of economic decline, when creditors were demanding securities, and repayment of loans in gold coin or bullion. Furthermore, it seems most unlikely that the opinion of Rabbi's grandson would be given before his own.

However, Ratner (ad loc.) argues that instead of reading 'ל (Rabbi), we should rather read 'ל (Rabbi J...). I would accept this reading, and suggest we complete the lacuna thus: Rabbi J[ohanan], (often called merely 'ל in Rabbinic literature)<sup>4b</sup> Our text now makes very good sense, and the difficulty in the order of opinions - Rabbi's grandson's before his own - vanishes. R. Judah the Prince, at the end of the II or the beginning of the III cent., stated that a poor man, even if he has very little money (i.e. less than 200 d.), can always find someone who will lend him money. In R. Johanan's time, however, later on in the III cent., this was no longer the case. People were very loath to lend out money, except against the maximum assurances that they receive back its full value, either in gold coin or gold bullion. Obviously in such a situation the poor man could never hope to find a loan, and this indeed is what R. Johanan says. Such then was the situation around the mid III cent.

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4b. This too is one of Ratner's suggestions (ad loc.). Alternatively, may be a corruption from R. Judah Nesiah. There is an example of this in Esther Rab. 4.2.4 where Rabbi is mentioned as a contemporary of R. Ami (though not in Pesaro ed.) and Judah b. Simeon b. Pazi, i.e. of the later III cent. Cf. parallel reading in J. Horayot 3,5 (48 c 48) et alia. See Lieberman, Hayerushalmi, Kipshuto, p.175, whose interpretation is unacceptable on chronological grounds.



In Egypt by 260 the situation has reached such a state that the banks do not wish to accept the official silver coin - "divine money of the Emperors" - and had to be forced to do so by edict. The instructions are issued not only to the bankers but to all who enter into contractual obligations in any form knowing that if they do not obey this injunction they shall experience the penalties which the magnificence of the prefect has imposed on them even before this.<sup>5</sup>

At the same time we noted changes in terminological usage, that must be seen as part of a parallel development. Thus maneh becomes a single denarius, and not 100 d., sometime around the early or mid III cent.<sup>6</sup> "Dinar", by itself denotes an aureus<sup>6a</sup> where previously

5. P.O. 1411; Currency p.183. However, see West in ANSMN VII (1957) p.114. Note also that according to the Script. Hist. Aug. Aurelian 47, officials were being paid in kind not money in the later III cent. Also most taxes were paid in kind, not money between 260 and 300. Currency p.84. See also Johnson's "Egypt and the Roman Empire" (Ann Arbor 1951), pp. 29, 269-79. See also F.F. Abbott & A.C. Johnson, Municipal Administration in the Roman Empire (Princeton 1926) No.199.
6. Tanhuma Buber, Deut. p.23; Deut. Rab. ed. Liebermann p.126 and note 2 ibid, where 5 maneh is a small sum of money - c.200-50. Cf. Exod. Rab. chap.30 end. And see above our long discussion on the "maneh". In Masechet Semachot chap. 6, sect. 11, we read of a Sefer Torah (= torah scroll) being worth 100 maneh (= 10,000d.). c.60-70. (Ed. M. Higger, New York 1931, p.135, lines 45-7; "The Tractate Mourning", Yale Judaica Series, vol. XVII, 1966, p.50, translation Dov Zlotnik). Although this is not meant to be an exact estimate, it is clear that a Torah scroll was very expensive. See also Acts 19.19, for magical books to the value of 50,000 silver pieces. Thus it is quite likely that only 2 maneh (= 200 d.) for a Torah Scroll is very little. Hence there is no need to suggest that maneh in J. Yoma 1.1 (38c), where it is stated that a very cheap Torah could be produced for as little as 2 maneh, is an indication that maneh meant denarius already pre-c.220. See also T. Baba Kama 8.3, 6B, 58, and note that the perhaps significant change in the order.
- 6a See also Guey's convincing argument (supported by Buttrey) that the 500,000 *δραχμαί* of the Naqsh-i Rostam inscription, of the mid III cent. are aurei. But here this usage may be no more than the result of the Persian original's (DYHR) influence: see Syria 38, 1961, pp. 261-7.



it had meant denarius, while denarii may be (little) unspecified units from the latter part of the III cent. onwards.<sup>7</sup> Then mainly from the end of the III cent. onwards new terms, such as follis, gramma, argurion, karat, etc. gradually replace the traditional terms.<sup>8</sup>

And yet if one examines our price-lists for the period one finds no evidence of startling rises in costs until perhaps the last quarter of the III cent., despite the continuous fall in value of the denarius from the 20s onwards, certainly no rise in costs comparable to the fall of the denarius as we have outlined above. The same seems to be true of Egypt.<sup>9</sup>

May this not be further indication that people were thinking and reckoning in terms of aurei and not denarii, and in terms of aurei prices did not necessarily change so radically?<sup>10</sup> This may also be a reason for the surprising lack of evidence for an increase in barter-trading during this period, though increase in barter is usually a

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7. J. Ma'aser Sheni 4.1, see above in section on "Currency Terminology". Also J. Ma'aser Sheni 1.2. 52D 20-1, and Archiv Orientalni ibid.

8. See Currency p.157 for a parallel development in Egypt.

9. Currency p.84. See also Johnson in JJP 4 (1950) p.156.

10 Eg: If in the II cent. a mod. wheat cost 4d. - prices range from 1 to 4d. - in gold this would be about 1/6 aureus. According to Ed. Diocl. 1 mod. wheat: 100d. = 100/800 = 1/8 aureus. Of course, I have not taken into account the varying weights of the aureus etc., but this does not affect the general line of our argument. There was no absolute shortage of gold during Gallienus' period; cf. West in ANSMN VII (1957) p.96.



logical outcome and characteristic result of serious inflation.<sup>11</sup>

Seen in this light Diocletian's introduction of a gold standard was perhaps little more than an official recognition (de jure) of what was already the economic situation de facto.

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11. The same is true of Egypt. Cf. Econ. Survey Vol. 2 (Egypt), p.437.

RABBINIC ATTITUDES TO GOLD

The great virtue of gold coin as a stabilising element in personal economy was both recognised and appreciated by the Rabbis of this period.<sup>1</sup> Thus in Genesis Rabba 16.3<sup>1a</sup> we find R. Isaac (flor. c.250-320) commenting on the Biblical verse (Gen. 2.12) "And the gold of that land is good"; "Good to have in the house, good to take on a journey", i.e. good not only for local purchasing, but acceptable wherever one might go.

The real significance of this statement can only be appreciated when seen against the contrasting background of a II cent. text. For example, in the Sifré to Deut. 32.2 we read the following:<sup>2</sup>

It is like a man who goes to Caesarea and needs a hundred dinars (= denarii) or two hundred in cash. If he takes them in single [denarius] units, they will tire him with their weight and he will not know what to do (= he cannot endure them, M T [- Midrash Tanna'im]). But if he changes them into tetradrachms (= 4d. pieces), he can change-them-

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1. See L.C. West in ANSMN (1957), p.96, who shows that there is no evidence of an absolute shortage of gold during Gallienus' reign.
  - 1a Ed. Theodore p.143, and parallels.
  2. Ed. Friedman, p.132A, par.306; = Midrash Tanna'im (= MT), ed. Hoffmann p.185, with slight variants. I dealt with this text in my article in Archiv Orientalni, pp. 63-4, but there I misdated it completely, and therefore did not see its true significance. It is a part of a text by R. Judah [b. Ilai], and is of the middle or later II cent., probably for the lower Galilee (Usha?). See also J.N. Epstein, Prolegomena ad Litteras Tannaiticas (Jerusalem 1957, Hebrew), pp. 628-30.



back-into-smaller-money and spend them wherever he wishes. Similarly, he who goes to the market (= to Beit Ilanim, MT) and he needs ten or twenty thousand [denarii], if he takes them in tetradrachms (- small coins, MT), they will tire him and he will not know what to do (- and he cannot endure them, MT). But if (- But rather, MT) he should exchange them for gold dinars (= aurei), he can (- and MT) change-them-for-small-money and spend [it] wherever he may wish.

From here it is quite clear that in the II cent. one did not need (or even find convenient) aurei for local household consumption.

Even when one went to shop in town, one would be quite satisfied to take tetradrachms. Only when one needed a very large sum of money for an annual visit to a far-off (?)<sup>3</sup> market did one use aurei.<sup>4</sup> A single aureus was after all, something like a month's wages<sup>5</sup>

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3. I.S. Horowitz, in *Palestine and the Adjacent Countries* (Vienna 1923, Hebrew), p.119B states that Beit Ilanim is 14 kilometres S.W. of Tiberias (A-Sadjarah), while Avi-Yonah, in the *Quarterly of the Dept. of Ant. for Palestine*, vol. 5, (1936) p.167, equates it with Butna, near Hebron in the South. So also in *Sefer ha-Yishuv* vol. 1, ed. S. Klein (Jerusalem 1934) pp. 11,12. See *Encyclopaedia Judaica*, art. Bet Elonim, followed by Heichelheim in *Econ. Survey* 4, p.210, note 20. However, Horowitz argues very well against this view (*ibid.* p.120, note). Butna had an annual market; *Gen. Rab.* 47 ad. fin., ed. Theodore, p.477; J. Avoda Zara 1.4, 39D28. See also S. Klein, *Eretz Yehuda* (Tel-Avid 1939) p.167. But see G. Allon, *Mehkarim be-Toldot Yisrael* vol. 2 (Israel 1958) pp. 97-8 for his identification of this place with *βηθελέα*, near Gaza, which had a great annual market.
  4. This is probably why the Palmyrene caravaneers wanted aurei, but why old ones ( *παλαιὰ* )? See above and West, *Gold and Silver Standards* etc. p.118 ( *χρυσὰ παλαιὰ δηνάρια* ) = *דִּינָרִין דִּי הָבָה לִּי תִקֵּן*, Cooke, *North Semitic Inscriptions* p.273 no.115. See Syria, 38, 1961, pp. 268-74, where it is argued that "old gold denarii" refers to a unit of value rather than to actual old gold coins.
  5. See price lists above.



concentrated into one unit, and one would certainly have to change it with the local money-changer, and pay him his banker's fees before one could normally use it.<sup>6</sup> From the second half of the III cent. onwards, however, gold was not also useful but also essential even in ordinary household use.

The same passage in Genesis Rabba continues with a statement of R. Abbahu (flor. c.270-320, in Caesarea): "The Lord did his world a good service [in giving gold to man]. A man changes one gold coin and may use it for many purchases." A. Marmorstein<sup>7</sup> sees in this a reference to Caracalla's introduction of a gold piece worth 3125 sest. However לנן or לנן seems almost always to refer to the aureus<sup>7a</sup> or (later) the solidus<sup>7b</sup> and there is little reason why it should not do so here too. This statement, as it stands, makes very good sense seen against the background of the silver coinage system in the later III cent. For while in the II cent. one could buy a dozen 2 lb.

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6. E. Lambert in REJ, vol. 51 (1906), p.217 et seq. and vol. 52 (1906) p.24 et seq. "Les changeurs et la monnaie en Palestine du I-er au III-e siècle de l'ère vulgaire d'après des textes talmudiques". See also above, and note Hadrian's letter to Pergamum.

7. REJ vol. 98 (1934), pp. 35-6.

7a Even in the Mediaeval sources. See, e.g. Ma'or ha-Afelah (Nur al-Z'lam), ed. J. Kafih (Jerusalem 1957), p.116 top (a XIII cent text).

7b. It is interesting to note that the term solidus does not appear in Rabbinic literature. סולדוס in Midrash Tanna'im, ed. Hoffmann, p. 202, is not solidus, as Hoffman suggested (ibid. note 10), but salarium. See various spellings cited in Krauss, Lehnwörter 2, p. 397A, sv. סולרן, (especially that of Yalkut Prov. section 946, which reads סולרן, suggesting an original reading of סולרן).



loaves of bread with a single denarius,<sup>8</sup> by the 270s one could get almost nothing with a single debased denarius. An aureus, on the other hand, could indeed make several purchases.<sup>9</sup>

Finally, R. Simeon b. Lakish (flor. c.240-75) states (Gen. Rab. *ibid.*): "This world was not fit to make use of gold. Why then was gold created? For use in the Temple..." Here, too, I think we may best understand this somewhat surprising near-adulation of gold as an expression of R. Lakish's deep appreciation of gold coinage in its crucially important role<sup>10</sup> (certainly) from the '50s onwards.<sup>11</sup>

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8. See section on bread above.

9. However, this text too suggests that prices had risen considerably by this time, and that an aureus was good not for, e.g. a month's living expenses or even a fortnight's, but only for "several purchases".

10. But cf. *ibid.*, ed. Theodore p.135. Cf. Lev. Rab. 3.1 (ed. Margulies, p.55), R. Isaac (again) cautioning against unwise speculation and borrowing at interest. Better by far to have 10 aurei - note use of gold coins again - and do quite business with them, he advises, than borrow large sums (at interest) and speculate with them. For, as the proverb goes, "he loses his own and that which is not his own too". Cf. Eccles. Rab. 4.6. It should be noted that probably already in 238 gold commanded a premium. For in CIL. XIII 3162, of that year, M. Aedinius Julianus on The Marbe de Thorigny boasts of having received his salary in gold. See J.P. X.C. Kent's article "Gold Coinage in the Later Roman Empire", in *Essays in Roman Coinage presented to Harold Mattingley*, ed. R.A.G. Carson and C.H.V. Sutherland (Oxford 1964), vol. 1. pp. 27-8. See also the inscription from Asia Minor of 237 discussed by D. Magie in *Roman Rule in Asia Minor*, p.1573 note 37; cf. JHS LVII (1937).

11. Note the Palmyrene inscription, cited in Cooke's *North Semitic Inscriptions*, p.283 No. 123 (= Vog. 17), from the mid-III cent. recording a donation of 10,000d. ( 'Αρ[ι]κ[α]ς ] = ΠΙΙ ). The magnitude of the sum donated is suggestive of inflation (but no more than suggestive). See also the literature on Polecharmas inscription of Stobi in *Dumbarton Oaks Papers* 3, Ernst Kitsinger (1946) pp. 142-3, 159-60, especially Marmorstein in JQR NS XXVII (1937), pp. 373-84. However, a fine of 250,000d. even in the later III cent. (= 250 aurei?) seems a little excessive.



GOLD AND SILVER "STANDARDS" II

So far we have examined attitudes towards gold and silver in the (II and) III cent. There is, however, some very significant evidence on this subject relating to the IV cent. But in order to understand it, we must first analyse yet another monetary term, namely <sup>שקל</sup>.

This term <sup>שקל</sup><sup>1</sup> occurs only twice in Rabbinic literature, both times in the Jerushalmi and in both cases difficult and problematic texts.

In J. Ma'aser Sheni 4.1, 54D17-21 we read:<sup>2</sup>  
 תני משתכר הוא אדם עד שקל משתכר הוא אדם עד רביעית, היך עבידא?  
 דינרא הכא בתרין אלפין ובארבאל<sup>3</sup> בתרין אלפין ולקן<sup>4</sup>  
 והוא בעי מיתן חמשין<sup>5</sup> ריבוא ואיטוק. דיהב<sup>6</sup> ליה הכא  
 בתרין אלפין [ובארבאל<sup>7</sup> בתרין אלפין]<sup>7</sup> ולקן<sup>8</sup> וחמשין  
 ריבוא.

The text states clearly that 1 [gold] dinar (= aureus) was worth 2000 [denarii] here (probably in Tiberias), and in Arbael (not very far

1. See J.M. Sheftel, Erech Milim<sup>2</sup> (Berditchev 1906) pp. 77A-78B, sv.
2. According to the British Museum Ms. OR 2823, fol. 26A (Sirilio Ms) add ד' יהודה אומלל.
3. Printed ed. (Krotoschin) has ארבאל; correct to ארובאל, as in Venice ed. Sirilio Ms. ארובל. On these two forms, see G.R. Driver, Aramaic Documents of the Fifth Century B.C. (Oxford 1965), p.58. See also S. Klein, Beraitha shel 24 Mishmarot p.19, (Mechkarim Arzi-Yisraelim, 2, Vienna 5684)
4. Printed ed. (Krotoschin) has שקל, correct to ולקן, as in Wilna ed. Sirilio Ms. etc.
5. Leiden Ms. has ששים corrected to חמשים. See J.N. Epstein, Prolegomena ad Litteras Amoraicas (Jerusalem 1962), p.473.
6. Rome Ms. has ריבוא. Sirilio Ms. as above.
7. Correct to ארובאל or ארובל, as above in note 3.
- 7a Not in any text, but conjecturally restored. See below.
8. Missing in all but Rome Ms.



from Tiberias)<sup>9</sup> it was worth 2000 [d.] plus one  $\eta\zeta$ . As P51 310, of the year 307, also gives the equation 1 aureus = 2000 d., this text would appear to be of c.307. The  $\eta\zeta$  must (from the context) be a coin (or unit of value) and the explanation that  $\eta\zeta$  = λευκόν is very convincing.<sup>10</sup> It would appear to be a silver-washed coin rather than a

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9. There are two Arbels (at least). One is about 10 kilometres by road from Tiberias (see Avi-Yonah's Map of Roman Palestine). Hirschensohn, in Sheva Chochmoth (London 1912) p.43 sv.  $\text{ארבל}$ , believes that this is the Arbel here referred to. There is, however, another Arbela in Transjordan, 39 kilometres S.E. of Tiberias. (See Horowitz, Palestine and the Adjacent Countries, Vienna 1923, pp. 75-7, on both Arbels). As this was one of the major cities of its area, it is perhaps more likely to be the Arbel of our text. On the evidence of Cod. Theod. 9.23.1 (cf 352) the value of the solidus (or aureus) varied slightly from area to area, and according to that law it was forbidden to transport money or gold in order to profit from these differences (see below).
10. Krauss, Lehnwörter vol. 2, p.3194, sv. ; Levy, Neuhebräisches und Chaldaisches Wörterbuch, vol. 2, p.526 sv.; Aruch Completum, vol. 5 p.58B sv. This explanation is based on that of Zuckerman, in his Talmudische Münzen und Gewichte (Breslau 1862) pp. 29-30. However, for the Greek λευκόν one would have expected something more like  $\eta\zeta\eta\iota$ ,  $\eta\zeta\eta$  or  $\eta\zeta\eta\iota$ , (cf. Krauss, Lehnwörter vol. 1, pp. 57,90). (Also H.B. Rosen, in Journal of Semitic Studies, vol. 8 (1963) p.65 and note 4 ibid). The complete omission of both sets of vowels is rather surprising. I was therefore first tempted to identify  $\eta\zeta$  with the Greek δλκή, as the dropping off of the first  $\delta$  is by no means uncommon (e.g.  $\text{δολιχόν} = \text{δολιχόν}$  ibid. p.123 para. 228). However, this leaves the final "nun" unexplained, and as the form  $\eta\zeta$  appears identically in both texts (see below) and in all Mss. and editions, it seems hardly likely to be a corruption. Also δλκή appears in Syriac as  $\text{קאל}$  Epiphanius, ed. Lagard p.52 line 38, ed. Dean fol. 68B line 7 (= BM.Or. Add.17148); Brockelmann, Lexicon Syriacum<sup>2</sup> p.23 B sv. (not in Payne-Smith, Thesaurus or Supplement!). The omission of the final o of Leukon is easily accepted (e.g. cf. readings in Tosefta Ki-fshutah Zera'im 2, p.229 etc.), and even the falling out of  $\epsilon\upsilon$  has its precedence (e.g.  $\text{δολιχόν} = \text{κελευσις}$ ,  $\text{δολιχόν} = \text{δολιχόν}$  etc., Krauss, Lehnwörter, vol. 1, p.24, para. 34).



pure silver piece<sup>11</sup>, which would probably have been called ארגרון

- ἀργύριον (see below), קרט (below) or something similar.

10 cont. Thus לקס = Leukon, Horowitz' suggestion (Bretz Visael etc., p.76 note 13) that לקס = the Syriac לקס, the Peshitta translation of קשיטת (Gen. 33.19 etc.), is quite wrong. לקס is the plural of לקס, (e.g. Peshitta to Job 42.11) meaning a lamb (Brockelmann<sup>2</sup> p.444B sv. לקס Payne-Smith, Thesaurus Syriacus sv. of Jastrow Dict. p.932B sv. לקס). The Peshitta translation of קשיטת parallels that of the LXX (ἐμψυς etc.), Onkelos (קורפן cf. Gen. 21.22 etc.). Cf. Gen. Rab. 79.7, ed. Theodore p.948, notes ibid. Also Levy, Chaldaisches Wörterbuch über die Targumin (Leipzig 1881) p. 284A, sv. קורפן II. Note reading לקס in Midrash Haggadol (ed. Margalioth p.585). See also Midrash ha-Mefetz, apud M.M. Kasher, Gen. Torah Shelemah, pp. 1515-6 note 67. Jastrow's identification of the לקס with לקס (which in Aramaic would probably be לקס as in Syriac) has no manuscript basis (cf. Dict. p.719B sv.). Perhaps in this defective spelling we may see a conscious attempt to differentiate between this Leukon, and the other which is a disease (a kind of elephantiasis). See Jastrow Dict. p.701 AB, sv. לקס, Aruch Completum, vol. 5, p.308, sv. לקס, Levy, Wörterbuch, vol. 2, p.490 AB, sv. לקס, Krauss, Lehnwörter, vol. 2, p.304, A, sv. לקס. The various spellings are cited in Krauss ibid. Note that in all cases the final o of leukon is omitted. In B. Bechorot 45B the word is explained by the Aramaic לקס (= white), see below. See also J. Fürst, Glossarium Graeco-Hebraeum (Strassburg 1890-1) p.132B, sv. For later parallels, see Schrotter, Wörterbuch der Münzkunde (Berlin and Leipzig 1930) sv. blanc, blanca, witten (pp. 77-8, 74-8) etc.

11. It is a parallel use to לקס, of B. Shabbat 68B (Abaye). Brockelmann<sup>2</sup> p.223A, sv. לקס (b) writes: albus (nummus, i.e. argenteus). This is certainly the meaning given by Eliya of Nesbis (ed. Lagarde, Gottingen 1879) p.78 line 68, לקס no. 7 - translated into Arabic as a "silver dirham". However לקס in Bar-Hebraeus' Laughable Stories (ed. E.A. Wallis Budge, London 1897) no. 418 (p.84, line 18) seems to be different from לקס = לקס, cf. no.419 ibid. Note also that in La Chemie au moyen âge, (P.E.M. Berthelot & Duval, Paris 1873) 34.4 gives לקס another meaning, namely tin. Lane: לקס - silver. Cf. Payne-Smith Thesaurus Syriacus, 1230 sv. לקס β (Supplement, p.122B sv). It is parallel to asperi, which appears to denote pure silver coins. See Ducange Glossarium Mediae et Infimae Latinitatis (Du Fresne, Henschel) vol. 1, part 2, p.425A, sv. asperi, citing Suetonius, in Nerone, chap. 44; Aurum obryzum et nummum asperum ingenti fastidio exegit; Persius, Sat.3: Quid asper utile nummum habet. Also Gloss. Graeco-lat. λευκόν, λευκόν.



Now at that time there were, as we have seen above, only two kinds of silver-washed pieces, the one (in Diocletian's reform system, c.301, and probably still c.307) worth 5d., and the other 2d. I would tentatively suggest the above text to mean the following:

A person is permitted to earn up to a shekel (= 2d.) [in an aureus = 25d. or 24d.] or up to a quarter [of a sela (= tetradrachma = 4d.)], without transgressing the laws of usury - תב"ד<sup>12</sup> How can one do it? (i.e. how can one gain any sum of money on such a contract, not necessarily  $\frac{1}{12}$  or  $\frac{1}{24}$ , as above). [e.g.i:] A [gold] dinar here (in Tiberias<sup>2</sup>) is worth 2000 [d.] and in Arbael [it is worth] 2000 [d.]

11. cont'd. . In view of the above evidence one might suggest that the leukon is the pure silver siliqua (=  $\frac{1}{24}$  sol.). In that case the Jerushalmi would be exemplifying the earning of  $\frac{1}{24}$  profit (i.e. a תב"ד = 1d., in the aureus) as in the beraitha first quoted. However, in view of evidence brought below from the context the other source mentioning the קפ"ז, I feel leukon here must be not the pure silver piece, but one that is whitish. Note also that לב"ז in Hebrew does not always necessarily mean white, but also grey (as opposed to black), (e.g. B. Makkot 20B, Jastrow Dictionary, p. 690B sv. לב"ז). According to this the קפ"ז is not identical (though similar) to the Mishnaic "asper" (contrary to what I wrote in JQR, LVI, 1966, p.293). On the silver wash in the first half of the IV cent. see H.L. Adelson's article "Bronze Alloys of the late Roman Empire", ANSMN VI (1954) pp. 111-29, especially p.112 note 2, and p.117, and E.S. Hedges & Dudley A. Robins, in Num. Chron., 1963, p.237 et seq.; Sutherland & Harold, Archeometry 4 (1961) pp. 56-61. See also Leyden Pap. X.24; Χαλκὸν λευκὸν πειλῶσι (Berthelot M, Archéologie et histoire des sciences, Paris 1906, p.278).

12. Cf. first interpretation of Pnei Moshe ad loc. and that of Elijah Gaon of Wilna ad loc. Contra Lieberman, in Tosefta ki-fshutah, Zera'im vol. 2, p.751. The same argumentation could quite as well be applied to the case of the substitution of the Second Tithe, (Lieberman ibid., Pnei Moshe explanation 2). The cost of transport would be minimal.



and a leucon (= 2d?), and he needs to transfer (literally = give) 50 myriads (= 500,000)  $\overline{\text{d.}}$  (to Arbael) and go up (? or go away?)<sup>13</sup>.... Then he gives (i.e. lends) him (i.e. another person, who needs to borrow 500,000d.) here (in Tiberias?)  $\overline{50}$  myriad  $\overline{\text{d.}}$  at a rate of 2000<sup>14</sup>  $\overline{\text{d. per aureus}}$ , and in Arbael  $\overline{\text{he receives back}}$  (and) <sup>15</sup>  $\overline{\text{there}}$  50 myriad  $\overline{\text{d.}}$ <sup>16</sup> at a rate of two  $\overline{\text{thousand d.}}$  and a leucon. (In this way he would receive 500d., at 2d. per aureus, =  $\frac{1}{4}$  aureus clear profit.)<sup>17</sup>

The other text in which we find the  $\lambda\epsilon\upsilon\kappa\epsilon\upsilon$ , and the more important one for us at the moment, is in J. Baba Mezia 4.1, 9c 34-6. There we read: R. Jacob b. Aha (flor. c.290-350) said: 'R. Johanan and Resh Lakish both stated that one is permitted to lend out  $\overline{\text{gold}}$  dinars (= aurei) for  $\overline{\text{gold}}$  dinars (= aurei).<sup>18</sup>  $\overline{\text{He}}$  (R. Jacob b. Aha)

13. The commentators (Lieberman, Pnei Moshe, preceding note) explain that it costs 50 myriad to transport the money. (The Pnei Moshe says that this number is an exaggeration! See also R. Josef Engel's Gilione ha-Shass, ad loc.). However, this seems most unlikely at so early a date, c.307. See, for example, Segrè, in Byzantion 16, 1942-3, pp. 404-6. It is more plausible that he wishes to shift his money for business purposes. Cf. Sifré to Deut. 32.2 (ed. Friedman p.132A) discussed above.
14. So I understand the  $\text{בית דין לא יאמר}$ , etc.
15. Delete. According to all readings this seems to make no sense as it stands.
16. According to Rome Ms. According to other Mss. etc. we must supply the fact that he receives back the money at a higher rate.
17. Cf. Zuckermann, Talmudische Münzen und Gewichte pp. 29-30. His interpretation, attractive though it be, takes no account of the other text (below) in which the leucon is mentioned.
18. In the Babli (B. Baba Mezia 45A) we read the opposite, namely that R. Johanan did not permit the lending of a dinar for a dinar. The Talmud there explains that this refers to a gold dinar. However, this is in order that the statement of R. Johanan be in accord with the Mishna as it appears in the Babli. For, as the Mishna of the Babli reads that "gold purchases silver" (above), gold must be produce.



adds<sup>19</sup>: A karat for a karat is [likewise] permitted; a leukon for a leukon is forbidden.

Now כרַת (Karat) can be one of two words, and have one of three meanings. It can either come from the Greek *κεράτιον*<sup>20</sup>, or be like the Syriac כַּרְתָּ. The former can mean one of two things, either a certain weight of gold, a fraction of the gold pound, i.e.  $\frac{1}{1728}$  libra aurei<sup>21</sup>, or its silver equivalent as a coin, the siliqua =  $1/24$  solidus,<sup>22</sup> (see above). The כַּרְתָּ, on the other hand, is in the words

18. cont. Hence a gold dinar could not be lent for a gold dinar, as this would be like lending a measure of produce (כֶּמֶס) for another etc. (See Sdei Yehoshua on the Jerushalmi ad loc.) However, we have shown (above) that Rabbi's son, R. Hiyya etc., are of the opinion that silver is produce, hence R. Johanan and Resh Lakish probably would also hold this view. To solve the apparent contradiction between the Rabbi and the Jerushalmi, I would suggest that R. Johanan's statement in the Babli is referring to silver dinars, which in his time were regarded as produce, and therefore could not be lent out for silver dinars. (I make this suggestion despite the Babli's own clear contrary explanation). That the Jerushalmi is talking of gold dinars will become even more certain below.

19. I understand this section to be R. Jacob b. Aha's own addition and not a continuation of R. Johanan and Resh Lakish's statement, the reason being that such terms - according to my interpretation below - could hardly be used before the early IV cent.

20. As suggested by Krauss, in Lehnwörter, vol. 2, p.566B, sv. כרַת. However, he corrects himself in Additamenta ad librum Aruch Completum etc., p.374B, sv. כרַת 2. Cf. Löw Flora I, p.313; Aruch Completum vol. 7, p.194A, sv. כרַת, Levy, Wörterbuch etc., vol. 4, p.375B, sv. כרַת. See also Sheftel, Erech Milim, p.123AB sv.

21. Liddell and Scott<sup>2</sup>, p.941B, sv. *κεράτιον* II.

22. A. Souter, Glossary of Later Latin (Oxford 1964), p.328A, sv. siliqua. Cod. Just. 4.32.26. But cf. Jones in Essays in Roman Coinage etc., ed. Carson and Sutherland (Oxford 1956) p.28 note 2, who believes that the siliqua is never a coin and only an accounting unit. See also Schrotter, Wörterbuch der Münzkunde (Berlin and Leipzig 1930), p.638A, sv. siliqua.



of Brockelmann<sup>23</sup> "quarta (pars sicli)" (=  $\frac{1}{4}$  tetradrachm = ld.)<sup>24</sup>

We have already seen above that in J. Maaser Shenit the קר<sup>5</sup> is a coin. "Dinar" is certainly a coin. Karat, therefore, is probably also a coin in this context and not a weight of gold.<sup>25</sup> As such it would be of the same generic type as the [gold] dinar (= aureus) and the leukon.<sup>26</sup>

The halachic context would also seem to point to the karat's being a coin rather than a gold weight. For if karat here meant keration, a specific weight of gold, what would R. Jacob b. Aha be teaching us now that we could not have known from the rulings of R. Johanan and Resh Lakish? Surely the reason why one can lend out a gold dinar for a gold dinar is because its value is (considered to

23. Lexicon Syriacum<sup>2</sup>, p.695 sv. Sources ibid., but see below note 25.

24. See S. Fraenkel, Die aramäischen Fremdwörter im Arabischen (Leiden 1886), p.200 See also J. Shekalim 56D 15: דינרין קרטין.

25. It can however mean a weight of gold too, (contra Brockelmann, note 23 above), as in Acta Martyrum et Sanctorum, ed. P. Bedjan, vol. 4 (Paris and Leipzig 1897), p. 311, line 10:   
 ג' קר<sup>5</sup> (א-מ-ד-כ-א)   
 ג' קר<sup>5</sup> (א-מ-ד-כ-א)   
 The Sdei Yehushua in J. Baba Mezia ad loc. thinks that the karat is a gold weight. Elijah of Fulda (ad loc.) on the other hand, says it is a silver coin.

26. The פירוש הקצר in the Krotoschin ed. translates קר<sup>5</sup> a cup-  
 כער<sup>5</sup> (Krauss, Lehnwörter, vol. 2, p.319B sv. קנא). However, in view of the context this explanation is hardly acceptable. (The author of the פירוש הקצר is ר' דוד דרשן; See S. Lieberman, Hayerushalmi Kiphshuto, Jerusalem 1934, p.VIII, note 1).



be) constant or stable, in that it is valued as a specific weight of gold, ( $\frac{1}{60}$  libra aurei, or at whatever fraction it was officially struck in R. Johanan's time). And this even when in point of fact it may have weighed less! It is thus patently obvious that a (real full) weight of gold may thus be lent out without infringement of the laws of usury. R. Jacob b. Aha would hardly have to teach us this.

It follows then that Karat here must either be the silver equivalent of the keration as a coin, i.e. the siliqua, or "a quarter (of a shekel)", i.e. a denarius. The shekel was, however, by now long no more than a mere theoretical unit of value, a survival of a much earlier system, and it seems strange and unlikely that when referring to contemporary monetary units - in order to teach a legal ruling of practical topical significance - such a term be used. This seems to indicate that the karat here is referring to the siliqua.

Now we have stated above that the siliqua was  $\frac{1}{24}$  solidus<sup>27</sup>, and also that earlier in its career this term was applied to the argenteus whose value was  $\frac{1}{25}$  aureus,<sup>28</sup> (see above "Currency Terminology" section on nummus). Thus, it was in actual fact equal to the old

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27. Note also that in Galen 24r the  $\kappa\lambda\tau\omicron$  =  $\frac{1}{60}$ bol, i.e.  $\frac{1}{24}$  denarius. (Payne-Smith, Thesaurus Syriacus, 3741, sv.  $\kappa\lambda\tau\omicron$ ). Can this be a confusion with  $\frac{1}{24}$  dinar, dinar being a gold coin in the Islamic monetary systems? Cf. my remarks in Sinai, vol. 53, p.167, also ibid. p.166 note 14.

28. On the connections between the Constantinian siliqua and the Diocletian argenteus, see P. Bruun in RIC VII (London 1966) p.7.



denarius  $1/25$  aureus - pointed out above). Hence the application of the term  $\nu\gamma\pi$  to the siliqua was based on a two-fold association: (a) the phonological similarity to  $\kappa\epsilon\rho\acute{\alpha}\tau\iota\varsigma$  <sup>29</sup>, and (b) to the fact that the siliqua was equal to the old denarius, which equalled  $1/4$  shekel and had originally been called quarta-karta.<sup>30</sup>

29. Note also that in the Sinai palimpsest Gospels (Cambridge 1894) כרית, in Luke 15.16, translates (incorrectly) the Latin siliqua and Greek κεράτιον, (Brockelmann<sup>2</sup>, p.694B, כרית). Normally (Tetra Evangelion Kaddisha p.418, Palestinian Lectionary p.126, etc.) this word is translated כרוב. The karat is a carob (Book of Medicines, ed. E.A. Wallis Budge, Oxford 1913, p.278 line 6; Syriac Epiphanius, ed. Lagarde, p.57, line 53, ed. Dean, translation p.64). In this way we may better understand the use of the term כרוב (= כרוב carob) in the early (?) Byzantine Palestinian legal text, the Sefer ha-Ma'asim li-Vnei Eretz Israel. (On the problem of the date of this text see S. Lieberman, in Ginzei Kedem vol. 5, Jerusalem 1934, p.185 et seq., contra A. Aptowitzer, in Tarbiz vol. 4, p.142 and Baron, Social and Religious History of the Jews, vol. 6, chap. 27 note 71). There fol. 20A (Tarbiz l.l. Oct. 1929, p.95, ed. B.M. Lewin) we read:   
בכל מקום שאת שונה שלע ארבע חרובין הוא הסלע והכסף לשקל שני חרובין והזון חרוב/אחד ידעוהו סתם שני חרובין הן ודינרי זהב עשרים וארבע חרובין...  
(see J.N. Epstein's note in Lewin's introduction, Tarbiz ibid. p.90 note 1). It is clear that the text is talking of the siliqua, which is translated חרוב and pointing out that it corresponds with the old zuz (= denarius), is 1/4 sela (= tetradrachms, Biblical shekel), and is 1/24 gold dinar (= solidus). The כסף (= 2 חרובין) is surely the miliarensis (= 2 siliquae) which Epiphanius (Syriac, ed. Dean, p.61, para. 52) called כסף (= 2 חרובין) (fol. 69A25 etc.). The term חרוב was a common one and turns up in a V cent.(?) Palestinian papyrus letter, (Cowley, JQR. XVI, p.1 et seq.; Sefer ha-Yishuv, vol. 1, ed. S. Klein, Jerusalem 5699, pp. 174B-175A). This term further appears in two more, as yet unpublished, Genizah fragments, which Prof. Shraga Abramson was kind enough to show me in Jerusalem. They do not seem to add any further clarification to the problem of dating the first appearance of the term in Hebrew literature, but they do demonstrate, according to Prof. Abramson, that it continued to be used for perhaps several hundred years. It would seem to me that the Sefer ha-Ma'asim - a composite text of several historical strata - cannot be dated to before the first century of the Islamic era, and with this view Dr. N. Wieder and Prof. Abramson are in agreement. Note further that in the Cowley papyrus the חרוב is also mentioned, surely 1/4 חרוב. In the VI cent. the smallest fraction of the solidus was 1/96 (= 1/4 karat, or siliqua (Currency etc., p.129). See also

(Notes 29 and 30 see p.210)



According to our interpretation, then, in the early (?) cent.<sup>31</sup> both gold (aureus or solidus) and silver (siliqua) pieces were considered by the Rabbis as "coin" and could therefore be lent out קרט בקרט without any transgression of the laws of גביט .

The קס -leukon, on the other hand, may not be thus lent out. Now it is clear from the context that the leukon is a smaller denomination than the karat (just as the karat is smaller than the gold dinar). It cannot be a siliqua, as that is called a קרט, (see above note 11). There was in fact a coin current that was only half the size of the siliqua, but this too was of good silver, and there is little reason why its halachic status (vis à vis the laws of "ribit") should differ from that of the siliqua - קרט. Hence the inevitable conclusion seems

29 (from p.209).

the remarks of E.Y. Kutscher, in Words and their History (Jerusalem 1961 (Hebrew) pp. 28-9, which should be amended slightly in view of the above. See also Excavations at Nessana, by C.J. Kraemer (Princeton 1958), p.343, index IX, sv. קרטיון.

30. This interpretation makes it quite clear that a "dinar for a dinar" means "A gold dinar for a gold dinar". For if the silver denarius is being spoken of (as would have to be the case if the Babli's interpretation be correct, and the two Talmuds do not contradict one another), why mention the karat, of the same value. On dinar meaning gold dinar, see above.

31. It is clear that IV cent. authorities followed the III cent. rulings on the status of gold as "coin". R. Jacob b. Aha's statement is probably of the third decade of the IV cent. In the first decade silver values fluctuated considerably, while his rulings presupposes some period of stability for silver. The term siliqua appears to be a third decade term; see above section on nummus.



again to be that the leukon is the silver-washed piece<sup>32</sup>, rather than a pure silver one. These were, as we have seen above, subject to considerable changes in value, inflation, devaluation, deterioration of silver content, and it is understandable that they should not be recognised halachically as "coin".

If our interpretation be correct, we have here a very interesting and revealing halachic decision, according to which both gold and silver are regarded (in respect of this law of usury) as "coin", while the silver-washed pieces, because of their lack of stability, are regarded as merely "produce".

Thus while we have seen that in the III cent. silver was completely discredited<sup>33</sup> and only gold was regarded as "coin", it would appear that in the early IV cent. with Diocletian's establishment of a relatively stable system of good (pure) silver coins in addition to the gold ones, silver was reinstated as "coin" alongside with gold. Where however Diocletian failed, namely with his silver-washed pieces which rapidly declined in value and status, the halacha denied these pieces the legal standing of "coin".<sup>34</sup>

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32. After 307 only one denomination was struck as a rule, probably the larger of the two. See below.

33. This was, of course, only because it too was greatly debased, and thus very similar in character (and behaviour) to the Diocletianic silver-washed piece.

34. Most recently P.M. Bruun, in RIC vol. VII (London 1966) has reaffirmed the character of the Constantinian solidus as money, as opposed to bullion (p.2). Both the silver and gold had the same character, and similar degrees of over-valuation (ibid. pp. 1-8). Also see his remarks in Congresso Internazionale di Numismatica (Rome 1961), Atti vol. 2 (Rome 1965) p.338, on Cod. Theod. 12. 7.1, contra Seeck in Zeitschr. f. Num. 17 p.54. It is interesting to compare our results with the conclusions of P. Grierson in his



And, finally, a text reflecting monetary conditions during the second half of the IV cent. In J. Horayot 3.5 (48 C 25-8) we read: R. Samuel b. R. Jose b. R. Bun (=Avin) (flor. c.350-375) said...<sup>35</sup> It is just as when two people enter a city, the one with bars (פסות) of gold, and the other with units [of currency] (פרוטות)<sup>36</sup>. The one who has bars of gold does not [have to] spend [them], and he [nevertheless] can live. [But] the one who has [only] units [of currency] must spend [them] in order to live. This statement teaches us that a person who had a stock of gold bullion could live on credit, whereas one who had (even the equivalent amount in) units of currency could not, but had to pay in cash for anything he might want.

Now in this text the comparison is made between "units of currency" on the one hand, and gold ingots, on the other, and not, for example, copper coins (פרוטות) and gold dinars, the more usual terms of comparison. I believe this means that even gold coins (= units of currency)

34 (cont.) penetrating analysis of "The Roman Law of Counterfeiting", (Essays in Roman Coinage, ed. Carson & Sutherland, London 1956). For there he shows that even during the IV cent. the law of counterfeiting clearly distinguished between gold, and silver, on the one hand, and bronze, on the other hand. For bronze coinage was not "Caesaris moneta" or *καίσαρος νομισμα*, as was gold and silver coinage (pp. 241-2, 244-5, 247-8; cf. CIL VI (1) Nos. 42-4 [= ILS nos. 1634-5], *ibid.*, p.245 note 3). The above argument rejects the interpretation of Sutherland in RIC 6 (1967), pp. 89-90.

35. This is part of a Midrash on Prov. 28.II. There are some problems connected with the Midrashic exegesis of this verse, which cannot be discussed here. Suffice it to say, that the interpretation of the Pnei Moshe ad loc. is, in part, refuted by the statement of R. Levi, a few lines below, (35-7). Cf. Targum ad loc., Midrash Mishle, ed. Buber, p.102, and Yalkut Machiri to Prov. *ibid.*, ed. Grunhut.

36. I have found no variants, and therefore accept this reading as correct. The meaning "units (of currency)" is well attested. See Jastrow 1220b.



were regarded with far less confidence than were bars of pure gold. For we know from both numismatic and literary evidence that from around the mid IV. cent. onwards there was considerable adulteration (and counterfeiting) of solidi. Thus, in Cod. Theod. 12.6.13 (of 367) we read:

Whenever solidi must be paid to the account of the imperial largesses, the actual solidi shall not be delivered, because adulterated coins are often substituted for such solidi, but either the solidi should be reduced to a mass, or if the taxpayer is able to have such material from any other source, the mass of fine gold should be despatched for that part of the tax, of course, which each person pays. (Translation Pharr.)<sup>37</sup>

Thus it appears that in the third quarter of the IV cent. the advent of large-scale forgery and adulteration caused confidence even in the solidus to be somewhat shaken. Only pure gold ingots continued to have the people's complete confidence to the extent that its holder could be certain of absolute credit.<sup>38</sup> It was to reinstate that confidence in the solidus that the marks OB (also standing for OBRUZOS-pure gold) and COM were put on it, testifying its mintage from accredited bullion received by the treasury, and concentrated at the imperial residence (comitatus = COM).<sup>39</sup>

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37. Cf. *ibid.* 12.6.12 (366), 12.7.3 (367), 10.1.11 (379); on counterfeiting see *ibid.* 9.21.22, 9.38.6-8, 11.21.1, etc. See below in the concluding section. See also Kent's "Gold Coinage..." and Grierson's "Roman Law of Counterfeiting", both in Mattingly *Festschrift*, which bring ample literary and numismatic evidence.

38. This reduction in confidence vis-à-vis bullion probably had no direct halachic effect.

39. Kent *ibid.* p.203-4, cited more fully below in concluding section. More exactly OB(RIZIATUM). *ibid.* p.200 note 2.



Part 4.

IV CENT. PRICES

IV CENT. PRICES

1. The preceding section has brought us back into the IV cent. Let us now turn to a consideration of IV cent prices and price-levels.

In J. Baba Mezia 5.8(6) 10 c.53-4 we read that: R. Aba b. Zemina gave one [gold] dinar (= aureus or solidus) to a baker, and received from him [bread] the whole year round at a cheap rate (literally: at the cheap[est?] hour of the whole year)<sup>1</sup>, ולא מודי רב, literally: and Rav did not agree.

We know little of R. Aba b. Zemina's biography.<sup>2</sup> But we do know that he was a pupil of R. Zera I, and never once quotes R. Johanan or Resh Lakish directly. When he does quote R. Eleazer, it is via the medium of the traditional R. Oshiah<sup>3</sup>. Thus he probably was born after c.270, and functioned c.310-50.

It is clear that the reading ולא מודי רב cannot be correct, as Rav could hardly be said not to agree with the opinions of someone living about a century later. Thus, though I have found no variant reading here either in Mss. or printed editions,<sup>4</sup> I feel that Z.W. Rabinowitz's<sup>5</sup> correction to ולא מודי לרב - and [in this] he did not agree with Rav's opinion (earlier in the same section) absolutely necessary and correct.

1. See commentators ad loc.

2. See Hyman, pp. 44B-45B, Margalioth 9,10. He is called ר' אבא ב' זמנה. There was also a R. Aba b. Avina (Hyman, pp. 14B-15B) a pupil of Rav who could perhaps at times be confused with our R. Aba b. Zemina (through an interchange of ז for א). However, in the Jerushalmi the latter is always called R. Ba (אבא), and either b. Avina (אבא) or b. Mina (אבא etc.) but never Amina - אמינה.

3. J. Ta'anit 1.3.

4. See for example, Jerushalmi Gilead ed. (New York 1949). J.N. Epstein Prolegomena ad litteras Amoraicas (Jerusalem 1962) p. 592, for Leiden Ms. readings.

5. Sha'are Torath Eretz Israel (Jerusalem 5700) p.491. See his explanatory comments ad loc.



In the East the aureus ( $\frac{1}{60}$  libra aurei) continued to be struck till 324, and only after that date was the solidus ( $\frac{1}{72}$  libra aurei) introduced. Hence, in our case it is difficult to know whether "dinar" refers to the solidus (the text being post-324) or the aureus (the text being pre-324).

In Mishnaic times a loaf of bread had cost around  $\frac{1}{12}$ d., and there had been 25 d. to the aureus, so that at a loaf of bread per day, a year's<sup>6</sup> bread would come to around  $\frac{1}{5}$  aureus. Thus if R. Aba b. Zemina paid an aureus for a year's bread at a cheap rate, or even a solidus - one sixth less - this would presuppose an average (higher) rate of about  $\frac{1}{6}$  aurei or  $\frac{1}{6}$  solidi or a little more. (See above in Part I that the maximum profit that the bakers made was one third. The price variation throughout the year would probably not be much greater).

Thus in the first half of the IV cent. the price of bread when paid (or reckoned) in gold was not much different to that of the I or II cent.<sup>7</sup>

Similarly, we have seen above that c.340-60, 1 mod. Italicus what cost around  $\frac{1}{25}$  sol., and 1 mod. castr. about  $\frac{1}{12\frac{1}{2}}$  sol. This in terms of I and II cent. money would be equal to about  $\frac{1}{10}$  aureus, or approximately 2 $\frac{1}{2}$ d per mod. castr. (= se'ah). Here again the price of wheat in terms of gold is fairly similar to that of the II cent.

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6. I have reckoned at an average solar year of 365 days, minus the 7 days of Passover. I have also calculated according to the minimum amount of bread he would be likely to get. Cf. Richard Duncan-Jones in Papers of the British School at Rome, vol. 33 (N.S. 20), 1965, pp. 222-3. In the last quarter of the IV cent. the average yearly wage of a grammaticus was 1 sol. per pupil. See A. Cameron in Classical Review XV (1965) pp. 257-8, basing himself on Anth. Pal. ix. 174 (Palladas).

7. I have not compared with III cent. prices, because of the innumerable difficulties involved in evaluating them with any degree of accuracy. (See above, for the problems involved). See also Bernardi, in Studia Ghisleriana 3, (Pavia 1961). p.301.



Furthermore, it is somewhat below the maximum price given in the Edict of Diocletian, of 30l. (I.1) according to which 1 mod. castr. wheat: 100 d. =  $\frac{1}{8}$  aur. (= about  $\frac{1}{20}$  sol.).

From this discussion I exclude the abnormally high famine price of wheat recorded by Eusebius (Hist. Eccles 9.8.4) for the year 312-3.<sup>7a</sup> According to this source 2500 Attic drachmas (= denarii)<sup>7b</sup> were given for  $\epsilon\upsilon\varsigma \mu\acute{\epsilon}\tau\rho\upsilon \mu\omicron\upsilon\delta\acute{\omega}\nu$  which the Syriac text more explicitly states to have been  $\kappa\alpha\tau\alpha \mu\acute{\omicron}\delta\iota\alpha$  (one modius)<sup>7c</sup>. In the year 313-4 there were about 7116d. to the aureus (R. Roll. Princ IV.31, see below), so that Eusebius' famine price was approximately  $\frac{1}{8}$  aureus per mod. [castr.], not even three times as high as the maximum price given in the Edict of Diocletian. The Talmud speaks on more than one occasion of famines that raised the price of wheat to some four times their normal cost.<sup>8</sup> This was a particularly bad

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7a. Discussed in detail in my article in Archiv Orientalni 34, 1966, pp. 59-60.

7b. Segre, Byzantion 15, p.249, note 1, and see above our discussion of

7c. Ed. Wright and McLean (Cambridge 1898) p.369, ed. Bedjan (Leipzig 1897) p.530. For a discussion of the Syriac version see above, section dealing with "maneh". See also S. Lieberman, in Annuaire de l'Institut de Philologie et de l'histoire Orientales et Slaves, vol. 7 (1939-44) p.434 note 4. Lieberman (ibid. p.434) was right in regarding Eusebius' statement as plausible and indeed accurate, (contra Lawlor and Oulton etc. see ibid).

8. Tosefta Avoda 4ara 5.4. ed. Zuckerman p.446, lines 4-9. B. Baba Batra 91 AB (3 cent.). See my remarks in Archiv Orientalni ibid. p.60 note 33. See also the very strange, and as yet not satisfactorily explained text in Gen. Rab. 25 ad. fin., ed. Theodore, p. 243 line 2 (= p.383 line 10 and parallels etc.), a text from c. 290-320. See Theodore's note ibid. (p.243). Here I would very tentatively offer the following explanation. The rule is that prices would have to double before one can leave Palestine (ibid. ed. Theodore ibid). In the time of Ruth (Ruth 1.1) there was a famine that was bad enough to permit Elimelech to leave the country. Therefore prices must have doubled. The text reads:

רָעָב שָׁבַע בָּיִת  
הַשּׁוֹפְטִים ר' הוֹנָא בְּשֵׁם ר' דִּימָא מִבְּ סֵאן הָיוּ וְנִגְשׁוּ בָּא.



famine, and during that year "some, indeed, did not hesitate to barter their dearest possessions for the scantiest supply of food with those better provided; others sold off their goods little by little and were driven to the last extremity of want...and as for the women, some well-born ladies in cities were driven by their want to shameless necessity, and went forth to beg in the market-places, displaying a proof of their noble upbringing in their shamefacedness, and the decency of their apparel", (Eusebius *ibid.*, Loeb translation, vol. 2, p.353, et seq. - 357). Had this been a normal year, the prices may well have been at least four times as low, i.e. 600d. per mod. [castr.] wheat, which is a little more than twice as much as the current wheat price in Egypt.<sup>8a</sup>

But again returning to prices in gold, in J. Baba Mezia 4.1, 9c53-8, we read: R. Mana said ... A man who said to his neighbour, 'I wish to sell my cow'. He said to him, 'For how much?' 'For eight [gold] dinars', he replied. He went and deposited it with a money-changer.<sup>8b</sup> In the morning he was passing by when he found him standing there. 'What are

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8. cont. However a number of Mss (Paris, Oxford, Stuttgart, Munich etc. see apparatus *ibid.*) read מאס. I would tentatively emend the text to read: מ"כ מאה היה ונעשה לו = 1 m/odius/ o/astrensis/ cost 100d. (as in the price of the Edict of Diocletian), and that became the price of the m/odius/ I/talicus/. (On CK>ך, see Krauss, *Lehnwörter*, vol. 1, pp. 31-2, para. 43, II p.295A sv. מאס = castra and p.317A, sv. מאס = λαϊκός etc.). As the mod. Italicus is half the mod. castr. the price doubled. However, this explanation is highly conjectural, if somewhat ingenious. ~~XXXXXX~~

8a. PER.E.2000 Hermopolis 10,000 dr. per art. (= 750 d. per mod. castr?) of the year 314, SB.7621, Philadelphia, 3000 dr. per art. (= 225 per mod). See price lists above. But see Boak, *Harv. St. LI* (1949), and my remark in *Archiv Orientalni*, *ibid* p.60 note 33. Cf. *Currency* p.125.

8b. line 55: טריפוניטי correct to טריפוניטי = פריטי of J. Kiddushin 1.6, 54A5 (a parallel text). Cf. S. Liebermann, *The Talmud of Caesarea* p.53. (Supplement to *Tarbiz* II, Jerusalem 1931).



you doing here?' he asked him. 'I want to take my money (literally: dinars) which I deposited [here, yesterday]'. 'What do you want to buy yourself with them?' he asked. 'A donkey', he replied. 'Your donkey is with me'<sup>9</sup>, he responded, (meaning I have just the donkey you require. Buy yourself my donkey...)<sup>10</sup>

According to the correction of the Pnei Moshe<sup>11</sup> ad loc., the beginning of this passage should read: אֶל מָנָא אֵית הָכִי מִלִּי דִּידֵי רַבָּא לֵל יוֹסִי; our text has: אֶל מָנָא אֵית הָכִי מִלִּי דִּידֵי רַבָּא לֵל יוֹסִי. Thus the R. Mana mentioned in this text must be R. Mana II, who lived after R. Ba.<sup>12</sup> Once again we know little of the exact chronology of his life, but he was the son of R. Jona, who was certainly alive in the 350s<sup>13</sup>, and R. Mana II probably

9. For slight variant in Leiden Ms. of Epstein ibid. p.592 (line 49).

10. See Pnei Moshe ad loc, and cf. his comments in J. Kiddushin 1.6. (61A 4-8)

11. Ad loc. sv. אֶל מָנָא. Cf. Mar'eh ha-Panim and Ridbaz ad loc.

12. Hyman, pp. 885a-8B, Margalioth 633-5. Jaawitz, 7, pp. 84-6. For R. Mana I see Margalioth 633, Hyman pp. 884A-5B, flor. C.220-50.

13. I have discussed the chronology of R. Jona in my article in Archiv Orientalni, vol. 34 (1966), pp. 61-2. He was alive during the period of Ursinus' exploits in Palestine, c.351. On Ursinus, cf. most recently Jones, The Later Roman Empire (Oxford 1964), vol. 1, p. 116, and vol. 3, p.19, note 8. (Socr. 2.33; Soz. 4,7). Also Graetz, Hebrew ed. (Warsaw 1893) vol. 2, pp. 400-1. See also Lieberman in JQR NS, vol. 36 (1945-6) p.352 note 176, on Jona's chronology; ibid. pp. 336-41, on Ursinus.

14. Hyman thinks that he died c.353 (p.888A). Halevy, Dorot Harishonim, vol. 2 (Berlin and Wien 1923) pp. 368-72, 375-80 etc. puts him c.300. Neither of these views can be correct for reasons suggested in the preceding note, namely that R. Mana appears to have outlived his father R. Jona by more than a few years, and R. Jona was alive c.350. Halevy's main argument (p.380) is based on J. Hala 4.7, 60A 27-8 (no variants), where we find R. Bun (= Avin) b. Hiyya talking to



functioned c.350-70<sup>14</sup>. According to this text, accordingly dated c. 350-70, a cow (and a donkey) cost 8 solidi, which was quite a reasonable price to pay for a cow (see price lists above), so that once again we find that in terms of gold a IV cent. price is very comparable with that of the two centuries earlier.

In Codex Theodosianus 8.4.17 of 389(?), in an order to Cynegius, Praetorien Prefect of the Orient, we find that 80 lbs. of pork are valued at 1 solidus (1 lb. pork:  $\frac{1}{80}$  sol.). In II cent. terms that was about  $\frac{1}{4}$ d. per lb. Pork was slightly more expensive than beef<sup>15</sup>, and the price of beef may have been as much as one third less, i.e. about  $\frac{1}{6}$ d. (1 lb. beef =  $\frac{1}{100}$  -  $\frac{1}{120}$  sol.). This is about twice as much as in the II cent., but here again we must bear in mind (a) that prices of pork varied from year to year<sup>16</sup>, and (b) that in the Codex we are dealing with official government rates of payment to soldiers (to the

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14. cont'd. R. Mana. R. Avin b. Hiyya was a 3rd generation personality who lived for only 28 years, and who had studied with R. Johanan and Resh Lakish (Halevy *ibid*). This however was probably R. Mana I (above note 12), a contemporary of R. Johanan. R. Mana II lived on after Ravin's death (Eccles. Rab. 11.3) = Ravin II, (Hyman, pp. 92B-3A, Margalioth, 784-6). They both (Ravin II and R. Mana II) lived in Sepphoris. See also Fraenkel, *Mevo-ha-Yerushalmi*, p.115A, Lieberman, *J.Q.R.* *ibid.* p.352 note 176.

15. Cf. *Tanhuma Numbers*, ed. Buber, p.145. Ed. Diocl. IV 1a, 2.

16. Cf. Cod. Theod. 14.7.2-4. On prices in the IV cent. see L. Ruggini, *Economia e Societa nell' Italia Annonaria* (Milan 1961), pp. 361-79, and Bernardi, in *Studia Ghisleriana*, 3 (Pavia 1961), pp. 293 et seq, especially notes 208 and 215.

border militia, in this case) and we do not as yet know the relationship between this kind of price and ordinary civilian market rates.<sup>17</sup>

So far, these few sources seem to indicate that prices when reckoned in terms of gold had not gone up radically in comparison with II cent. costs. We turn now to the few sources we have (most of which we have analysed above) recording IV cent. prices in terms of debased bronze currency.

According to the Edict of Diocletian of 301 (IV 1a, 2), beef cost 8d. per lb. and pork 12 d. per lb., i.e.  $\frac{1}{100}$  and  $\frac{1}{66}$  aureus (at 800d. per aureus), or  $\frac{1}{88}$  and  $\frac{1}{55}$  sol. (at 666 d. per sol), which is a little more expensive than the price of 389 (above).

We have seen above that c.290-350 (probably c.320), 1 loaf of bread, 1 pint of wine and 1 lb. of meat cost 10 follarin each<sup>18</sup>. We have also suggested that there 1 follaris or follis = 5d.<sup>19</sup>, and that the price of these commodities was 50d. This agrees with the price of 1 lb. of meat recorded in J. Berachot 5c55-57<sup>(50)</sup> maneh) - of c.324, which we have shown to be 50d. Furthermore, according to P. Rylands (see above) the average costs of 1 xest. (= pint) of wine and 1 lb. of meat (perhaps pork?) was 75-100 d., c.317-24 (nearer to 324, we have suggested).

Now according to P. Oxy 1430, 1 lb. gold was valued at somewhat more than 300,000d. in 324. This gives a solidus of (more than?) 4166d.,

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17. Cf. Nov. Val. 32.2., of 452, where 240 lbs. of pork: 1 sol. Cf. Mickwitz, p.87.

18. Gen. Rab. 49.4.

19. Cf. Bolin ibid. p.305.



or 4320 d., according to another reckoning (and an aureus of 5000d.)<sup>20</sup> According to this the price of 1 lb. of meat (pork?), c.324, would appear to have been around  $\frac{1}{42}$  -  $\frac{1}{56}$  sol., and perhaps even  $\frac{1}{84}$  sol., (if the Gen. Rab. text is of the same date).

We have seen above that c.363 bread cost about  $\frac{1}{150}$  sol. for a 2 lb. loaf (=  $12 \times \frac{1}{12\frac{1}{2}}$  sol.) = about  $\frac{1}{124}$  aureus, which is about 6 $\frac{1}{2}$ d. in Diocletian terms (of 800d. per aureus). We have reckoned above that in Diocletian's time a loaf would cost about 8d. Once again the Diocletian price is a little higher than those of half a century or more later.

According to Codex Theodosianus 14.4.3., in 363 Julian fixed the maximum price of pork at Antioch at 6 folles per lb. Beef, therefore, probably cost around 5 foll. per lb. (see above). As this price is probably fairly similar to that of bread (a 2 lb. loaf - see above), 5 folles =  $\frac{1}{150}$  sol., and 1 follis =  $\frac{1}{750}$  solidus approximately, c.363<sup>21</sup>.

This is borne out to a certain extent by Cod. Theod. 9.23.1 dated 356. Here an attempt is made to check speculation in copper coin by prohibiting its transport from place to place, but allowing merchants to carry on their own animals not more than 1000 folles for their expenses. Jones writes<sup>22</sup>: "In this context 1000 folles is evidently a very small sum equivalent to 1 or 2 solidi; the annual rations of a

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20. According to West & Johnson, in *Currency etc.*, p.167

21. Contra Jones, in *JRS*. XLIX (1959), p.37. Cf. Mickwitz, pp. 86-7  
Ruggini Rendiconti d. Lincei (1962) pp. 314-6.

22. Ibid. p.37.

soldier were commuted for 4 solidi (Nov. Val. 13.3, of 445), and a merchant even if he had several pack animals and a slave or two, would still not have needed half that sum for the expenses of a single journey". According to our suggestion, 1000 folles equals approximately  $1\frac{1}{2}$  solidi.

In Codex Theodosianus 14.4.4 (419, Ravenna) we are told of 20 lb pork costing 1000 denarii and giving the cost of 1 lb. pork as 50 denarii. We do not know exactly what the "denarius" of this text refers to. However, if we assume that here too the pork cost  $\frac{1}{150}$  sol. per lb., then there are 7500 denarii per solidus, and the denarius  $\frac{1}{10}$  follis of 363. (This is easier than 6 follis = 50 d., ∴ 1 foll. =  $8\frac{1}{2}$  d.)<sup>23</sup>

Maybe the denarius here is the same as the nummus of Codex Theodosianus 14.19.1 (Milan 398). For there we read of Ostian and fiscal bread - we do not know how much - being sold for 1 nummus. Now according to Nov. Val. 16 (of 445), the banker was required to pay 7000 nummi for a solidus which he could sell for 7200<sup>24</sup>. It suggests itself that this nummus is the same as the denarius of 419. This is by no means unlikely as the identification of the nummus with the denarius is found

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23. Contra Segre, Byzantion 15, p.268. Note that according to this calculation there are now 10d. in a follis, not 5, as in Diocletian's time, and as late as c.324. Is this because the denarius was halved in value, while the follis stayed firm, or that the follis doubled in value while the denarius stayed firm? Cf. Mickwitz, p.95. According to Casson in TAPA 70 (1939) p.15, from the IV to the VII cent. the average cost of medium-prices wine was  $\frac{1}{150}$  -  $\frac{1}{336}$  sol. per sextarius.

24. Contra Segre ibid. Cf. Currency p.164.



in papyrological sources, e.g. PER E 1014, where a pint of relish costs 3τ .  
150 νοῦμμοι , and PER.NN.117 where the rent of a room is given as  
νοῦμμίωv κέρματος .<sup>25</sup>

All the above evidence presents the same overall view of the IV cent., one in which prices may have fluctuated to a certain extent (as indeed they had in the I and III cent.), but when reckoned in terms of gold did not radically rise above the general levels of the II cent., for example. It is only when these prices are expressed in terms of debased bronze coinage, that they sound so amazingly high. There are two famous examples of these prodigious prices, which were first noted by S. Lieberman in one of his characteristically enlightening footnotes<sup>26</sup>, and which I have discussed in some detail elsewhere.<sup>27</sup>

The first is in J. Ma'aser Sheni 1.2, 520 19-21. There we find R. Jona asking what would be the case if someone's purse containing 100 myriad [of debased] denarii fell into a pit, and it would cost him 50 myriad to hire someone to get it out. As this example is given by R. Jona, it belongs to some time between c.320 and c.355, perhaps around 350. At that time it was apparently conceivable for a person to have one million (!) "denarii" in a purse, and for it to cost him half a million (!) denarii for the relatively simple task of retrieving it.

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25. Suggestions of West & Johnson, in *Currency etc.*, p.131. Segrè, *Metrologia* p.479, Mickwitz p.91, Ruggini, *Rendiconti d. Lincei* (1962), p.312. Cf. also Segrè in *Maia* 16 (1964), pp. 272-5.

26. In *Greek and Hellenism in Jewish Palestine*, Hebrew ed. (Jerusalem 1962) p.4 and note 24 *ibid.* Also cf. his remarks in *Annuaire de l'Institut de Philologie et d'Histoire Orientales et Slaves*, vol. 7 (1939-44) p.434 note 4. See also *Tosefta Ki-fshutah Zera'im* 2, p.1718 note 39.

27. In my article in *Archiv Orientalni*, vol. 34 (1966) pp. 61-2, 65.



And sometime between c.320 and c.350, R. Mana II speaks of an expensive garment worth 30 myriad denarii.<sup>28</sup> To be truly appreciated this astronomical figure should be compared with the II and II cent. concept of a fabulous price, namely 100 maneh (= 10,000 d.)<sup>29</sup> This IV cent. figure, perhaps from the 340s is some thirty times higher than the "highest" II cent. price! (See addenda pp. 337-8)

This latter text is perhaps not so completely inexplicable. For if it is of the same 330s, and during that time there were approximately 5000 d. per sol.<sup>30</sup> (see below), this very expensive suit would have cost 60 solidi or thereabouts, which is in fact far cheaper than the "10,000 d." ( מנה מנה ) of the II cent., which equalled 400 aurei.<sup>31</sup>

However, the first text cannot be explained away so simply. For is it possible to imagine a person carrying one million units of any kind in a purse? And would he pay half a million such units to get a simple job done? Even if the smallest coin then current had weighed only half a gramme, the purse would still have contained almost 5 tons of bronze (1 ton = 1016 kg.)!

In Egyptian papyri of the IV cent. we come up against the same problem. Thus, in 362 the price of a hide is given as 7,500,000 silver denarii (P.O.1057)<sup>32</sup>. "If these coins", write West and Johnson,<sup>33</sup>

28. J. Kila'im 1.1. 32A8.

29. E.G.: B. Yoma 35B; T. Yoma 1. 21-2; J. Gittin 46A56. Cf. B. Shabbat 128A; B. Shevu'ot 31A; Pesahim 36A top(?); B. Hulin 84A; T. Arachin 426(548); Mechilta d'Rabbi Ismael, ed. Horowitz and Rabin, p.86, line 17 ( מנה מנה ) etc.

30. Segré, Byzantion 15, p.263; Num. Zeitschr., 1913, pp. 161, 219 etc.

31. Cf. Ed. Diocletian, chaps. XXII-IV. Cf. L. Friedländer, Roman Life and manners, etc. (1908), vol. 2, p.177.

32. Cf. P. London 247 (c.346): 4 Babylonian hides 120 myriads. Cf. Ed. Diocl. VIII 1a, 2: 1 Babylonian hide, first quality: 500d., second quality 400 d. (ed. Graser pp. 346-7).

33. See next page.



"were<sup>even</sup> the poorest of all Egyptian tetradrachms, namely those issued by Diocletian before A.D. 296, then a single hide was equivalent to more than 130,000 lbs. of copper, even when one forgets the small amount of silver in the tetradrachm (8 gr. is taken as the average weight of the tetradrachm, and a kilogram as 2.2046 lbs.). It is obvious that a hide was not worth 65 tons of copper and equally obvious that 7,500,000 silver denarii of A.D. 362 were not the actual tetradrachms of the late third century".

From Egyptian sources one can multiply these examples very considerably. E.g.: P.O. 85,338 wheat 24τ (= 144,000 dr.) per art.

P.Princeton 188v.c.345 " 334τ (= 1,904,000 dr.) "

50τ (= 3),000 dr.) "

BGU 21 341 (Sale (or rent) 34τ (= 204,000 dr.) +  
1 cnidion wine

PSI 287 377 daily wage of apprentice to  
300,000 d. ταρκαπίος

P.Ross Georg. V.61 6 military cloaks: 200,000,000 d.

P.London 984 c.360 1 lb. wine, 1 lb. meat: 330,000 d. each

P.O.1753 390 3½ lbs. meat: 105 myriad d.

6 jars dry pitch: 300 myriad d. each  
etc. etc.<sup>34</sup>

Even if the smallest current unit were called a "denarius" or tetradrachm, the resultant prices in terms of copper would still be

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33. Currency p.169.

34. For numerous sources see Johnson and West, Byzantine Egypt; Economic Studies, pp. 179-94 etc.

well-nigh impossible. Thus, in the case of P.O.1057, the hide would be equal to over 10,000 lbs. of copper, also an unlikely relationship.<sup>34a</sup>

The paradox is somewhat heightened when one takes note of certain surviving epigraphic evidence. For example, Syrian inscriptions of 345<sup>35</sup>:

Monument of two centurions ordinarii	130,000 d. <sup>36</sup>
Cost of raising a tomb	71,000 d. <sup>37</sup>
Mothana monument, of 342	15,000 d. <sup>38</sup> And an inscription of 350:
Actuaries vexillationis	11,000 Syrian dr. <sup>39</sup>

Or again a tomb from SALKHAD of 325(?) 12,000 Syrian dr.<sup>40</sup>, a tower in IL-MESIKUK of 350, 15,000 (?)d.<sup>41</sup>, a building of DJEDIL of 352, 100,000 d.<sup>42</sup> Now these may seem to be high figures compared to the I-III cent.<sup>43</sup>, yet the cost of a building is still only one tenth of

34a Currency, pp. 169-70.

35. Lebas et Waddington, *Voyage Archéologique en Asie Mineur, Syrie, section III., Royaume Nabatéan* (apud. Friedländer, *Roman Life and Manners*, vol. 4, p.283).

36. Ibid. 2000. 37. Ibid. 2036. 38. Ibid 2037. 39. Ibid 2053.

40. Syria, IIIa, E. Littman and D. Magie (Leiden 1921) p.99, No.168.

41. Ibid. p.104, no.177. 42. Ibid. p.432, no. 799!

43. For the I cent. see Gerasa inscriptions: nos. 3-6, 17, 49, 52, 92. No.6 (p.377) line 5: a donation of 7100 dr. for the construction of a temple, 1500 for propylon etc. of the year 70. No.52 (399) cureus built for 3000 dr., c.83/96. Syria Part III Greek and Latin Inscriptions. William Kelly Prentice, nos. 104, 352, Ibid. IIIb (Northern Syria) no.1067, (p.116) of 227(?), a fine of 2000 dr. if someone shares this tomb.(KWARD). For this latter compare Inscriptions Grèques et Latines de la Syrie, Jalabert et Mouterde, vol. 1-2, p.102, no.171 (from KARA MOUGARA) a fine of 10,000 d., and vol. 5, p.279, no. 2652, (from HAB'ARA), a fine of 1,000d. for selling the tomb. Both unfortunately are undated. Cf. Cod. Theod. 9.17.2 (349), ibid. 4 (356), ibid.6 (381). See also Econ. Survey 4, pp. 175-6.



what R. Jona's theoretical personage kept in his purse.

On the other hand there are two undated inscriptions, which may well belong to the IV cent., which seem to record abnormally high figures. The first, a memorial from MJEDIL reads<sup>44</sup> \* μ(υριων) ,αο , which ought to mean 12,000,000 d., and the other, on a building from KHARSAH reading<sup>45</sup> \*] μ(ύριος) ϕ' (= 50,000,000). The editors<sup>46</sup> considering these sums too vast to be plausible, suggest that the numbers be interpreted to mean 11,200 and 10,500 respectively. However, there is no real basis for such interpretations, and in view of our Palestinian and Egyptian evidence their plain meaning should be seriously considered.

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44. Syria III a (Southern), E. Littman and D. Nagle no. 787<sup>14</sup> (p.392).

45. Ibid. no. 790<sup>4</sup> (p.401).

46. Ibid. There are two other interesting, but unfortunately undated inscriptions from this area. Cf. Ibid. nos. 875<sup>1</sup>, a fine of 2500 d. for opening the tomb (NEDJHAN), and no. 787<sup>10</sup>, a memorial from MDJEDIL of 80,000 (?) d.

I have discussed these two undated inscriptions (787<sup>14</sup> and 790<sup>4</sup>) with Mr. Gideon Förster (Inst. of Archeology, Jerusalem, Israel) and he agrees that both on paleographic grounds and a consideration of the names, in the case of the former, (non-Christian, Αὐρηλίου Ζηνοβίου Σαγίου... Νασεαθ...), they cannot be later than the IV cent. One may add that in a V or VI cent. inscription one would not expect the term denarius\*, but rather keration, nummus or follis. See, e.g. P. Grierson in JRS XLIX (1959) p.77. (However, even if they were on V or VI cent. inscriptions, this would not materially affect our argument, as the sums would still be too vast for a straightforward interpretation. [Grierson, JRS ibid. pp. 78-80]).



2. To solve this apparent paradox let us further examine the development of copper coinage during the IV cent. As a point of departure we shall examine a IV cent. Palestinian legal text dealing with the laws of charity, and containing yet another problematic monetary term.

In T. Pe'a 4.8<sup>1</sup> we read: "One does not give a beggar who is passing from place to place less than 1 loaf worth a pundion (=  $\frac{1}{12}$  d.) at the rate of 4 seahs for a sela (see above). If however he is wont to go begging from door to door one gives him nothing (i.e. no money from the קופה של צדקה - Poor-Fund, a communal charity). The Jerushalmi (Pe'a 8.7, 21 12) modifies this latter statement thus: All beggars that wander from door to door begging, we do not give them anything, (i.e. any charity from the Poor Fund). Said R. Jona (flor. c.320-60):<sup>3</sup> דלית<sup>2</sup> אגרון מן אגרון ליה מן אגרון. The meaning of this

1. Ed. Zuckerman. p.23 line 20; ed. Lieberman, p.57 lines 26-7.

2. The various readings of this word are as follows: (a) אגרון or (b) אגרון (Krotoschin ed.), (c) אגרון, Sirilio Ms. (B.M.Or. 2822 fol. 162A), (d) אגרון, (Rome Ms. cited in Ginzberg, Yerushalmi Fragments etc., p.356A). The basic letters are 'ARGRON'. In (b) the R. has changed to D (ך to ד), a very common occurrence in Hebrew orthography. In (c) the R has changed to L, a common dialect change (e.g. גרענים - גלענים). (Cf. also Sefer Halachot Pesuqot, ed. S. Sasoon, Jerusalem 1950, pp. 28-9). In (d) the first R has been omitted. אגרון appears to be the Greek ἀργύρον, (Krauss, Lehnwörter, vol. 2, p.127 sv. and Dictionaries). Though one would have expected ארגורין, the omission of the U (i.e. its change to A) has numerous precedents, (e.g. סנהדרין - סנהדרין, Cf. Krauss, Lehnwörter, vol. I, pp. 85-6, para. 121). Normally סנהדרין changes into סנהדרין (i.e. סנהדרין - סנהדרין, cf. Krauss, Lehnwörter, vol. I, p.92, para. 140). The form אגרון thus suggests the Greek ἀργύρον (rather than ἀργύριον). Sophocles (p.245A) sv. ἀργύρον equates it with the ἀργύριον, on the basis of Epiphanius, III.289 (= Patrologia Graeca XLIII): τὸ δὲ ἀργύρον, τοῦτο ἔστιν ὃ οἱ ῥωμαῖοι ἀργύριον καλοῦσιν. ὃ ἐρμενεύεται στρατιωτικὸν δομα,



latter phrase is somewhat uncertain, but most scholars interpret it to mean - "So long as one does not give him less than his  $\lambda\gamma\acute{\upsilon}\rho\iota\omicron\nu$ "<sup>4</sup>. They understand the word argurion to denote a small coin, and the general burden of R. Jona's statement is that such a beggar should still receive some small charity.

In reaching this interpretation, the commentators were influenced by the Babli (Baba Batra 9A) where we find the following:

If he goes from door to door  $\overline{[begging]}$ , one gives him nothing. A certain poor man, who used to go  $\overline{[begging]}$  from door to door, came before R. Papa (to receive charity from him, as he was in charge of the Poor Fund). He gave him nothing said R. Sama b. R. Yeva to R. Papa, 'If you, sir, will give him nothing, no one else will give him anything,  $\overline{[and]}$  he will die  $\overline{[of hunger, etc.]}$ '. 'But,'  $\overline{[asked R. Papa in reply]}$  'have we not learned in a ber-aitha.' If he is a poor man who goes  $\overline{[begging]}$  from door to door, we give him nothing'? He replied to him, 'We do not give

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2. (Cont.) (= Hultsch, *ibid.* vol. 1, p.266 lines 20-2; Cf. Lagarde *Symmicta*, Göttingen 1877, p.277 lines 19-21, p.182 lines 20-1, cf. *ibid.* p.197). However, there are cases of -lov turning into  $\lambda\lambda$ -(e.g.  $\chi\alpha\chi\lambda\iota\omicron\nu$  -  $\lambda\lambda\gamma\lambda\gamma\lambda$ ,  $\sigma\pi\alpha\rho\tau\iota\omicron\nu$  -  $\lambda\lambda\tau\eta\tau\eta\sigma\alpha\chi$ , cf. Krauss, *Lehnwörter*, vol. 1, p.134), so that  $\lambda\lambda\gamma\lambda\gamma\lambda$  could well be  $\lambda\gamma\acute{\upsilon}\rho\iota\omicron\nu$ . Below I have adopted the latter suggestion.
  3. Rome Ms. has  $\lambda\lambda\tau\eta\tau$ ; cf. Lieberman, *Tosefta Ki-fshutah*, Zera'im, vol. 1, p.184.
  4. Some commentators following reading (c) interpret ARGALON from  $\lambda\gamma\lambda$  - that which he is used to (receive by way of charity).

him a big present, (i.e. a pundion's worth of bread), but we do give him a small one.<sup>5</sup>

If this interpretation (that he should receive  $\sqrt{\text{from the Poor Fund}}$ <sup>6</sup> at least an argurion) were correct, it would follow that an ἀργύριον would be worth less than a loaf worth a pundion (i.e. the cost of a 2 lb. loaf, see above). Thus, he may not get the value of a 2 lb. loaf of bread, but he should at least get an argurion. From this it would appear that an argurion was worth less than the cost of a 2 lb. loaf of bread.

This can hardly be correct, for we have seen above that in the 360s, in Antioch an ἀργύριον (= siliqua,  $\frac{1}{24}$  solidus)<sup>6</sup> would purchase 10 2 lb.-measures (μετρα) of wheat, equal in price to about 5 2 lb.-loaves of bread (see above). R. Jona lived in Tiberias throughout the first half of the IV cent. and we have seen above that (probably) c.340, there in Tiberias one could buy 25 modii (Italici) of wheat for 1 sol., and in Sepphoris 20 mod. per sol. An argurion, if it is a siliqua, would have purchased about 1 mod. (Italicus) of wheat, which would in turn produce about 12 2lb.-loaves of bread, but would be equal

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5. As to who it is who gives this "small present" (or ἀργύριον) - private individuals, or the communal charity - see Lieberman ibid., who shows that this is a point of disagreement among the classical commentators.
  6. However, here it is probably a coin, and not a unit of measure, and may therefore be the piece struck at 1/60 libra aurei, (from Constantius onwards), not the 1/12 (= siliqua), which did continue to be struck. In that case, the ἀργύριον might be 1/20 not 1/24 solidus, thus worth about 6 loaves. There was also a small silver piece struck at 1/192 libra aurei, which would be worth approximately 2 loaves of bread. This too could perhaps have been called an ἀργύριον.



in value to about 6 such loaves, (taking into account costs of milling, bakers' profits etc., (see above)). Thus an "argurion" can hardly be said to be a "small present", and even if this term refers to the smallest silver coin current<sup>7</sup>, it would still be worth much more than one single 2 lb. loaf of bread.

I would, therefore, like to suggest a different interpretation for R. Jona's statement. The Mishna in Pe'a there (8.7) discusses the question of who is eligible to receive money from the קופה של צדקה - the Poor Fund, or in other words: how poor does one have to be to receive such charity. The Mishna answers: He who has food for fourteen meals (i.e. a week, at two meals per day) (or its value in money) may not receive from the [Poor] Fund. Now, we have shown above that a לֶחֶם פֻּדְיוֹן - a loaf for a pundion was a day's ration, i.e. was equal in value to two meals. Therefore, 14 meals = 7 2 lb. loaves, or 7 pundions (-worth of bread). An argurion, however, was only worth 4 to 6 2 lb.-loaves (at the most), (or about  $\frac{5}{6}$  pundion, in Tannaitic terminology), so that a person possessing no more than one argurion would certainly have the right to receive charity from the Poor Fund. However, if he wanders from door to door making a living by begging, according to the Tosefta he may not receive anything.<sup>8</sup> But even such a beggar should be entitled to some help, if he cannot by himself earn enough to live on. This, I believe, is what R. Jona wishes to say,

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7. The smallest silver coin recorded in Egypt is worth 1/192 sol. (P. Leipzig 87).

8. Presumably because each day he can make enough to live on.

and I would translate his statement thus: such a beggar does not receive charity from the Poor Fund "As long as he does not have (i.e. at the end of a day's work) less than an argurion". But if he does have less than this amount, he may claim from the Poor-Fund charity to supplement his earnings.

It would appear that R. Jona, who had many dealings with the poor, knew that at times a beggar could barely eke out a living by begging alone.

The question that immediately calls itself to mind is: why does this qualification of R. Jona, which is so clearly absent from the To-sefta (cf. Babli ibid), not appear earlier in Amoraic halacha? Or again, expressed slightly differently, why is it that only in the IV cent., in the time of R. Jona, such a(n obvious) proviso had to be made, and not in the III cent? I would suggest that the solution may lie in the evolution and change of the monetary situation during this period.

Let us consider for a moment what sort of money (coins) a beggar would probably receive during these various periods. Assuming that each person would give him the smallest coin then current<sup>9</sup>, we may make an approximate reckoning of how many coins he would need to make up the measure of money that would disallow him any right to the Poor-Fund, i.e.

7 pundions =  $7/12d.$ , or  $7/300$  aureus. I shall call this latter sum Q.

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9. Cf. B. Nedarim 33B, the famous (Babylonian, of course)  $\text{למכור דבר} \text{למכור}$  (Cf. B. Baba Kama 46B:  $\text{אמר ר' יוחנן}$ ). B. Baba Batra 9A, 10A, Lev. Rab. 34.2; Midrash Psalms 17 etc. Often, however, people gave much more than the minimum coin: e.g. Midrash Cant. Zuta, ed. Buber, p.19: issar, dinar or sela (Tannaitic). Cf. B. Baba Mezia 78B, B. Sota 21A, B. Hagiga 5A (all a denarius or zuz [= denarius]), B. Pesachim 8A, sela etc.



According to early Mishnaic reckoning, there were 192 prutas in a dinar (= denarius), so that he would need about 100 prutas to make up Q<sup>10</sup>. However, elsewhere I have shown that this system refers back to Hasmonean currency, in which the pruta was a bronze coin of about 2 gms.<sup>11</sup> In the Roman imperial period, however, the smallest denomination was considerably larger<sup>12</sup>, and though almost nothing is known about local currency systems at this time<sup>13</sup>, it is possible that the minimum denomination current was (approximately) equal to a Roman quadrans, i.e.  $1/64d$ . Q would then be equal to about 35 coins of minimum size during the II and early III cent.

Carson notes that towards the middle of the III cent. and approaching the height of the inflation, the city coinage not only of Asia Minor but also of Syria, Phoenicia and Palestine, too, have larger modules<sup>14</sup>.

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10. T. Baba Batra 5.11 (405, 19-24); B. Kiddushin 12A; J. Kiddushin 580 30-5. Cf. Zuckermann, *Talmudische Münzen und Gewichte* (Breslau 1865), and my own article in JQR, LVI (1966) p.298.
  11. See my article in JQR *ibid.*, pp. 273-301.
  12. Eg: The coins of Aelia Capitolina, L. Kadman, *Corpus Nummorum Palaestinensium* (= CNP) I, (Jerusalem 1956), out of 206 types only 4 (nos. 6, 21, 83, 205) weigh under 4 gr.; Caesarea Maritima, CNP II (1959), 3 types (nos. 25, 30, 46) out of 230; Akko Ptolemais, CNP IV (1961), 4 types (nos. 91, 130, 156, 271) out of 189 (from Claudius onwards). In Tiberias (The Coins of Tiberias by A. Kindler, Tiberias 1961) after Antoninus Pius no such small pieces were minted (p.51).
  13. Aelia, CNP I, p.27; Caesarea CNP II, p.31, Akko Ptolemais, CNP IV, p.41.
  14. In his paper published in INCP, p.240, Bosch, *Die Kleinasiatischen Münzen der römischen Kaiserzeit*, Arch. Anzeiger 1931, p.438; Aelia CNP I, p.27; Caesarea Maritima CNP II nos. 91 et seq; Akko Ptolemais CNP IV, p.42; Tiberias Kindler *ibid.*, p.51. Cf. West in ANSMN VII (1957) p.107; see also E.W. Klimowsky's material set out in INCP, pp. 168-9 and compare with the table of the "seventh period", *ibid.* pp. 166-7. Finally, see B. Levick, "The Coinage of Pisidian Antioch in the Third Century A.D.", N.C., 1966, pp. 51-3.



He argues that it can hardly be a coincidence that these developments take place in a period of inflation. "These local bronze coins" he writes, were originally fiduciary, but while the imperial silver was debased to a point at which it was little better than bronze, the city coinages maintained their metallic value and from the Severan period in many cases increased it by using larger coins." This suggestion is perhaps borne out in some measure by R. Mana's statement (cited and discussed above)<sup>15</sup> that "silver stopped in its place, copper went up in price copper went down in price", which in its context suggests that copper coins went up in value (and were therefore a greater fraction of the denarius, rather than that the silver denarius went down in value with the same effect). It would appear that some attempt was made to keep a steady relationship between bronze and gold, bypassing the silver currency, as it were (cf. above). Thus this stage of the inflation would not necessarily have much affected the number of coins in Q.

When the local bronze issues finally came to an end during the 260s<sup>16</sup> the antoninianus became the smallest denomination current, and

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15. J. Kiddushin 1.1, 88D 39.

16. The material has been collected and set up by Carson in his article cited above (note 14). Here I present this material in chronological (rather than his geographical) order. (S = Syria, Ph = Phoenicia, P = Palestine). The coinage of these cities end during the reign of the following emperors: Macrinus - Beroea S, Gebala S; Diadumenian - Caesarea Panias S; Elegabalus - Byblus Ph., Caesarea ad Libanum Ph; Diocaesarea P., Nicopolis P., Sebaste P., Gaza P., Severus Alexander - Seleucia Pierias, Sidon Ph., Tripolis Ph; Maximinus - Aescalon P; Gordian III - Leucas S., Aradus ph. Nysa-Scythopolis P; Philip I - Samosata S., Zeugma S., Cyrrhus S., Hieropolis S., Nicopolis S.; Raphia P; Trajan Decius - Aelia Capitolina P; Trebonius Gallus - Laodicea ad Marem S; Caesarea P; Valerian I - Damascus S; Gallienus - Heliopolis S; Betytus Ph., Botrys Ph., Ptolemais Ace Ph., Tyre Ph. See also West in ANSMN VII (New York 1957) p.107.



there may have been as many as 500 of them to the aureus (see above). But even then it would have taken little more than 10 such antoniniani to make up Q ( $= \frac{1}{44}$  aureus).

Around 301, when there were 800d. to the aureus, even if the smallest denomination were to have been a ld. piece<sup>17</sup> (and not a 2d. piece as suggested above), Q would still have been no more than 20 of them.

In the year following 301, on the other hand, there was a rapid decline of the copper coinage, as we have seen above, so that c.304 there were 1600 d. per aureus (P.O. 2106) and c.307, the aureus equalled 2000d. (PSI 310).

We can, in fact, check our findings to a certain extent. For, given the approximate weight and metallic contents of the silver-washed copper coins, we may reckon the number of them that went to make up the aureus (assuming the constancy of the gold-silver ratio). Thus, starting with our formula  $\frac{N(100 PQ + PR)}{10,000Y} : 1$  (see above section on the antoninianus), we may modify it thus  $\frac{N(100PQ + PR)}{10,000Y} = 14.4$ , giving N as  $\frac{14.4(10,000Y)}{100 PQ + PR}$ . When Y is an aureus it equals  $\frac{1}{60}$  libra aurei = 5.4, when a solidus  $\frac{1}{72}$  libra aurei, 465. Where Y is an aureus  $Q = \frac{7}{300} N$ : where Y is a solidus,  $Q = \text{approximately } \frac{7}{350} N$ .

Thus<sup>18</sup>: C.307, 10 gr. pieces at about 1% silver, yields a result of  $N = 390$ . If each unit equalled 5d. (as it had in c.301) then

17. Here I am referring to the little laureate coin of about 1.3 grms., which is almost silverless. Sutherland, in *Archeometry* 4, 1961, p.60, thinks that it is a ld. piece. But soon the 2d. piece was the lowest denomination, *ibid.*p.59.

18. See tables at end of section, compiled from A. Ravetz, "The Fourth Cent. Inflation", *Num. Chron.* 7th ser. vol. 4, 1964, pp. 215-6. *idem* in *Archeometry* 6, pp. 56-61, especially pp.53, fig. 2 and 54. As the mints represented are Italian (Rome, Trier) or Eastern (Antioch), and not Egyptian, the results constitute evidence independent of papyri.



the aureus equalled  $5 \times 390 = 1950d.$ <sup>18a</sup> This result is very close to the 2000d. of PSI 310. If this were the minimum coin Q would be about 9.

c.313/14, the 3.5 gr. piece at 1% gives a result of  $N = 1303$ . If this too was a 5d. piece - and this seems likely in view of its evolution from the 10 gr. piece - then the aureus was worth 6515d.<sup>19</sup> This is a fairly close result to the equation yielded by P. Roll. Princ. IV. 31, of 313-14, 1 aureus = 7116d. Q would then be equal to 30.4 of these pieces.

c.317, the situation is a little better, and the 3 gr. piece with a 2% silver content yields a result:  $N = 864$ . Again, if each unit equalled 5d., then 1 aureus = 4320d. This too is a fairly close approximation to the equation given by P. Roll. Princ. VII 6, of 316, 1 aureus = 4166d. Q then equals 20 of these pieces.

P.O. 1430, of 324, (discussed above), yields an approximate equation of 1 aureus = 5760d., 1 solidus = 4800d.<sup>20</sup> (or more exactly 4354d.). Q, therefore, is about 130d., and if the minimum denomination was still the 5d. piece,  $Q = 26$  such pieces. An analysis of the GLORIA EXERCITUS pieces of c.330, weighing  $2\frac{1}{2}$  gr. and containing about 2% silver (or less), suggests that  $N = 880$  such coins (or more) and if they were 5d. pieces, then 1 aureus = 4440d. (or more).

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18a. However, see Raavetz's figure in Archeometry p.48 that c.307 (nos. 7-3 and 6) there was still more like 2% silver in these coins.

19. This suggests that our interpretation of Cod. Theod. 11.36.23, of 315, which appeared to yield an equation of 1 aureus = 3000d. is not correct. It would seem then that 1 follis =  $\frac{1}{2}$  lb silver, and that the fine was doubled by 341 (Cod. Theod. 11.36.5).

20. Currency, pp. 188-9, Segrè, Metrologia, p.439, idem Byzantion 15, pp.249-50.



By 341, the unit (VICTORIAE DD AUGG Q NN) had become greatly reduced in size (to 2 gr.) and in silver content (to 1%), yielding a result:  $N = 1680$  (per sol), and if these coins were again 5d. pieces, 1 sol. = 8400d.  $Q = 48$  such pieces.

c.346. The FEL(ICIUM) TEMP(ORUM) REPARATIO piece was introduced, weighing up to 5 gr. and with (in the East) at least 2% silver. According to this  $N = 448$ .  $Q$  then equals a little less than 13 such pieces. It seems likely that this piece which was twice the weight of its predecessor was valued as double its predecessor. Thus it would be worth 10d., and the sol. 4480d.

c.354, the coin weight dropped by half again (to  $2\frac{1}{2}$  gr.), with a little less silver perhaps (slightly less than 2%). This gives  $N$  as about 880 (maybe nearer to 850), and if these coins were meant to be equal to the FEL. TEMP. type (i.e. were worth 10d.) the sol. equalled around 8500d.  $Q = 25$ .

In 361 Julian appears to have made a conscious attempt to improve the coinage, striking a piece of 5 gr. with around 2.9% silver.<sup>21</sup>  $N =$  about 337, according to this, and  $Q$  under 10 such pieces. Again, as this coin weighed twice as much as the preceding one, it was probably worth twice as much, i.e. 20d.<sup>21a</sup> Thus 1 sol. = 6740d.

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21. Archeometry 4, ibid. no.75, dated 361/3, mint of Constantinople (no.2056) not as in Num. Chron. 1964 ibid, when it is apparently dated 355.

21a We have seen above that the follis was worth approximately  $1/750$  sol. c.363. Possibly it was worth 10d. (giving 7500d. per sol), and was  $1\frac{1}{2}$  this older denomination. Julian did in fact strike denominations of  $\text{Æ} 1$  and  $\text{Æ} 3$  throughout his reign. Cf. J.P.C. Kent in Num. Chron. 1959, p.109, ("An introduction to the coinage of Julian the Apostate"). See also late Roman Coinage, Carson & Kent (London 1965), pp. 92-3.  $Q$  would be at least 20 such pieces.

Valentinian's copper coins of 364 onwards have virtually no silver content, and it appears that from then on copper coinage becomes token coinage.<sup>22</sup> Reduction in the weight of a coin from this date onwards does not necessarily mean a reduction in value, and certainly not a reduction in value in a ratio to the reduction in weight. It is, in fact, probable that after 364, the solidus held a fairly steady only slightly fluctuation value of around 7000d. For we have seen above that on the basis of Cod. Theod. 14.4.4 (of 419) and Nov. Valent. XVI, of 445, the solidus was valued at between 7000d. and 7500d. Slightly earlier, at the end of the IV cent., there were 6800d per sol.<sup>23</sup> Cassiodor. Var. 1.10 states that: veteres...sex milia denarionum solidum esse voluerunt.<sup>24</sup>

Of course, there were far smaller denominations than those in which we have reckoned Q thus far. Thus there are a number of "quarter-folles" in Constantinian coinage.<sup>25</sup> In the period 350-63, coins seem to have been struck in at least three denominations (sometimes struck concurrently, but almost certainly circulating concurrently for a

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22. Num. Chron. 1964, p.218.

23. Hultsch, *ibid.* I, pp. 3380-40, *Symm. Rel.* XXIX, Ruggini *ibid.* p. 311 note 29.

24. Ruggini *ibid.* p.311, note 28; Adelson in *Centennial wl. of ANS*, p.17 note 64. This is an agreement with Ruggini's thesis, *ibid.* pp. 312, 316-8; but cf. *ibid.* p.316 note 57, bibliography *ibid.*

25. Kent, in *Num. Chron.* 1957, nos. 175-8, 205-6, 443-7, 485-6, 611.



while at least), AE1, AE2, AE3; (see above note 21a). Unfortunately, virtually nothing is known of the precise relationships between these various units of the subsidiary copper coinage. Nonetheless, it would, I think, be safe to multiply our results for Q by 3 in most cases to give us some approximate notion of what Q constituted in terms of the smallest (often very minute) units of copper currency. Thus around c.313/4, Q was probably approaching 100. Thereafter it seems to fluctuate between around 60 (c.316) and over 140 (c.341), being perhaps about 75 c.354.

Whatever the precise details of this story be, the overall effect is quite clear; as the minimum denomination became progressively (if varyingly) smaller in relationship to the aureus or solidus, it became more and more difficult for the poor man to achieve this most basic subsistence-level-Q.

It is even likely that the purchasing power of the copper pieces dropped even more than did their official value, and since we are actually interested in the cost of 14 meals (= 7 2 lb. loaves of bread), and not merely an abstract sum of money, we may reckon Q from certain surviving prices. Thus as c.324, 1 loaf of bread, (1 pint of wine and 1 lb. of meat all) cost 10 follarin, which we have suggested above equals 50d. = 1 follaris = 1 follis = 5d. - Q would be 70 folles, if the follis were the smallest denomination. This makes Q = 350d. rather

than 130d., as suggested above, and simply demonstrates (what one would expect to find) that prices had risen considerably higher than would be expected from the extent of the depreciation of the coins.<sup>26</sup> When, and indeed, whether, the purchasing power of the copper coinage caught up with its official value, as a fraction of the gold or silver denominations, this again we do not know. However, once again it is clear that it must have become increasingly difficult for the poor man to make up his Q.

We have a reflection of what popular opinion thought of this debased coinage in an undated (anonymous) text which must, I think, be of the mid-IV cent.<sup>27</sup> For in Tanhuma תרומה<sup>28</sup> we read: אגורו רבותינו - המלכות הרשעה הזו עתידה להשתמש במטבע של חרס. Our sages said: This evil government<sup>29</sup> is (destined to, or) going to use coin[s] of pottery, (i.e. clay).<sup>30</sup> Anyone who has handled the miserable specimens that abound in mid-IV cent. "copper" hoards will appreciate the true sharpness of this criticism.

R. Jona, who was probably negotiating these halachic changes sometime during the 40s, must have been well aware of the severity of the

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26. See, for example, Heichelheim, in *Economic History* III, p.11.  
 27. This seems to be the opinion of S. Lieberman in *Greek and Hellenism in Jewish Palestine* (Hebrew ed. Jerusalem 1962), p.4, note 24.  
 28. Para. 7 (Warsaw ed. = printed ed. 1888, p.178). Buber ed. Exod. para. 6, p.92. Cf. *Sefer Ve-Hizhir* (ed. Freimann) vol. 1, p.155.  
 29. Referring to the Christianised government(?) But cf. the problematic Gen. Rab. 64.8, ed. Theodore pp. 710-2; note variants in p.710 line 4.  
 30. Cf. the (very different) remarks of the anonymous author of *De Rebus Bellicis*, ed. E.A. Thompson (*A Roman Reformer and Inventor*, Oxford 1952) p.93 line 25; a late IV cent. text (*ibid.* p.2). If this text is post-364, it may also mean that since copper coins were token coinage, they might just as well be of clay, and indeed the government might well resort to such means.



situation. He, who had many dealings with the poor,<sup>31</sup> would have been well placed to realise that a man to go on begging all day long, and still not end up with an argurion's worth (siliqua?, miliarense?) of copper coins, or enough for a week's supply of food - a situation almost inconceivable in earlier times. It was to cope with this new situation that he modified the Tosefta's ruling in the manner described above.

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31. Eg. J. Pe'a 5.3, 21B 31; Lev. Rab. 34.1, ed. Margulies p.773 etc.

3. Now all the above evidence seems to indicate that prices even in terms of copper coinage did not rise so phenomenally that a simple job of getting a purse out of a pit should have cost half a million denarii, or indeed that a person could walk about with a million denarii in his pocket. Nor does it seem likely that a memorial should have cost 12 million d., and a building 50 million - if these are IV cent inscriptions.

To solve the problem posed by the cases of the phenomenal Egyptian prices West and Johnson<sup>1</sup> suggest that: "The Egyptian transferred to the new bronze coins of the post-Diocletian period the names of the pre-Diocletian monetary system but instead of calling the smallest bronze an obol or a drachma, he seems to have called it so many talents or myriads."<sup>2</sup>

Surely we have a similar situation in our Palestinian text. We have already shown above that a denarius was called a "maneh" (formerly 100d.) from some time during the III cent. onwards. In R. Jona's example of the purse falling into the pit, he is obviously using round numbers to simplify the legal exposition (hence, 1 million,  $\frac{1}{2}$  million,

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1. Currency, p.170. See also Johnson, in *Egypt and the Roman Empire* (Ann Arbor, 1951), p.59; Jones. *The Later Roman Empire*, vol.1, p.440.
  2. Thus according to this argument, e.g.: SB 7034, 1 sol. = 5,760,000. If each unit equals 750d. ( $= \frac{1}{2}$  talent  $\left[ = \tau \right]$ , 1 sol. = 7680d. c.360, P.O.1056, 1 sol. = 2000 M (= myriad). If each unit = 300d. ( $= 2\tau$ ), 1 sol. = 6,666d. (Cf. p.51, IV, 287, of 377, and P.O.1223). c.380, PSI VII 961, 1 sol. = 4050 M. If each unit = 6000 d. ( $= 4\tau$ ), 1 sol. = 6750d. (Cf. P.O.960). P.O.1917, 1 sol. = 60,000,000d. If each unit = 7500d. ( $= 5\tau$ ), 1 sol. = 8000d. Compare our results above. See further, Segre, *Metrologia*, pp. 454-6, 489; Jones, *Inflation etc. in Econ. Hist. Rev.* 5/3 (1953), pp. 308-11, Ruggini *ibid.* p.311; Segre, *Byzantion* 15, p.263 etc.



2:1, a pattern found throughout Rabbinic literature).<sup>3</sup> Yet here again these theoretical and simplified numbers must bear some relationship to contemporary conditions.

Let us assume that R. Jona's statement was made c.346, and that he reckoned a solidus at around 5000d.; it would not be unreasonable for a person to have two solidi in his purse, or for a job to cost him one solidus (partly, ofcourse, for expositional simplification). R. Jona could then have said "a man who had 10,000 manehs (= 2 solidi) in his pocket, but as a maneh (still) meant 100d.<sup>4</sup>, it would be equally reasonable for him to say 100 myriads (= 10,000 x 100 = 2 solidi). Perhaps the inscriptions we cited above reflect the same terminological tendency (for from the Syriac Eusebius, we have seen above the Syriac usage), and their figures should therefore be likewise divided by 100, giving the more reasonable sums of 120,000 and 500,000, a more plausible number of solidi<sup>5</sup> whatever the exact valuation of the solidus at the time these inscriptions were carved.

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3. Cf. for example, M. Baba Kama 3.9, 4.1, etc., etc.

4. There are certainly some IV cent. texts in which the maneh retains the primary meaning 100d. Cf. my examples in my article in *Talpiot ad fin.* Here I give one example. In *Pesikta de R. Kahana* (ed. Buber p.71A, ed. Mandelbaum vol. 1, p.144) (= *Lev. Rab.* 28.6, ed. Margulies p.664) we read that the "Omer" cost 10 manin - a statement of R. Levi, flor c.290-320. That means that 3 or 5 se'ahs of barley (cf. M. Menahot 10.1) cost 1000 d., and 1 se'ah (= mod. castr.) 200/333d., i.e. about 3 times the price in the Edict of Diocletian (I.2, ed. Graser p.318), a price reasonable for the second decade of the IV cent.

5. Possibly around 20 and 100 solidi. Compare our price lists above, and Gerasa inscriptions, nos. 3-6, 17, 49, 52, of the first cent. Compare with the dated mid-IV cent. Syrian inscriptions cited above, (Lebas & Waddington, *Vog. arch. en Asie Mineur, Syria III*, nos. 2000, 2036, 2037, 2053).



It should further be noted that *denarion* (certainly in the IV cent. if not earlier) had two distinct meanings, and in one of them was equated with the mina - *μνη* etc. (= 100d.). This has been convincingly demonstrated by Oskar Viedebantt<sup>6</sup> from his analyses of certain texts in Epiphanius' treatise on weights and measures, of 392<sup>7</sup>. Thus the Syriac there<sup>8</sup> reads: "Sixty assaria, however, are denarion, and a hundred denaria are a silver [coin] (= *ἄργυρος*)", (translation Dean). On this latter word there is a very interesting marginal gloss<sup>9</sup>, headed *ἈΡΓΥΡΟΣ*:  
*ΚΤΙ ΛΚ / "ΤΑΚΤΙ ΜΝΗ ΤΑ ΜΝΗΝΑ / ΚΑΘΑΤ ΟΥΔΕΝΤΑ<sup>10</sup> ἄργυρος*  
*ΚΑΤΙ ΛΚΤ / ΚΤΑΚ ΜΝΗ ΟΥ ΚΑΤΙ-argurius<sup>10</sup>*, translated "of silver", is that of which a man [might] say that it is, for example, a zuza, or something like that. The Ms. itself is dated 65-<sup>12</sup>, and the glosses are

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6. Antike Gewichtsnormen und Münzfüsse (Berlin 1923) pp. 81-2, especially p.81 note 3, and p.97-8. Note also the variants cited by Swete in the LXX of Ezra B II.69 (Swete II, p.165) *καθάρως μνη* *ἄργυρος* A (= Codex Alexandrinus).
  7. Cf. Syriac Epiphanius, ed. Dean, p.57 and note 394 *ibid.* See also Symmicta vol. 2, p.194 (= MSR, vol. 1, 265, 267, vol. 2, 152, etc.). p.196 line 12 (= MSR vol. 1, 271.4) etc.
  8. Translation, p.57, B.M. Add. 17148 fol. 67B.
  9. *Ibid.* bottom left.
  10. Dean, p.57 note 395 reads: *ἄργυρος* whereas the correct reading should be *ἄργυρος* we have it *ἄργυρος*. (Presumably Dean worked from a photo or microfilm, where the marginal glosses, written as they are in a lighter coloured ink is almost illegible). I only point this out, as the absence of the U (of *ἄργυρος*) is paralleled in the Rabbinic transformation *ארגרן*, as noted and discussed above.
  11. The last letter is obscured by a mark on the vellum.
  12. See W. Wright, Catalogue of Syriac Manuscripts etc., (London 1870) p.718A.



in a fine estrangela hand of not much later, if not almost contemporary<sup>13</sup>. In any case, whatever its exact date may be, this gloss may well reflect the same IV cent. tradition noted above. For according to it, the zuza (= zuz, usually equal to the denarius) is equal to the argurius, which is 100d. Here again, then, we have a denarius-zuz-argurius of 100d., and thus equal to a maneh, just as we saw earlier that the maneh in Talmudic literature came to mean an ordinary debased denarius. It is difficult to know whether the (III cent.) Talmudic development is in any way dependent upon the denarion - mina relationship, which is first clearly attested only in the late IV cent.

However, the above observation may perhaps serve to add some credence (and rationally explicable basis) to our suggestion that certain IVcent. texts apparently suggestive of enormous degrees of inflation, are misleading<sup>14</sup> in that they reflect no more than deceptive terminological usages<sup>15</sup>, the sources and causes of whose semantic developments may well lie in the changing economic conditions of the preceding century.<sup>16</sup>

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13. The fact that it is in a different coloured ink does not indicate that it is of a later date. I discussed the matter with Mr. R. F. Hosking of the British Museum, and he too thought the glosses near if not completely contemporary to the Ms. itself.
14. As I was misled in my article in *Archiv Orientalni*, 34 (1955) especially p.61.
15. Again we may explain certain Egyptian papyrological texts along these lines. Thus we have suggested above that the denarius and the nummus were at one time at least (in the late IV cent.) identified with one another. The nummus we have shown above was worth 25d. (in the early IV cent.). Thus: PER.37, 1 sol. = 100 T (= 150,000). If a denarius is a nummus of 25d., 1 sol. = 7000d. If the nummus was 32 d. (as suggested above), then in the case of PER 310, where 1 sol. = 120 T (= 180,000d.), 1 sol. = 5626 d. approximately. (Cf. SPP.XX.96). The 50d. unit is also a unit that we may make use of

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15. cont.

in this connection. Thus, PER 225 gives the equation 1 sol. = 183½ T. (= 275,000d.). At a unit of 50d., the sol = 5500d. This sort of method, as that employed above in note 2, gives us results which are on the whole very favourably comparable with the ratios we arrived at using analyses of metallic contents of coins, etc.

16. Note also the Itala, Mark 12.42 (Didasc. apost. 33.25): denarios minutos duos quod est quadrantis. ( λεπτα, Vulg. dua minuta) = Tetra-Ewangalien Kaddisha, ed. Puseus & Gwilliam (Oxford 1901).

<sup>183½</sup> <sup>183½</sup> <sup>183½</sup> See my article in Novum Testamentum, 9 (1967) pp. 178-90, on Mark 12.42 and its metrological background.



<u>Date</u>	<u>Weight</u>	<u>NS</u>	<u>Size</u>	<u>Weight</u>	<u>NS</u>	<u>Size</u>
296/207	9.93	(54)	25/8	3.31	(28)	19/21
308/11	6.64	(354)	23/5			
311/12	6.12	(13)	21/3			
312/13	4.92	(93)	19/21			
313/14	3.57	(21)				
314/17	3.36	(12)				
317/18	3.24	(16)				
318/24	3.14	(29)	17/20			
324/27	3.24	(18)				

Mint Closed:

327/55

335/7	2.65	(20)	17/18	1.70	(30)	14/17
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NS = No. of specimens

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Changes of Weight and size of the "follis" in the Mint of Alexandria

(From Currency, p.97). Cf. RIC, 6, pp. 101-3, for evidence from other mints.

<u>Date</u>	<u>Weight of Coin Unit</u>	<u>% of Silver</u>
Early Diocletian reform coinage has up to		5½%
In later Diocletian coinage the percentage fell to		1 %
317	3 gm. pieces	2 - 2½%
330	(GLORIA EXERCITUS) 2½ gm.	2% or less
341	(VICTORIAE DD AVGG a NN) 2 gm.	1%
346	(FEL[ICITUM] TEM [ORUM] REPARTO <sup>I</sup> ) up to 5 gm.	2½ - 3½% (2% in Eastern mints).
c.354	2½ gm.	less than 2%
355	(Julian) 3 gm.	2.9%
364	(Valentinian) 2½ gm.	little or no silver.

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Based on the "Fourth Century Inflation", by Alison Ravetz, in Numismatic Chronicle, 7th ser. vol. 4 (1964), pp. 215-6. Cf. idem in Archeometry vol. 6, (1963), pp. 46-55, especially p.574, fig. 2 ibid. For the Julian coin analysis, see Archeometry, vol. 6, no.75. Cf. Archeometry, vol. 4, pp. 56-61. See also "An Introduction to the coinage of Julian the Apostate" (360-3), by J.P.C. Kent, in Num. Chron. 1959, pp. 108-117, especially p.109; idem in Num. Chron. 1957, on Constantinian coinage.



RELATIONSHIP OF DENARIUS TO SOLIDUS IN EGYPT DURING THE IV CENT.

P.Lond.1259	1 sol. = 32T = 48,000d. If each unit = 10d., 1 sol. = 4,800d.		
PER 187	1 sol. = 36T = 54,000d.	"	" = 10d., 1 sol. = 5400d.
PER 37	1 sol. = 100T = 150,000d.	"	" = 20d., 1 sol. = 7500d.
PER 310	1 sol. = 120T = 180,000d.	"	" = 30d., 1 sol. = 6000d.

(cf. SPP xx.96)

PER 225	1 sol. = 183½ = 275,000d.	"	" = 50d., 1 sol. = 5500d.
pre-361 P.O.2267	1 sol. = 4571, 428	"	" = 750d.(=½T), 1 sol. = 6,095d.
SB.7034	1 sol. = 5,760,000d.	"	" = 750d.(=½T), 1 sol. = 7680d.
c.360 P.O.1056	1 sol. = 2000M = 20,000,000d.	"	" = 3000 (=2T), 1 sol. = 6,666d.

(cf. PSI. IV. 287, of 377, and P.O.1223).

c.380 PSI.VII.961.	1 sol. = 4050M = 40,500,000d.	"	" = 6000 (=4T), 1 sol. = 6,750d.
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(Cf. P.O. 960).

P.O. 1917	1 sol. = 60,000,000d.	"	" = 7500(5T), 1 sol. = 8,000d.
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See Segrè, *Metrologia*, pp. 454-6, 489-490; Jones, *Inflation*, *Econ. His. Rev.* 5/3 (1953). pp. 308-11; Segrè, *Byzantion* 15, p.263; Ruggini, p.311. Cf. *Currency* p.170; Johnson, *Egypt and the Roman Empire*, p.59; Jones, *The Later Roman Empire*, vol. 3, p.114 note 74. See also Remondon in *Chronique d'Égypt* 31 (1956), p.146.

GOLD AND SILVER RATIOS

SB 6086	early IV cent.	1:18
P . Oslo 162	IV cent	1:14.4
Cod. Theod. 13.2.1.	297	1:14.4
CIL.V.8734	c.400	1:15
Cod.Theod.8.4.27	422	1:18
Cod. Just.10.78.1.	534	1:14.4

From "Silver Currency and Values in the early Byzantine Empire", by Howard L. Adelson, in Centennial Publication of the American Numismatic Society, ed. Harald Ingholt (New York 1958), pp. 7, 10-11. Cf. L.C. West, "The Roman gold standard in ancient sources", American Journal of Philology, vol. 62 (1941), pp. 278-301; See also Currency, p.108. Cod. Theod. 11.21.2(396) suggests 1:18; Cf. Mickwitz, Geld und Wirtschaft etc., p.105, Segrè Circolazione, p.53 et seq., idem Metrologia, p.454. Also cf. Cod. Just. 10.29 (1:14.4), and P. Lond. IV. 1434,5. For the period c.500, see Segrè Metrologia, p.481; Mickwitz, Geld und Wirtschaft etc., evidence of the marks of value on Vandal coins. See also Jones, The Later Roman Empire, vol. 3, pp. 113-4, note 73.

<u>STANDARD</u>	<u>THEORETICAL WEIGHT IN GRAMMES</u>	292-	305-	337-	360-	363-	393-
		<u>305</u>	<u>337</u>	<u>360</u>	<u>363</u>	<u>393</u>	<u>450</u>
192	1.71		x	x			x
144	2.27			x	x	x	
96	3.41	x	x	x			
72	3.55		x	x	x	x	
60	3.46		x	x		x	

Silver denominations current in the IV cent. based upon their theoretical standards, (as fractions of the solidus etc.). Based on Adelson, ibid, p.7; cf. Currency, p.106.



APPROXIMATE RELATIONSHIP OF DENARIUS TO AUREUS IN IV (AND V) CENT  
BASED ON LITERARY AND NUMISMATIC EVIDENCE

C.301.	800 d.	= 1 aureus
307	2,000 d.	= 1 aureus
c.313/4	6,500/7,000d.	= 1 aureus
c.316/7	4150/4300 d.	= 1 aureus
324	4350/4800 d.	= 1 solidus
330	4400 d.	= 1 sol.
341	8400 d.	= 1 sol.
346	4480 d.	= 1 sol.
c.354	8500 d.	= 1 sol.
c.355	6740 d.	= 1 sol.
end of IV cent.	6800 d.	= 1 sol.
419/45	7000/7500 d.	= 1 sol.
V cent.	6000 d.	= 1 sol.

4. According to the above, Egyptian IV cent prices, despite their phenomenal size, should show some sort of approximate scale-relationships comparable to those of the I, II (and III) cent. That is to say, wheat or meat prices, for example, when given in "denarii", should be reduceable to a scale where they will be approximately comparable to (perhaps twice as cheap as - see price relationships above) Palestinian prices, and prices of such commodities recorded in solidi should bear an obvious parity to contemporary Palestinian ones.

There is indeed some, if scanty, evidence to show that this is the case. For in the *Vita S. Pachomii* 33-4, we read that during a year of shortage in Egypt, when "wheat stood at 5 art. (= about 16 mod) to the solidus, Pachomius sent out a monk to buy wheat for his monastery. Eventually he found an obliging tax-collector who sold him corn from his public stocks at 13 art. (= about 43 mod.) per solidus, in the expectation of postponing delivery of the tax to the government till after the harvest when he hoped to replace wheat he had illicitly sold at the cheap rate that would then prevail. Pachomius repudiated this risky transaction, and had to buy at  $5\frac{1}{2}$  art. (= about 18 mod.) to the solidus"<sup>1</sup>. Clearly the tax-collector had reckoned on making some sort of a profit on this deal, and we may safely conjecture that he had been hoping to replace his wheat at a minimum of about 50 mod. (= 15 art.) per sol., thus making a clear profit of only 7 mod.

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1. Jones, *The Later Roman Empire*, vol. 1, p.445; *Patrologia Orientalis*, vol. 4, part 5, ed. Bousquet and Nau, (Paris 1907), pp. 455-8; ed. Bedjan, in *Acta Martyrum et Sanctorum*, vol. 5 (Paris 1895), pp. 148-51 (Syriac version). See also *The Book of Paradise of Palladius etc.*, ed. E.A. Wallis Budge (London 1904), I, pp. 455-7 = II, pp. 321-4.



(= about 2 art.) per sol.<sup>2</sup> (In the reign of Valentinian I, a speculator named Hymetius made as much as 200% clear profit during a famine at Carthage<sup>2a</sup>).

This event took place some time between 320 and 346<sup>3</sup> - unfortunately it cannot be dated with greater accuracy. Now though this text gives us no certain figures for a normal Egyptian wheat price, it does give us some idea of the scale of prices. The famine price (which may have been three to four times a normal price, see above) was 16 mod. per sol. The tax-collector was willing to sell at 43 mod. per sol., and would still have been able to make a profit on the deal (at least 7 mod. per sol. we suggested, meaning that the famine had pushed up the price to some three times its normal level). Thus, however, we interpret the details of the evidence, the general conclusion seems to be clear, namely that a normal Egyptian wheat-price during the second quarter of the IV cent. was considerably lower than a Palestinian one, at least twice as low since the Palestinian price for this period was around 20 mod. per sol (see above). This agrees well with our conclusions for the III cent. and the first quarter of the IV cent.<sup>4</sup>

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2. This text is interesting also in that it gives us some idea of the great range of (possible) seasonal price fluctuations.

2a Jones, *ibid.*, p.445, citing Ammianus 27. 17-8.

3. See *Evangelisches Kirchenlexikon*, vol. 3, p.1 S.V. Pachomius and bibliography *ibid.*, (Göttingen 1959), Pachomius came to Tabenna (= Thebais) in 320 and died in 346. P. Princeton 1834, which is post-345, reflects one period of very high wheat prices, 334<sup>T</sup> per art. Cf. P. Lond. 1914 of 335, Alexandria, 14<sup>T</sup> per art.; P.O. 85 of 338, 247 per art.(?). (Cf. H.I. Bell's Note to P.Lond. 1914); Byzantine Egypt; *Economic Studies* p.177); P. Lond. 427, Hermopolis, c.350, 50<sup>T</sup> per art. However, it does not seem likely that the Pachomius incident took place in 346 (i.e. post-345, and before Pachomius' death).

4. Such were our conclusions for c.312/3 above.



Around the year 350 according to P. Lond. 427 (Hermopolis), one art. of wheat cost 50T, i.e. 1 mod.: 15T (= 225,000). We do not know the precise cost of wheat in terms of solidi in that year, but if we assume that it was again around 40 mod. per sol., we get a solidus of 9,000,000 d. Again if the minimum unit in that time was one talent (= 1500d.) (cf. above table of relationships between the denarius and the solidus), the solidus was worth approximately 6000 d. Now these are necessarily very conjectural calculations, but the conclusions, though not necessarily accurate - they do not aim at exactness - are reasonable in their scale. Thus we have reckoned that c.355 there were some 6740 d. per sol. By c.360 (P.O.1056) there were already 20,000,000 d. in the sol., so that 9,000,000 d. per sol. for c.355 is a reasonable conclusion. Again 40 mod. per sol is probably about half the contemporary Palestinian price.

According to P.O. 85 of 338, 13 art barley: 500d.<sup>5</sup> ∴ 1 mod. barley: 12.8d. Wheat would have cost somewhat more, perhaps 21d. per mod.<sup>6</sup> P.O. 85 also informs us that wheat cost 24T per art.<sup>7</sup> i.e. about 7T per mod. Thus 7T = 21 d., or 1 d. =  $\frac{1}{3}$ T. (= 500 d.) If there were some 6,000 d. per sol., the sol. would have been equal to 3,000,000 d. in Egyptian terminology. This seems to be a rather high valuation for the solidus at such a date. Furthermore, according to PSI.202 of 338(?) (Oxyrhynchus), 1000 lbs. of pork: 900 d., i.e. each lb. pork cost just under 1d. It seems most unlikely that 1 lb. pork should have

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5. Cf. Currency pp. 113, 124-5.

6. See price-relationships above. But cf. PER E 200, Hermopolis, 314 etc.

7. So according to Bell, in a note to P. Lond. 1914.



cost under  $1/6000$  sol., when according to the Edict of Diocletian and Palestinian sources pork prices of the first half of the IV cent. ranged between  $1/175$  and  $1/150$  sol. (see above). However, the reading of the wheat price in P.O. 85 is uncertain,<sup>8</sup> and we should therefore not base ourselves on it too much. But what is, I think, clear from P.O. 85 and from PSI 202 is that the denarius was equal to ~~many~~ many denarii, though how many we do not know.

According to P. Lond. 247 of 346, 4 Babylonian hides: 120 myr. d; ∴ hide: 30 myr. d. And according to P.O. 1057 of 362, 1 Babylonian hide cost 750 myr. d. In the Edict of Diocletian (VIII.1a,2) the prices for Babylonian hides are given as 500 d. each, for the first quality, and 400 d. for the second quality, (i.e. very approximately  $3/5$  sol. or a little more each). According to this c.346, 1 sol. = 500,000 d., and 362, 1 sol. = 12,500,000 d. approximately. Again these calculations have no pretensions to accuracy, but the scale of our highly conjectural results seems to be reasonable. As we have calculated that the solidus stood at 4480 d. in 346, the minimum unit must have been about 100 d. Again as we calculated the sol. at about 6800 d. c.360 onwards, the minimum unit would be about 1750 d. =  $1\frac{1}{6}$  T, a slightly unlikely figure. A unit of 1T would be more easily acceptable, giving a solidus valuation of some 10,200,000d.; alternatively, there may have been a regional differences in the price of the solidus

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8. See Byzantine Egypt: Economic Studies, p.177, where the authors write "24T. for an art. in tenth measure". See there note ibid. "This is dubious. The reading of the text seems to be 24 art. ἀρταλ ( ) in the tenth measure as the amount left in stock...etc."



of up to one sixth, though this again seems a little excessive.<sup>9</sup>

PSI 781 of 341 seems also to be relevant to our argument, though it is a text of considerable ambiguity. It reads: ἑσθλὸς τρωμένων τη[λ]α \*ρὸς ὁ τέω(ς) ἀργυρίου τάλ(αντα) τετρακόσια εἴκοσι ὀκτώ καὶ δραχ(μας) διαχίλιας. If this means, as has been suggested that 175 denarii are now worth 428 T 2000 dr., or 1 denarius = 14,685 <sup>5</sup>/<sub>7</sub> dr., and the [silver] denarius is the siliqua<sup>10</sup>, then 1 sol. = 98,104 d., or approximately 100,000 d. in 341. If they were 8400d. per sol in this year, as we have calculated, the minimum unit in Egypt must have been 12d. It may however be that this unusual figure contains a hidden charge for exchange,<sup>11</sup> in which case 84,000 d. per sol (meaning a minimum unit of 10d.) might be a more acceptable ratio.<sup>12</sup>

All the above demonstrates that one may generally (and very conjecturally) calculate a roughly comparable price-scale and system of solidus-valuations for Egypt as for the rest of the Eastern Empire.

9. On regional variations in the value of the solidus, see Cod. Theod. 9.23.1, of 352, and above. See also Procopius, Hist. Arcan. 25.12. The value of the solidus during the IV cent. must have been approximately the same in Egypt as in other parts of the Eastern Empire, as the same marks of value appear on coins of Egyptian and non-Egyptian mints. Eg., the famous XIIϞ of Licinius, which appears on coins from the mints of Cyzicus (SMKA) and Nicodemia (SMNA) as well as those of Alexandria (ALE). Cf. Also Currency, p.101. Contra J.G. Milne, in JRS XVII, 1927, p.10.
10. Currency, p.125, But cf. ibid, pp. 165-6.
11. Suggested by West and Johnson, in Currency, p.125.
12. See BGU 21, of 340, (Hermopolis), according to which 1 sest. wine: 3T (= 4500 d.). This means that wine cost about 1/20 sol. per sest., or about 32 d. per pint in terms of the Edict of Diocletian. This seems to be a rather high, though not impossible, price for wine. Cf. P.O.2114, of 316, 65 d. per sest. of old wine. Cf. also SPP.xx.93, for an oil price probably of 334, as oil was generally more expensive than wine. See also P.O. 1753, of 390, according to which 40 sest. olive oil cost 1 sol., which compares well with the price given in the Edict of Diocletian (III.3). Also compare meat prices ibid: 30 myr. d. per lb.



This is indeed no more than one would have expected, and for our purposes it bears out our calculations of prices in Palestine, and the values of the solidus as calculated from Non-Egyptian sources. The precise cause of the singular terminological development in IV cent. Egypt, that is the phenomenon of constantly renaming the minimum unit of value (or the standard unit of reckoning), remains, however, puzzling and unexplained. One can only point out that it was a development apparently equal throughout the whole of Egypt, and not limited to one district, and therefore may be dependent upon official government edicts as opposed to local accounting practices. However, this point is also unclear, and for the moment the problem remains unsolved.<sup>13</sup>

The above analysis of Palestinian and Egyptian prices etc. seems to bear out the opinion of West and Johnson that "in spite of the almost universal opinion that there was (an actual money inflation in Egypt), the evidence does not wholly support this view. Egyptian prices, it is true, are expressed in figures of astronomical size but only when the monetary unit used is the denarius or drachma, never apparent when prices or tax-rates are given in gold" (Currency p.157). "The apparent increase of prices expressed in terms of denarii and drachmae at a time when no rise can be discerned in the prices which are expressed in terms of the solidus, siliqua or follis is not inflation in the proper meaning of that term" (Currency p.169). That

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13. See the remarks on the usages in literary sources in Currency, pp. 157, 168.

is not to say that prices did not rise at all. In so far as the denarius depreciated in value to as much as one tenth of its value of 301, at some stages of its career, prices in terms of copper coinages must have fluctuated accordingly. It is the scale of these price-increases and their meaning in terms of actual money (coins paid out to the vendor) that we have attempted to reconsider in the preceding sections. By disentangling prices in terms of actual monetary units from prices expressed in terms of units of value, we have tried to show that the situation in Egypt was not radically different from that in Palestine, and indeed in the rest of the Eastern Empire.<sup>14</sup>

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14. This fact has been appreciated before, though never demonstrated in any detail or convincingly. See, for example, Lellia Ruggini's remarks in her article in *Rendiconti dei Lincei* vol. 16 (1961), p.315. But see Segrè in *Byzantion* 15, p.251, who calls the IV cent. "one of the worst (periods) in the economic and political history of the world"; obviously he was basing himself primarily on Egyptian papyrological evidence. See also Segrè in *Circolazione monetaria e prezzi nel mondo antico ed in particolare in Egitto* (Roma 1922), pp. 359-405 etc; idem *Metrologia*, p.457; Mickwitz, *Geld und Wirtschaft*, p.114; E. Petrie, *The rise of prices in Roman Egypt* (1922), in *Ancient Egypt*, p.103; cf. Bernardi in *Studia Ghisleriana* 3 (Pavia 1961), p.303, note 222, etc. See also J.G. Milne, in *JRS* XVII (1927), p.10, who writes that in Egypt there was a "local devaluation of a coinage.... which had not depreciated anything like the same extent in other provinces."



CONCLUSION

In our discussion of III cent. prices two significant points emerged, both of which require some further consideration. (a) We noted that though the actual currency started depreciating already early in the century, prices did not rise radically till some time around the '70s. Thus, for instance "there is no indication of a significant change in price level in the period covered by the parchments and papyri from Dura"<sup>1</sup> which extend from the late I cent. to c.254. (I have set out the published material from Dura in JESHO 9/3, 1966, pp.195-8). (B) When these prices did rise, they did so primarily in terms of debased silver. In terms of gold, however, prices both in the III and IV cent. did not change radically.<sup>2</sup>

The first observation poses something of a problem. The second, left as it stands, gives a one-sided view of the situation. To complete this part of the picture, we must first know more as to the relative amounts of copper, debased silver and gold circulating. Thus, if neither gold nor pure silver were actually available, people would have to buy and pay in debased silver and copper, or whatever was in circulation, so that even if prices had not radically changed in terms of gold, they would still be paying out more coins for their purchases. This in turn would not necessarily have any serious adverse effect on the

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1. Dura. Final Report, V.1, ed. Ann Perkins (New Haven 1959), p.8. Cf. Johnson in JJP 4 (1950), p.156 "Inflation in prices quoted in terms of fiduciary currency suddenly became acute (in Egypt) during Aurelian's reign".
  2. Cf. D. Magie, Roman Rule in Asia Minor (Princeton 1956), vol. 1, p.713.

"man in the street" so long as the government and the banks were willing to exchange silver and gold for the right number of debased units - at the market-values<sup>3</sup> - and that his wages went up<sup>4</sup> in a ratio equal to the fall in value of the coins in which he was being paid. Or as West puts it:<sup>5</sup>

"As long as conversion into coins of some more valuable metal was readily possible, it made no difference in the value of the subsidiary coinage whether it was pure silver, or a piece of paper with no intrinsic value. Subsidiary coinages acquired a value of their own only when their value as bullion exceeded the value assigned to them by the mint; and under such conditions, they would not be minted."

Bearing in mind these considerations, we may now reconsider our first point, and the question it appears to pose. Here a number of factors are of importance:

(1) I have tried to demonstrate above that up till the end of Galienus' reign the relationship between the ant. and the aureus was kept more or less steady (at about 25:1). Only towards the end of his reign are we witness to the complete collapse of this "classical" system, and the extreme debasement of the ant.

(2) At the same time it is clear that already in the earlier part of the century there was a strong desire for a stable currency in plentiful amounts. This is surely the meaning of the

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3. See for example, P.O. 1411 (referred to above) according to which the banks did not wish to accept the official "silver" coins.

4. The annual salary of a *trecanarius* fell from 70 lbs. gold to a nominal  $1\frac{1}{2}$  lbs. gold (Kent, in Mattingly *Festschrift*, p.191). Note also that Caracalla halved the value of the *denarius*, but increased army wages only by a half (from 500d. to 750 p.a.) See Jones, *The Later Roman Empire*, I. p.29, III p.6 note 25 (Pan. Lat. 6.11) etc.

5. *ANSMs* 4, 1954, p.9, article entitled "Ancient Money and Modern Commentators". Cf. Johnson in *JJP* 4 (1950), p.151.



tremendous boom in the production of copper coins by the local mints. A few examples of this should suffice to delineate the main tendency. Caesarea Maritima minted in the last nine years of its 186 years of minting history (244-53) 53% of all its production.<sup>6</sup> 41% of all coins issued at Akko Ptolemais during 207 years were struck from 224-68.<sup>7</sup> In Aelia Capitalina 94 out of a total 207 types (from Hadrian onwards) were produced between the years 218-60. Carson (in INCP pp. 240-2) computes the following proportions of II to III cent. coinage (and here it should be borne in mind that the III cent. is not more than 60 odd years):

Syria	Antioch	1:5
	Emesa	1:2
	Gabala	1:3
Phoenicia	Berytus	1:3
	Byblus	1:10
	Ptolemais All	1:4
	Sidon	1:8
	Tripolis	1:3

From Asia Minor C. Bosch<sup>9</sup> calculates the following ratios for relative quantities of coinage circulating in the II and III cents.

Ephesus	3:14
Smyrna	5:10
Nicaea	5:14
Ancyra	1:14
Tarsus	5:58
Perge	2:34

6. CNP II. p.38

7. CNP IV pp.39, 55-8

8. CNP I, p.26

9. Die Kleinasiatischen Münzen der römischen Kaiserzeit in Arch.Anzeiger, 1931, p.430. See also D. Magie, Roman Rule in Asia Minor, p.701; E. Gren, Kleinasien und der Ostbalkan in der Wirtschaftlichen Entwicklung der römischer Kaiserzeit (Uppsala Universitets Arsskrift IX, 1941) p.5; and most recently B. Levick, Roman Colonies in Asia Minor, (Oxford 1967) pp. 170-2.

Probably more detailed analysis would reveal that in all these cases the major rise in mint production came during the last two or so decades before the mints closed.

It is no coincidence that this tremendous boom in the production of copper came at just the time when the ant. was rapidly depreciating in value. It surely reflects a rising demand for a stable currency, which indeed the copper coinage was.<sup>10</sup>

Why then did this local production come to an end around the middle of the III cent? It is clear that there was no imperial edict ordering the closure of these local mints.<sup>10a</sup> for they do not all stop their activities at the same time. There are in fact some half a dozen instances of cities in Pamphylia and Pisidia issuing local bronze coins as late as Claudius II, Aurelian and, in one case, Tacitus (Carson, *ibid*). It seems probable that it gradually became less economic for the cities to produce the local bronze pieces as the ant. dropped in value. Or in other words "their value as bullion (now) exceeded the value assigned to them by the mint, and under such conditions they would not be minted". The fact that the modules tend to get larger in the midIII cent (see above) may well be a sign of copper inflation and not of prosperity.<sup>11</sup> Certainly

10. Cf. D. Magie, *Roman Rule in Asia Minor*, I, p.713. Above we noted the greater emphasis on gold and gold bullion, also part of the same pattern. Likewise, the change from money ~~to~~ taxation to taxation in kind reflects the same trend. See particularly Lev. Rab. 15.9, ed. Margulies, p.338 (R. Aba 6. Kahana) מִדָּד הַבִּיָּא מִדָּד הַבִּיָּא. See G. Allon, *Toldot ha-Yehudim be-Eretz Yisrael be-Tekufat ha-Mishna ve-ha-Talmud* (Israel 1955) vol. 2, p.182 et seq; Jones, *The Later Roman Empire*, Vol. 1, pp. 30-1 etc.

10a Contra "est in ANSMN 7 (1957) p.110. See also *ibid* p.109.

11. CNP IV p.55, Akko Ptolemais, metallic content of coins better, size large, post c.225. In Antioch too the coins of this period have a larger module; see B. Levick *Roman Colonies in Asia Minor*, p.171.



by the end of Aurelian's reign it would hardly have been worth while issuing local bronze denominations.<sup>11a</sup> For if, as we have suggested, his pre-reform ant. was worth  $\frac{1}{500}$  aureus, it was equal to  $\frac{1}{20}$  old denarius, i.e. less than an as ( $=\frac{1}{16d.}$ ); even in his post-reform system the ant. ( $=\frac{1}{250}$  aureus) would have been  $\frac{1}{10}$  of an old denarius, i.e. less than a dupondius (a piece of about  $8\frac{1}{2}$  grammes - Elagabalus, or 12 gm. - Caracalla).<sup>12</sup> Why some cities did nonetheless continue issuing bronze is still something of a puzzle, but there may have been localised reasons - strong conservative traditions? - for this.

This local copper coinage had undoubtedly acted as a (partially) stabilizing influence (at least) during the earlier part of the century, and the extent of its increase, most especially in the '40s, is clearly indicative of the strong demand for a stable currency. Thus, confidence in the ant. must have been wavering very considerably. (Hence, the premium on gold noted above). When this source of "stable currency" dried up, it should have been matched by comparable emissions of some equally stable currency - in gold. The fact that there is evidence of "absolute shortage of gold during Gallienus' period" (West) is not enough.<sup>13</sup> In order to satisfy the obvious demand for stable currency, there should have been a significant rise in gold emission and circulation,

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11a See INCP, pp. 247-8.

12. BMC V, (Mattingly), London 1950), pp. XXI-XXII. See also Jones, *The Later Roman Empire*, I, p.27.

13. See West in ANSMN 4 (1954) p.6: "In the fifteen years from 253 to 268, probably the darkest period in Roman history, enough different types of gold coinage are known to average about one every three weeks for the entire period". This is, of course, not a very accurate index of the actual bulk of coinage in circulation.

one relatively comparable to the bronze boom. But there is no evidence of this.

(3) Furthermore, yet another potentially stabilizing element had been taken off the market, probably during the latter years of Decius. For it appears both from hoard evidence and from certain legal texts (see Appendix B) that c.250 all the earlier silver denarii in circulation were officially demonetized, and, no doubt, bought up by the government. The government must have set some kind of premium on them, else they would all have been melted down to bullion. Whatever actually happened, the effect must have been completely to take out of circulation a (perhaps small, but surely significant) monetary element which could otherwise have served as a stable (and stabilising) currency-core.<sup>14</sup>

Thus, by the end of Gallienus' reign several factors combined together to destroy all possible vestiges of confidence in the ant., the only coin, practically speaking, in circulation. And though it is true that there may have been a theoretical right to change ant. in  $\frac{1}{2}$  aurei, the fact that "in comparison with the issues of subsidiary silver during the third century, the issues of gold seem infinitesimal"<sup>15</sup> meant "the resultant loss of any practical possibility of conversion from silver to gold".<sup>16</sup> This and other factors "brought about a commercial valuation of this subsidiary coinage that differed from the governmental valuation."<sup>17</sup>

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14. See Jones, *The Later Roman Empire*, I. p.28

15. West, in *ANSMN* 4, p.6

16. *Ibid*, p.7

17. *Ibid*.



In view of the above it is hardly surprising to find that the pattern of taxation changes during the later III and early IV cents from one of money taxation to one of taxation in kind.<sup>18</sup> This well-known fact is perhaps reflected in the late III cent. statement of R. Aba b. Kahana<sup>19</sup> that the government says (to the tax payer) מדיד הרביא מדיד הרביא - measure out and bring [your taxes], measure out and bring...<sup>20</sup>

There is also a change of attitude towards land discernable in Rabbinic texts of this time. For as money lost its stability people sought frantically to purchase land, thinking it a point of constancy in the economic flux.<sup>21</sup> Even merchandise and trading were considered less

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18. See Rostovtzeff, *Social and Economic History of the Roman Empire* ~~[=SEHRE]~~, p.728 note 60; Jones, *Later Roman Empire* 1, pp. 30-1. On taxation in late III cent. Palestine see G. Allon, *Toldot ha-Yehudim be-Eretz Yisrael bi-Tekufat ha-Mishna ve-ha-Talmud* [Allon] (Israel 1955), vol. 2, p.182 et seq., and p.253.
19. Lev. Rab. 15,19, ed. Margulies p.338. In the parallel text in B. Shabbat 149B-150A, this statement is recorded in the name of "R. Judah said in the name of Rav," which suggests that this is an early III cent. "derasha" However, see Rabbinoicz, *Variac Lectiones to Shabbat* p.360 note 80, for Ms (and other) readings of R. Johanan instead of R. Judah, and no mention of Rav. These readings seem very plausible, and would shift the text to the second half of the III cent. In any case it is significant that R. Aba b. Kahana used or quoted this "derasha".
20. Cf., for example, *Mechilta Yitro* 1, (ed. Friedman 61B, ed. Horowitz-Rabin p.221) for the use of the root שפ (relating to money) with regard to taxes, (a late I cent. text). Concerning this text see A. Büchler, *The Economic Conditions of Judaea after the destruction of the Second Temple* (Jews' College Publications IV, London 1912), p.62, and *Econ. Survey* 4, p.235. See also Büchler, *The Political and Social Leaders of the Jewish Community of Sepphoris in the Second and Third Centuries* (Jews' College Publications I, London 1909), p.42 note 3, who states that שפ seems to be a "technical term for delivering taxes". Cf. *Tanhumah Shelah* 15, and other sources cited *ibid*, especially T. Demai 6.3. (See also Lev. Rab. 34.12). Here it is the change from שפטו שפ that is significant.
21. Lev. Rab. 22.1, ed. Margulies p.495, a text in the name of R. Jeremiah (flor c.270-320). This is a point made by Walbank in his chapter "Shrinkage, Crisis and The Corporative State", in his *The Decline of the Roman Empire in the West* (London 1946) pp. 38-57.



"safe" than an investment in land.<sup>22</sup> Thus we find R. Eleazar  $\overline{\text{b.}}$  Pedat $\overline{\text{7}}$  (flor. 250-79) declaring that a "man who has no land is not a man",<sup>23</sup> and foretelling that even men with professions will go back to the land.<sup>24</sup> And indeed R. Eleazar's prognostication seems in some measure to have come true, for in the IV cent. we find that "many members of the professional classes were also landlords."<sup>25</sup>

This sort of situation led to vicious rivalry and landgrabbing, a struggle out of which the toughest and least scrupulous types emerged on top.<sup>26</sup> These "ba'alei zero'a", as they are called in Rabbinic sources, pandered to the officialdom to be "in with the government", and ruthlessly exploited the poor and weak to their own advantage.<sup>27</sup>

Under the pressure of high taxation in kind the pattern of landholding changed still further. Overtaxation encouraged flight and abandonment of land on the part of the small landowner, and this, of course, helped the "ba'alei zero'a" to build up their large new

22. Deut. Rab. ed. Lieberman, p.58

23. B. Yevamot 63A.

24. Ibid.

25. Jones, Later Roman Empire, p.770.

26. B. Sanhedrin 58B, R. Eleazar  $\overline{\text{b.}}$  Pedat $\overline{\text{7}}$ . Cf. Rostovtzeff, SEHRE, index s.v. "landgrabbing", especially vol. 2, p.746 note 60.

27. Pirké Rabbenu ha-Kaddosh, ed. Shönblum (Lemberg 1877), p.12. Cf. B. Sukka 19B, early III cent; Tanhuma Buber Exod. p.80 section 1, and printed Tanhuma cited by Buber ibid, note 2. (See also Midrash Shemuel 7.6, ed. Buber p.68; J. Bikkurim 3.3, 65D 7-17, later III cent. texts, etc.). Cf. Oertel in Cambridge Ancient History, vol. 7, p.274.



estates.<sup>28</sup> The Jerushalmi<sup>29</sup> relates a colourful (if apocryphal) tradition which conjures up a vivid picture of the oppressed peasantry and their apparently hopeless plight; "Diocletian oppressed the people of Panias.<sup>30</sup> They said to him, 'We are going' (i.e. running away from here to escape the burdens of taxation. A wise councillor (אבא רב) <sup>30a</sup> said to him, 'They will not go, and if they do they'll come back. And should you wish to test this, my statement, take some deer and send them away to a far-off land, and in the end they will return to their place.' He (Diocletian) did this. He brought deer and coated their horns with silver and sent them off to Africa, and at the end of thirty<sup>31</sup> years they returned to their place".

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28. Cod. Inst. II.59.1, SEHRE p.479, and index sv. "flight", Allon, p. 209. On the decline of the small peasant land proprietor see Jones, Later Roman Empire pp. 778-9, and Allon p.209. See also Jones' article in Antiquity 33 (1959) pp. 39-43, entitled "Overtaxation and the decline of the Roman Empire", where he puts forward the theory that the increase of taxation - evidence of Themistius in 364 that taxes had doubled in preceding 40 years (ibid p.39) - reduced profits so much that it became no longer profitable to farm, and therefore people left the land. Walbank calls this building up of large estates "manor economy", (cf. supra note 21).

29. J. Shevi'it 9.3, 38D46-50.

30. = Banyas, See Neubauer, La Géographie du Talmud pp. 236-7; = אבא רב. Hirschensohn, Sheva Chochmoth p.196; = Caesarea Panias, Avi-Yonah, Map of Roman Palestine (QDAP 5/4), p.146 87.

30a This is undoubtedly the correct reading. See also Pesikta de R. Kahana ed. Buber, p.107B, note 149, and Krauss, Lehnwörter 2, 377-8 s.v.

31. "Thirteen years" according to Leiden Ms. This reading of thirteen seems to be the more correct one. Such was the reading before Nachmanides; see his commentary on Gen. 49.21 (ed. C.B. Chavel vol. 1, Jerusalem 1959, p.272 - Chavel does not note this point). See J.N. Epstein, Prolegomena ad Litteras Amoraicas, p.437 note 11. See also Midrash Shir Ha-Shirim, ed. Grünhut, 48B section 14, which also has "thirteen", and see Buber's remark ibid p.34.



Private fortunes invested in land probably incurred relatively little loss of income as the produce could be sold at current prices.<sup>32</sup> The large landholder who marketed a considerable yield was in all probability paid in gold, while the owner of a smallholding may well have been paid only in silver or even copper. The latter would thus suffer more than the former, and this too would aggravate the trend towards large new estates. Hence "the incident of land tenure on the 'aris system (colonnate) became more strongly marked (during the IV cent)"<sup>33</sup> but clearly the class depending on salaries must have suffered most of all.<sup>34</sup>

This return to "natural economy" did however not last very long. With Diocletian's reestablishment of a relatively stable gold-based currency system, a confidence in money was re-established, as we have seen above. It was probably during the initial years, when the silver-washed "folles" were rapidly depreciating in value but gold was standing firm, that R. Isaac [Nappaha] counselled<sup>35</sup> that one should divide one's wealth into three parts (i.e. three types of investment), one part land, one part merchandise and one part cash. This would seem to be very sound advice at this period, since too much land would invite the excessively high taxes, and cash was still liable to fluctuate in value, (or so people thought). Trade was beginning to pick up again, after its virtual dislocation in the preceding century.

32. Magie, Roman Rule in Asia Minor, p.714.

33. E.E. Urbach. The Laws regarding slavery etc., p.87, in Papers of the Institute of Jewish Studies, London (ed. J.G. Wiess) I, (Jerusalem 1964). On the economic background to the colonate see Allon pp. 207-9. On the lateness of the colonate in Palestine (Cynegius, 383-8, as opposed to the more usual 332), see A. Gulak, Le-Heker Toldot ha-Mishpat ha-Ivri bi-Tekufat ha-Talmud, vol. 1 (Dine Karka'ot) (Jerusalem 1929), pp. 135-7, bibliography ibid. Cf. Walbank's remarks ibid (supra note 21). On the colonate in general see Clausen, The Roman Colonnate (1925) and Jones Later Roman Empire pp. 795-803.



By the time of Constantine the currency system with its abundant issues<sup>36</sup> had proved itself, and money was being used by all classes.<sup>37</sup> On the basis of texts from writers such as Libanius, Paul Petit has concluded that large contracts were in gold coinage, small ones in silver or even copper, and (hoarding and) tax payments in bullion.<sup>38</sup> If this thesis needs any added proof, then the IV cent. texts we have cited above can provide this further corroboration. We may even add that not merely large contracts were in gold, but smaller ones too, of the order of one solidus, as in the case of R. Aba b. Zemina. Furthermore, the absence of any reference to the use of bullion in private contracts during this period (in contradistinction to the late III cent, see above) is surely significant. It confirms what we have already stated above, that there was a very complete reverting to a money economy.<sup>39</sup>

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34. (from p.268) Magie *ibid* p.714.

35. (from p.269) B. Baba Mezia 42A. R. Isaac flor. c.260-320. He was a pupil of R. Johanan and a friend of R. Ammi and R. Asi.

36. See Kent in Mattingly *Festschrift* p.191; Jones, *Later Roman Empire*, p.807.

37. See P. Petit, *Libanius et la vie municipale à Antioch en 4<sup>e</sup> siècle après J.C.* (Paris 1955, Institut Francias d'Archéologie de Beyrouth, Bibliothèque Archéologique et Historique, vol. LXII), pp. 298-303. This is especially clear from the Codes: e.g., Cod. Theod. c.21; 9.22.1; 9.38. 7-8; 11.21.1; Serm. 8; Cod. Theod. 9.23, 1; 7.20, 11, etc. See also Grierson in Mattingly *Festschrift*, p.240 et seq; Kent. *ibid* pp. 203-4; Libanius' autobiography, *First Oration*, ed. and transl. A.F. Norman (Oxford 1965), p.161 (to Or. 1.61); Mickwitz, *Geld und Wirtschaft* pp. 154-64 (basing himself solely on patristic sources).

38. Petit *ibid*. pp. 300, 303.

39. See Petit *ibid* p.298: "Les historiens modernes les plus représentatifs, et parmi eux, en France, M. Piganiol, au premier rang, semblent d'accord aujourd'hui pour nous offrir de l'Empire sur ce point une image à peu près identique; ils constatent le développement des échanges monétaire et la triomphe de l'économie ouvert", (= *Geldwirtschaft*) etc. Bibliography *ibid*. See also Santo Mazzarino, *The End of the Ancient World* (London 1966), p.153; Passerini, *Studi in Onore di Gino Luzzatto* (1949) etc.



Clearly the tight control of gold issues was central to the balance of the monetary economy of this time. This problem has recently been the subject of a penetrating study by J.P.C. Kent,<sup>40</sup> who examines the administrative mechanism for this control, its development and the changing economic theories underlying it. Here I shall quote only his general conclusions:<sup>41</sup>

"In the collapse of the bimetallic system of the early Empire, taxation and wages were reassessed in kind. When from the time of Diocletian onwards a monetary economy was reestablished, the only fixed standard for taxes and payments alike was that of gold, and other coin rose and fell in relative value according to ordinary economic laws. Since the whole system of imperial finance depended on the maintenance of a satisfactory gold coinage, forgery and mutilation,<sup>42</sup> which tended to reduce the income from taxation, were savagely regressed, and every effort was made to draw in the maximum amount of gold to the treasury.<sup>42</sup> The final steps in perfecting the system were taken by Valentinian I and Valens in 366-7. They decreed that all gold received in taxation was to be melted into ingots and tested before acceptance, and they reorganised the central treasure of the sacrae largitiones so that it was able to collect this bullion direct from the provinces and undertake its recoinage.<sup>44</sup> Thus gold coinage became concentrated at the imperial residence (comitatus) and...the marks OB and COM that appear on it testify its mintage there from the accredited bullion received by the treasury."<sup>45</sup>

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40. Gold and Coinage in the Later Roman Empire, in Mattingly Festschrift.

41. Ibid. pp. 203-4.

42. See P. Grierson's essay on "The Roman Law of Counterfeiting", also in Mattingly Festschrift, p.240 et seq. See Cod. Theod 9.23.5 (343) 9.22.1 (343).

43. A discussion of the "cash-producing" taxes is to be found in Kent's article *ibid* pp. 194-6.

44. Kent, *ibid* p.197, states that the "excellent preservation of most surviving later Roman gold [is evidence that] the chance of any individual piece circulating for long was slight. If it escaped recoinage, it must have gone quickly to ground."

45. On this whole subject see Jones, *Later Roman Empire*, chap.XIII, especially pp. 427-37, 462-9, etc.



This then rounds the picture off, a picture of the transition from a silver to a gold standard,<sup>46</sup> via a short period of "natural economy". Within this period a great many major economic and social changes came about.<sup>47</sup> Patterns of land-holding and taxation altered<sup>48</sup> as has been noted above. Agricultural changes also took place, and these had serious economic effect. in Rabbinic sources that the fertility of the land was diminished There is evidence, though whether through soil

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46. The acceptance of a full gold standard, in the modern sense of the term, came about in 367. See Cod. Just. 11.11.2 of that year, according to which the variation in the price of the solidus is to be accompanied by proportional changes in the prices of other commodities. Cf. Also Cod. Theod. 9.23.1 (of 359), which states that coinage should be used for purchase and not as merchandise. See Kent in Mattingly Festschrift pp. 191-2.
47. For evidence of these changes in Rabbinic literature see the following: A Marmorstein, Ha-Matzav ha-Kalkali...be-Doro shel R. Johanan etc., in Freimann Festschrift (Berlin 5697) pp. 1-12; idem, Doro Shel R. Johanan etc., in Tarbiz 3, pp. 161-80 (Jerusalem 5692). Much of what he has written has to be radically revised. Thus he dates the "Otot ha-Mashiah" c.260-70 ('arbiz ibid. p.164), while Yehuda ibn Shemuel, in his Midreshei Ge'ulah (Israel 5717) p.297, demonstrates that it is mediaeval, and probably post c.950. Many of Marmorstein's arguments are based on undated texts. S. Lieberman in JQR NS 36 (1945-6) pp. 328-70 contains much valuable information (but is perhaps too kindly disposed towards the Romans? cf. Baron's remark in his Social and Religious History of the Jews, vol. 2, chap.13, note 11, p.398) as does his Greek and Hellenism in Jewish Palestine (Hebrew ed. Jerusalem 1962), and his article in Annuaire de l'Institut de Philologie et d'Histoire Orientales et Slaves, vol. 7 (1939-44) on "The Martyrs of Caesarea". See also S. Krauss, Paras ve-Roma ba-Talmud u-ba-Midrashim (Jerusalem 5708), and, of course, Allon's Toldot ha-Yehudim be-Eretz Yisrael etc. most especially vol. 2.
48. See also Allon pp. 210-3. See also S. Appelbaum's article in Zion XXIII-IV, (1958-9) "The Province of Syria-Palaestina as a province of the Severan Empire", pp. 35-45 (English summary, p.III). Pp.94-5, for changes of land-tenure pattern in III cent. p.43 note 64 for move away from the land because of taxation; pp. 42-3 for attempt to increase agricultural productivity in III cent.; and p.43 for increase in cattle-raising during III cent. See also A. Gulak's article "The Method of Collecting Roman Taxes in Palestine", in Magnes Anniversary Book (Jerusalem 1938) pp. 97-104. (English summary pp. XXI-III), especially his interpretation of the very interesting passage in J. Ketubot 10,5, 34A 15-19, a text that must be dated 350/75 mentioning "shequ'im - lands sunk into debts of unpaid taxes.



exhaustion or the incidence of less intensive cultivation is not clear.<sup>49</sup> Population movements and the altering patterns of population density, then too had their social effects<sup>50</sup> as, of course, did the spread of Christianity.<sup>51</sup>

All these numerous factors (and others too) must be taken into account before a description of any kind of real round and living picture of the times can be undertaken. In the above study, I have attempted to do no more than build up a somewhat pale and bloodless (monetary) framework of the period, within which certain primary guidelines are delineated. Into this spare skeletal frame, and following the rough outlines indicated, all the social, economic and political factors will have to be woven, in order to give flesh and colour to our image of the Empire during these two very crucial centuries of its history.

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49. Allon, pp. 209, 253. See J. Pe'a 20A 73 etc. See J. Feliks, Agriculture in Palestine in the Period of the Mishna and Talmud (Jerusalem 1963), p.159 note 37, who completely misunderstands B. Baba Mezia 105B, (A Babylonian statement) and J. Pe'a 5,18D. His correction (following R. Elija of Wilna) of  $\text{א'ל}$  for  $\text{פ'ט}$  in B. Baba Mezia ibid (see p.157 note 33) is completely impossible as it yields the patently absurd result of a crop-yield of 1:22.5 (bad year) and 1:45 (good yield) in ratio of amount sown. The average crop-yield is more like 1:6, as in J. Pe'a cited above, 1:4 or 1:8 if the reading  $\text{פ'ט}$  be kept. See also P. Nessana 82.83 (ed. Kraemer, p.242). Hence, his "economic" explanations are unfounded.

50. Allon pp. 252-62. See also M. Avi-Yonah in Israel Exploration Journal 8/1 (1958) pp. 40-1, in an article entitled "The Economics of Byzantine Palestine".

51. See Avi-Yonah ibid. p.41 et seq. who discusses the economic effect of the change of Palestine from being an obscure province (in the period before Christianity became the official religion of the Empire - e.g. Eusebius, De martyribus Palaest. 11.9-11) to being the "Holy Land", a centre of tourism and of massive donations (to Churches etc.).



APPENDIX A: On Palestinian Metrology

In B. Eruvin 83A we learn that there were (at least) three standards of volume, and consequently three types of se'ah, that of the desert - Midbarit - (=M), that of Jerusalem - (=J) and that of Sepphoris (=S). According to B. Eruvin ibid:

Se'ah M = 144 betza (= eggs)

Se'ah J = 173 betza

Se'ah S = 207 betza

A betza is approximately  $5\frac{1}{2}$  cubic inches,<sup>1</sup> hence:

1 se'ah M = 729 cubic inches

1 se'ah J = 951 cubic inches

1 se'ah S = 1138 cubic inches

1 se'ah = 24 logs. Therefore 1 log M = 30.4 cubic inches

1 log J = 39.6 cubic inches

1 log S = 47.4 cubic inches

This is borne out to a certain extent by B. Pesahim 109A, where R. Issac says that a "kasita" (xestes) of moraisa (a liquid) in Sepphoris = 1 log of the temple (= log J. surely!). A Roman sextarius = 34.4, while a Syrian xestes = 41. Assuming the Sepphoritic xestes to be a Syrian one, we get the close approximation of 39.6 and 41.<sup>2</sup>

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1. = 91.5 cubic centimetres. See Jewish Encyclopedia, Vol. XII, p. 449 S.V. weights and measures.

2. Note also that according to the Caervoran standard, 1 sextarius = 38. See F. Petrie, Measures and Weights (London 1934), p.12. For sextarius and xestes weights etc., see Encycl. Britannica (= EB - 9th ed.), art. "weights and measures", Vol. 24, p.485B, 486A., by F. Petrie).

In Josephus, Antiquities 8.2.9 we further learn that 1 bat (= epha) = 72 sextarii. 72 log = 1 bat, therefore 1 log = 1 sextarius. The bat is primarily a temple measure, so that again we arrive at 1 log J = 1 xestes (presumably a Syrian one).<sup>3</sup>

According to J. Terumot 10.5 (47B 25), 1 log = 2 litra (= libra). The Roman pound weighed 323.45 gr., the Alexandrian 349.33.<sup>4</sup> Therefore 1 log (water) weighed 646.9 gr. (Roman standard) or 698.66 (Alexandrian standard).

1 cc water = 1 gramme. Therefore 1 log m of 30.7 cubic inches  
= 503.5 cc = gr.

1 log J of 39.6 cubic inches  
= 699.4cc = gr.

1 log S of 47.4 cubic inches  
= 777.4 cc = gr.

The Alexandrian standard of 698.66 is very close to log J of 699.4.

In Jos. Ant. 3.8.3 (Loeb ed. p.441), we read that 1 hin = 2 Attic choes. 2 hin = 1 se'ah. Therefore 1 se'ah = 4 Attic choes. The Attic choes. is known to be approximately 210 cubic inches.<sup>5</sup> Therefore 1 se'ah = 840. This seems a little low for the se'ah J. If, on the other hand, the sextarius referred to in Ant. 8.2.4. (above) is a Roman one and not a Syrian one, then the se'ah would be  $34.4 \times 24 = 825.6$ , very closely approximating to the above estimate of 840.

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3. But see Epiphanius, Syriac version. Ed. J.E. Dean (Chicago 1935). Appendix IV, p.142 and pp. 13, 41. 1 bat = 50 xestai. See F. Hultsch. Metrologiconum Scriptorum Reliquiae. (Leipzig 1864), (= MSR) pp. 261, 271, 273 (II, 100, 102).

4. Economic Survey vol. 2, p.466.

5. EB. ibid. p.486A.



Epiphanius<sup>6</sup> tells us that 1 Attic medimnus =  $1\frac{1}{2}$  bat.

1 Attic medimnus = 3360, therefore 1 bat = 2240.

3 se'ah = 1 bat, therefore 1 se'ah = 746.6.

From other metrological sources<sup>7</sup> we learn that 1 saton (= se'ah) =  $1\frac{3}{8}$  modius. 1 modius = 550, therefore 1 se'ah = 756.2.<sup>8</sup>

Jos. Ant. 3.15.3 tells us that 1 kor (= 10 bat) = 31 Sicilian or 41 Athenian medimni, (read modii).<sup>9</sup>

41 Attic modii = 22550 cubic inches.

Therefore 1 bat = 2255, therefore 1 se'ah = 751.6.

These last three results are all very close to one another, and come closest to the se'ah M of 729.

From the above it becomes manifestly evidence that there were a number of different standards current at the same time, (and at different times), and that metrological writings are only approximate and (consequently) diverse when dealing with these matters.

When we judge Roman measures, however, we generally do so from the celebrated Farnesian congius of 206.7, arriving at a modius (dry measure) of 550. If a modius castrensis = 2 modii Italici, as Hultsch

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6. EB ibid p.485A.

7. Hultsch, Griechische und Römische Metrologie (2nd ed. Berlin 1882) (=GRM), p.449. Also EB ibid. 785A, citing Theodoret.

8. But see Epiphanius, Syriac version ibid., p.13 etc., 1 se'ah =  $1\frac{1}{4}$  modius and see Editor's note p.142. Also MSR, pp. 261, 271, (II, 101), and GRM pp. 449, 631.

9. EB ibid. p.485A.

considers it to be,<sup>10</sup> then 1 modius castrensis = 1100 cubic inches.

Now in B. Eruvin 83A, R. Dimi relates how Bunias sent to Rabbi [Judah the Prince] a modius of kundis of Nausa,<sup>11</sup> and Rabbi calculated it to be equal to a se'ah. The Talmud continues to tell that this modius was equal to 207 betza, or 1 se'ah S, in other words 1138.5 cubic inches. The Talmud understood the se'ah mentioned in our Mishna (Eruvin 8.5) to be equal to the one which Rabbi calculated to be as 207 betza. Hence the se'ah in our Mishna = 1138.5 and = 1 modius. The only modius at all similar is the modius castrensis of 1100; hence 1 se'ah of our Mishna = 1 mod. castr. (= 2 modii Italici).

Further evidence for the equation se'ah = modius castrensis may be adduced indirectly by a comparison of both terms with the Aramaic-Syriac  $\text{ܥܪܝܐ}$ . Jastrow<sup>12</sup> and Levy<sup>13</sup> both state that the gariba equals a se'ah. They further identify the two forms  $\text{ܥܪܝܐ}$  and  $\text{ܥܪܝܐ}$  as different spellings of the same word. In Syriac sources the identity of the gariba and the se'ah is clearly stated. See e.g. Brockelmann,

10. Ibid. pp. 629-31. (para. 53,14). For the weight of the Farnesian congius see E.B. ibid. 486A, A.E. Berriman, Historical Metrology (London 1953) p.125.

11. See R. Rabinowicz, *Variae Lectiones etc.* Eruvin (vol. 3) page 328, note 50, who cites several variants. For the most plausible explanation of the text see Levy, *Wörterbuch*, vol. 3, p.42 (S.V.  $\text{ܥܪܝܐ}$ ), translating "a modius of artichokes -  $\text{ܕܝܢܐܪܝܥܐ}$  - from Nausa - a place". On Nausa see J. Obermayer, *Die Landschaft Babylonien etc.* (Frankfurt Am Main, 1929) p.102; Hirschensohn, *Sheva Chochmoth* (London 1912), p.163; and for a very improbable explanation see Neubauer, *La Géographie du Talmud*, p.395. Cf. Gen. Rab. ed. Theodore p.1238 line 5, and Theodore's note ad loc.

12. Dict. p.268A, S.V.  $\text{ܥܪܝܐ}$ .

13. *Neuhebräisches und Chaldäisches Wörterbuch*, vol. 1, p.354A, SV  $\text{ܥܪܝܐ}$ .



Lexicon Syriacum<sup>2</sup> 130B, S.V. ܠܓܪܒܐ, Kings ܕܥܝܪܐ (=2) 7, 1.16.18

(correct Brockelman accordingly), where the Hebrew se'ah is translated gariba by the Peshitta;<sup>14</sup> Supplement to Payne-Smith Thesaurus Syriacus,<sup>15</sup> p.79B SV. ܠܓܪܒܐ, citing Bar. Hebraeus on Hos. III. 2, and

Ganath Busame 27B14<sup>16</sup>. Add to this Bar-Bahlul, ed. Duval (Paris 1910) 887 S.V. ܠܓܪܒܐ : ܠܓܪܒܐ ܠܓܪܒܐ.

Now in the well-known inscription of Shapur I, at the Ka'bah-yi-Zaradust, we find: ܠܓܪܒܐ ܕܥܝܪܐ ܕܡܡ ܠܓܪܒܐ, which is trans-

lated thus: ῥῥῥῥ ῥῥῥῥ ῥῥ ῥῥῥῥ.<sup>17</sup> This would appear to show that

ܠܓܪܐ equalled 1 modius, and contained 10 ܠܓܐ in the III cent.

Iran.<sup>18</sup> I would suggest that ῥῥῥῥ here is the modius castrensis, and that we have here an indirect confirmation that the se'ah (= gariba) = modius castrensis.

14. But cf. other sources cited *ibid*.

15. Ed. J.P. Margaliouth, Oxford 1927.

16. Not a British Museum Ms. as stated *ibid*. p.XII, but Berlin Orqu. 870. See Baumstark, *Geschichte der Syrische Literature etc.* (Bonn 1922), p.308 note 5.

17. Sprengling, in *American Journal of Semitic Languages and Literature* (Chicago) vol. LVII, 28720=45 39028=52 41619. Also his *Third Century Iran, Sapor and Kartir* (Chicago 1953) IV, 4,5,6, pp. 17-9.

18. Nyberg, *apud* G.R. Driver, *Aramaic Documents of the Fifth Century B.C.* (Oxford 1965) p.60. It may, of course, be that there we 7 hofen in a gariba, and 7+5 = 12 hofen =  $1\frac{1}{2}$  modii, so that 1 mod. = 8 hofen. In that case the mod. is slightly larger than the gariba. However, this suggestion seems unlikely. See also Lagarde, *Semitica* vol. 1 (Göttingen 1878), p.59. Cf. *idem*, in *Gesammelte Abhandlungen* (Leipzig 1866) p.28 no.71. See also Payne-Smith, *Thesaurus Syriacus* 1711, Sv. ܠܓܐ. For the metrological evidence of the Armenian Ananias of Sirak, see H.A. Manandian, *The Trade and Cities of Armenia in Relation to Ancient World Trade* (Lisbon 1965) pp. 124-7.

We have shown above (basing ourselves upon Pliny) that a modius (Italicus) produced about 22 lbs. of bread, and that 1 se'ah according to our Mishna) produced approximately 22 loaves. Hence we must assume a loaf to have weighed about 2 lbs. and that <sup>such</sup> a loaf cost as much as a pint of wine (and a pound of meat). 2 lb. loaves were not uncommon, (see note 4 in that section).

In the Mishna (ibid), however, the price of  $\frac{1}{2}$  log wine is equated with that of a loaf of bread, while in Genesis Rabba (ibid) 1 log wine (= 1 xestes) costs as much as 1 loaf of bread, (and 1 pound of meat). We must therefore assume that the wine of the Mishna cost almost twice as much as that of Gen. Rab., and in terms of the prices given in the Edict of Diocletian would have cost 16d., as indeed did "one year old wine of the second quality".<sup>19</sup>

On the other hand a difficulty is presented by a papyrological fragment published by Boak in Harvard Studies in Classical Philology Vol. LI (1940).<sup>20</sup> There in lines 49-50 of Col. III we read:  $\text{ὑπερ ἀργυρίου (τάλαντα) ἕως τοῦ τοῦ μοδίου καστρήσιου (σηνάρια) ρ.}$

(ἀρτάβαί) σϩϭ LTB .21

transl: to the amount of 65 talents at the rate of 100 denarii for the modius castrensis 297 $\frac{1}{2}$  1/12 artabas...<sup>22</sup>

19. Edict. Diocl. ibid. 2.9, also ibid. 15 (pp. 321-3).

20. Some Early Byzantine Tax Records from Egypt. Cairo, Journal d'Entrée, No.57030B. C.E. 312. Also in The Archive of Aurelius Isidorus. Boak & Youtie (Ann Arbor 1960), p.108.

21. Ibid p.50.

22. Ibid. p.54.



65 T = 390,000 dr. Divide this by  $297\frac{1}{2}$  1/12 and we obtain a price of 1310.5 dr. per artab. 4 dr. = ld. therefore 1 mod. cast. was valued at 400 dr. therefore 1 artab costs about  $3\frac{1}{2}$  modii castrenses.

1 artab =  $3\frac{1}{2}$  modii. Hence 1 mod. castr. = 1 mod (Italicus), or =

1 μῶδιος ἕντερος ("level" modius), of P. London, p.156, (Segrè, Metrologia 37),<sup>23</sup> whereas we have stated that 1 mod. castr. = 2 mod. Italici.

Segrè in Byzantion 15 (1941) p.277 agreed to this equation of the modius Italicus with the mod. castr.,<sup>24</sup> though he could not explain why both terms appear in the Edict of Diocletian,<sup>25</sup> rather than just the mod. castr.

Although we cannot explain differently Boak's text, nonetheless, the terminology of the Edict of Diocl. and our own independent Talmudic tradition would appear to bear out Hultsch's traditional views, namely that 1 mod. castr. = 2 mod. Italici.<sup>25a</sup>

We have already cited sources demonstrating the fact that the se'ah and the modius were equated.<sup>26</sup> This equation was known to the Rabbis (e.g. B. Eruvin 83A) and on occasions even caused them some difficulties. In this way I think we may explain an otherwise very

23. Ibid. p.58.

24. Disagreeing with the passage of Heron in Hultsch, MSR, p.204, saying that it is badly corrupt (Byzantion ibid, note 5).

25. Eg. 1, 6, 20, 23, 25; 6. 23. 25 (Byzantion ibid note 7) modius Italicus.

25a See also Mommsen, Über das Ed. Diocl. de pretiis vanalium (Berichte über die Verhandlung der Königlich Sächsischen Gesellschaft der Wissenschaft zu Leipzig. Phil.-Hist. Kl. 3, 1851, pp. 58 ff); Bolin, State and Currency etc., p.323, notes a, i; MacMullen in Aegyptus 41 (1961), pp. 3-5, where 1 mod. castr. = 2 mod. Italici is the equation favoured, cf. Segrè, Metrologia pp. 89-90; idem Traditio 3 (1945), p.107; Mickwitz, Geld und Wirtschaft, p.73 note 148; L.C. West in Studies in honour of A.C.Johnson (Princeton 1951) p.291, and Bernardi in Studia Ghisleriana 3 (Pavia 1961) p.306 note 232.

26. In the section "Wheat-bread-wine-meat", note 1. See also MSR p.252 line 25 etc.



difficult passage in the Jerusalem Talmud. For in J. Terumot 5.1 (43c 47-8), R. Abbahu (Caesarea III cent. C.E.) says: "How much is a kav? 24 betza. How much is a se'ah? 96 betza". Again taking the betza as  $5\frac{1}{2}$  cubic inches, we get a se'ah of 528 cubic inches. This is not dissimilar to the modius reckoned from the Farnesian congius of 550. Again it should be remembered that there were other Roman standards. Thus according to another reckoning the sextarius = 32.8 or 33.4 cubic inches, and hence the modius would be 524.8 or 534.4 cubic inches, even closer to R. Abbahu's result.<sup>27</sup> R. Abbahu apparently constructed or selected a se'ah of 4 kav, instead of the more usual one of 6 kav<sup>26</sup> in order that it accord with the modius Italicus.<sup>29</sup>

Finally it should be clearly stated that all our calculations are of necessity never more than very approximate. We have calculated from the common equation of the log = sextarius,<sup>30</sup> but as we have seen above there is much uncertainty as to the exact volume of the sextarius (in its various standards). Furthermore, this equation appears to contradict (at times?) the modius = se'ah equation. We calculated on the basis that 1 betza =  $5\frac{1}{2}$  cubic inches, yet there were several standards

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27. Vol. 23, p.488 I b.

28. Kav = 4 log (B. Baba Batra 89B. B. Pesahim 89B) and 1 se'ah = 24 log (J. Terumot 47B), there 1 se'ah = 6 kav.

29. There was certainly such a standard when 4 kav = 1 se'ah. For Epiphanius (Syriac version *ibid.* p.189) states that 1 kav =  $\frac{1}{4}$  or  $\frac{1}{5}$  or  $\frac{1}{6}$  modius. Epiphanius identified the se'ah and the modius (see note 8 above); thus (*ibid.* pp. 12, 40) he states that 1 kor = 30 modii. 1 kor = 30 se'ah. Therefore 1 se'ah = 1 modius. Therefore 1 se'ah = 4, 5, or 6 kav. R. Abbahu here has chosen the less usual 4 kav standard rather than the more usual 6 kav standard for the reason mentioned above.

30. See also GRM pp. 447, 453, 456 etc.



of the betza.<sup>31</sup> The Mishna in Eruvin may have been using any of these various se'ah standards (current?) which we have mentioned, but what is clear is that the Amoraim in their discussion in the Talmud (B. Eruvin *ibid*) understood the se'ah of this Mishna equal to 2 modii Italici, or 1 modius castrensis as we have suggested.

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31. The inscribed jars from Qumram presuppose a se'ah of 15.55 litres = about 1.8 modii. 1 mod = 8.74 litres - liquid measure, or 14.5 litres = about 1.6 mod. dry measure. See discoveries in the Judaeen Desert III, (Oxford 1962) pp. 37-41. See also J. Pesachim 10, 37c50-3, and cf. Ratner, Ahavat Zion vi-Yerushalaim, Pesachim p.129. However, there are many points of uncertainty in this text, questions of standard, dry or liquid measures etc. See further: S. Krauss, Talmudische Archäologie, vol. 2, (Leipzig 1912), p.359, G. Dalman, Arbeit und Sitte, vol. 2, p.201, and J. Feliks, Agriculture in Palestine in the Period of the Mishna and the Talmud, Jerusalem 1963, Hebrew) pp. 161-2.

APPENDIX B: On Trajan's Monetary Reform, etc.

It is by now a commonplace that Trajan introduced certain monetary reforms, probably some time c.100, minting new denarii of a slightly lower standard than those of Domitian and Nerva, and debasing them a further 15% (so that they vary from 88% - 79% in purity).<sup>1</sup>

It is also known from Dio Cassius (68.15.3) that in the year 107 Trajan had his mint gather in coins of (full weight and?) good silver for profitable recoinage. These coins were however badly worn:

τὸ νόμισμα τὰ πᾶν τὸ ἐξέτηλον ἐξεχώνευσε (Dio Cassius *ibid*).

The analysis of a considerable number of hoards has led West to further define this "ingathering" of the old worn coins in the following manner: "It seems clear that what Trajan did in 107 was to call in all the silver coins issued by Augustus, Tiberius, Caligula and Claudius ... The denarii issued by Nero before 63 were also called in (?) ... the inference from twenty-seven hoards is that gold struck

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1. The early dating of the reform seems to be clear from numismatic evidence. See L.C. West, *Gold and Silver Standards in the Roman Empire*, p.89, table R; S. Bolin, *State and Currency*, p.208 note 1, and pp. 210-1. This reform and the debasement do not seem to have anything to do with the conquest of Dacia. Contra, Heichelheim, *Klio* XXV (1932), p.124 et seq. (cf. West & Johnson, *Currency*, p.92), who is followed by several other scholars, e.g. in Tenney Frank's *Econ. Survey*, vol. 4, p.215; *ibid.* vol. 2, pp. 425, 443-5, vol. 5, p.91, (cf. P. Baden 37; CPR 12; SPP.XX.2; P. Giss. 47; Wilken Chr. 326). See further A.C. Johnson in *AJA* XXXVIII (1934), p.53; Mickwitz, *Geld und Wirtschaft etc.*, pp. 32, 42; Segrè, *Metrologia*, pp. 428/30 etc.



before the reform of Nero was likewise called in."<sup>2</sup>

However, the question that next comes to mind is: did Trajan officially demonetize the earlier coins or not? Scholars are not altogether certain on this point but tend to think that he did. Thus Mattingley writes:<sup>3</sup> "It seems clear that in 107 the pre-Neronian coinage of gold and silver, so far as it survived Nero, was definitely withdrawn - probably demonetized by an Edict or at least treated as invalid." On the other hand, it is a fact that early Imperial coins and even Republican coins survived as late as the III cent., and are found in quite a number of hoards all over Europe.<sup>4</sup> Were they hoarded because they were still legal tender, or merely for their bullion value? If the latter, why were they not melted down? In other words, were they officially declared (by edict) no longer legal tender after they had been withdrawn, or were they still acceptable as currency? Hoard analysis would suggest that they were withdrawn but not officially demonetized; Roman sources appear to be silent on this whole issue.

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2. West *ibid*, p.84. Cf. Dura, Final Report, A.R. Bellinger, (New Haven 1944), p.203: "no coins from Augustus to Claudius", but of Anthony and Nero. See below. His new coins were of the Nero-reform standard (about 111 grains). Domitian, Nero and "early Trajan" are of a heavier standard. See BMC. vol. 3, (1936) pp. XIV-XV; Bolin *ibid*, pp. 191-5.
  3. In BMC, vol. 3, pp. LXXXVIII-LXXXIX.
  4. See H. Mattingley, *Roman Coins*<sup>2</sup> (London 1960), p.174, BMC. vol. 6, R.A.G. Carson (1962), pp. 36-8 lists such British hoards in Caister by Yarmouth, Darfield, East Anglia, Falkirk, Kirkham, Llanarmon, Nuneaton, St. Mary Cray, etc. Also in France, Germany, Italy, Rumania, Bulgaria, Albania, (BMC *ibid*). See also BMC, vol. 3, p.XXX. Above note 2, evidence of Dura hoards. West *ibid*, pp. 192-3 etc. Also Bolin's hoard analyses p.344 et seq.

There are, however, some hitherto unexploited legal texts that can, I think, do much to cast light upon this problem. For in Jewish law it was important to know what constituted legal-tender (called in Talmudic terms "coin") and what constituted that which was no longer legal-tender and merely bullion - "produce"<sup>5</sup> in the Talmudic parlance - since one might substitute the "Second Tithe" by "coin" alone and not by "produce".

Now in T. Ma'aser Sheni 1.6 (ed. Zuckermann, p.86, lines 66-70)<sup>6</sup> we read:

"If he had coins of Bar- Koziba (i.e. of the Bar-Kochba uprising)<sup>7</sup> or coins of Jerusalem (i.e. coins of the first Jewish revolt of 66-70 bearing the legend "Jerusalem the holy") he may not substitute the Second Tithe by them ... But coins of the first kings which are current (i.e. not too worn, etc.) one may substitute the Second Tithe by them."

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5. On the distinctions between "coin" and "produce" see above section on "standards". For further discussion of the legal aspects of this problem, see Isaac Herzog's The Main Institutions of Jewish Law, vol. 1, "Law of Property", (London 1916), pp. 163-6, 182 etc.; also Asher Gulak, Yesod Hamishpat Ha-Ivri, vol. 1 (Berlin 1922), no. 36, p.107 et seq.

6. Ed. S. Lieberman (New York, 1955), p.244, lines 15-6

7. On these coins see my article in Sinai 55, pp. 37-41.



Revolt money, though of pure silver, could not be used for substitution as it was obviously not legal tender, (i.e. it was not "coin" but "produce"). However, coins of the "first kings" could be used for substitution as long as they were current and acceptable (i.e. not too worn to be marketable);<sup>8</sup> hence they must have been considered legal tender. Since this text mentions the ill-fated Bar-Kochba uprising of 132-5, it must post-date 135. In other words this text was formulated after Trajan's reign and his monetary reforms.

Who were these "first kings"? It seems most likely that they are those late republican rulers, (especially Anthony) and Augustus, who are represented in post-Trajanic hoards. To them the term "first kings" could very aptly be applied.<sup>9</sup> At this stage then, sometime post c.135, there had not been any official demonetization of early Imperial coinage. Certainly Trajan would have made no edict declaring such money invalid.

In another Talmudic text we may see reflected yet a further stage of a natural development. For in J. Ma'aser Sheni 1.2 (52D 4-6) we find the following:

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8. Jewish legal texts discuss the degree of wear that invalidates a coin from being considered "current", e.g. M. Baba Mezia 4.5, T. Baba Mezia 3.17 (p.377, 21 etc.).
  9. It is clear that silver coinage is here referred to, as no aes coinage of the first revolt bears the name Jerusalem, and it could therefore not be called "Jerusalem money". The "first kings" can therefore not refer to the latter (= first?) Herodians, or procurators (= kings?) as they never struck silver money. The author of this text is of the opinion that silver is "coin" and may therefore be used for substitution (i.e. the later opinion of Rabbi, see above), if all else is well. Cf. M. Baba Mezia 4.1 etc.

"A coin that has gone out of use (she-nifsal)<sup>10</sup> and the government accepts it - R. Jose in the name of R. Johanan (flor c. 135-70) [says]: 'It is like asemon', (i.e. bullion, and one may not substitute by it, as it is no longer coin). R. Hiyya in the name of (the same) R. Jonathan [says]: 'It is like the coin of the first kings' (and one may substitute by it)."<sup>11</sup>

It follows from the fact that one may substitute by coins of the "first kings" that they are still legal tender. They are, however, likened to coins "that have gone out of use". This then appears to have been the situation during the middle or late II cent., namely that late Republican and early Imperial currency had practically gone out of circulation, (partly due to government withdrawal, partly to hoarding, no doubt), but that the government would still accept any surviving coins of this type as money.<sup>12</sup>

A final stage in this development may be deduced from a text in the Babylonian Talmud discussing the same topic. In B. Baba Kama 97B we read:

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10. A problematic term difficult to translate, usually meaning something like "invalidated".
  11. Cf. S. Lieberman, *Tosefta Ki-fshutah*, order Zera'im, part II, (New York 1955), p.717, line 16 (and p.716 lines 14-15); who offers different interpretations of these texts.
  12. It was, no doubt to the government's advantage to accept such coinage, as legal tender, as it had a higher silver content than their own current coin, of the same nominal value. Had they not done so, it would no doubt have been melted down, and as bullion might possibly have been worth more than its nominal value as coin.



"Rava asked R. Nahman (both early IV cent. Babylonian personalities). [We have learned]: One may not substitute [the Second Tithe] by coins that are not current (énan yotz'ot).

How so? If he had money of [Bar] - Koziba, of Jerusalem, or of the first kings, one (= he) may not substitute [the Second Tithe] by them."

Here the criterion for "currentness" is the coins' acceptability as legal tender. The coinage of both "Jerusalem" and "[Bar] Koziba" was not "current" because it was illegal revolt-issue. And here, in this last text, the coins of the "first kings" are equated with those of the first and the second revolts. Evidently, by this time Republican and early Imperial coinage had been completely and officially demonetized.

Now this text presents certain difficulties. For it is in its literary form a "beraitha" (i.e. a Tannaitic text), and should therefore have a terminus ante quem of c.220. Yet hoard-analysis betrays no evidence of a sudden absence or withdrawal of Republic and early Imperial coinage until after the reign of Valerian.<sup>13</sup> The answer to

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13. See West *ibid*, pp. 192-3. (Table AP). In Decius' hoards Republican coins are still represented. After Decius, in the hoards of Trebonius and Volusianus only one Nerva and one Domitian is found, nothing earlier. After Valerian, nothing pre-Hadrianic. The evidence when seen in tabular form is strikingly convincing, and it appears that c.350-60, this early coinage was withdrawn. Can this evidence be related to Decius' overstriking of earlier (Severan) antoniniani (see H. Mattingly, *The Great Dorchester Hoard of 1936*, *Num. Chron.* 1939, pp. 41-3)?

this apparent anomaly lies in the complex history of the literary transmission of the Palestinian texts to Babylon. For it has long been demonstrated that when Palestinian traditions were transmitted to Babylon, the Babylonian recipients were often uncertain as to whether the text received was of Tannaitic or Amoraic authority, (i.e. pre- or post-c.220).<sup>14</sup> Furthermore, it is known that there are late beraithot, i.e. texts that are cast in a Tannaitic style, but are of Amoraic composition.<sup>15</sup> Finally, it has been amply demonstrated that the professional memorisers of Tannaitic texts during the Amoraic period frequently embellished, or altered, the original texts to suit their time, changed condition or perhaps for harmonistic reasons.<sup>16</sup> Much of this "editing", "composition" and "alteration" went on during the later III cent., when Palestinian material was brought over to Babylon by the "Nehuté" (= professional emissaries), like Ulla (flor. second half of III cent.) etc.<sup>17</sup>

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14. See e.g. Z. Fraenkel, *Mevo ha-Yerushalmi* (Breslau 5630), p.26A.
15. See e.g. J.N. Epstein, *Prolegomena ad Litteras Tannaiticas* (ed. E.Z. Melamed, Jerusalem, 1957), p.252; *ibid*, p.251-3, for a discussion of late beraithot in general. Also *ibid*, p.246, for Palestinian-Babylonian textual transmission etc.
16. Epstein, *ibid*, p.252-3. See also Ch. Albek, *Mechkarim ba-beraitha uba-Tosefta* (Jerusalem 5704), pp. 23, 26, 29, 31, 52-4, 88-9, 137-8 etc.
17. See M. Jastrow, *A Dictionary of the Targumin etc.*, p.894A. SV, נחוטא. See W. Bacher, *Tradition und Tradenten in den Schulen Palästina und Babylonien* (Leipzig 1914), chap. xxxv.



In our own case, Rava, (299-352), a Babylonian, is citing an obviously Palestinian text, an anonymous one - one of the characteristics of the "later type"<sup>18</sup> - and not the text we know from the Tosefta, (the first text we cited above). It seems likely that he was drawing (unwittingly, no doubt) upon a post-Tosefta (i.e. post-220) text, a modification of the original Tosefta made to suit the newly changed circumstances.<sup>19</sup> By this time the coins of the "first kings" were no longer legal tender.

To sum up: Talmudic sources suggest that Trajan did not demonetize by edict the pre-Neronian coinage that he gathered in, and that though it became ever scarcer during the course of the II cent., the government was always willing to accept it as legal tender. It apparently continued to have this status until some time c.250-60, when it was officially demonetized, and thus ceased to be regarded as "coin" in Jewish law.

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18. Cf. sources cited above, notes 14-15.

19. Jewish Encyclopedia, vol. XII, p.340 AB Sv. Ulla; Bacher ibid, p.519 etc.

APPENDIX C: Babylonian Price-Levels

To compare Palestinian or Roman prices of the III or IV cent. with contemporary (or near contemporary) ones from Babylon introduces a number of added complications. We have some Babylonian prices from the mid-III cent. onwards, i.e. from the period of the Sasanian dynasty. These prices are usually reckoned in "zuzim" which were Sasanian drachms (hereafter abbreviated drm.).<sup>1</sup> We do not know the ratio of silver to gold in the Persian Empire,<sup>2</sup> so that all comparisons with Roman prices must be in terms of silver.

Now the Sasanian drm. was a relatively stable coin, of very high (almost completely pure) silver content. Its average weight from c.211-420 was around 3.8 gr.<sup>3</sup> In the time of Diocletian, the Roman denarius, on the other hand, had only about .08 gr. silver. (The follis, worth 5d., weighed 10 gr., and had a silver content of 4.18%). Thus we may say that a Sasanian drm. equalled approximately 40 Diocletian denarii (42.5, more exactly). With this information, we may now try to compare some of our Babylonian prices<sup>4</sup> with those of the Edict of Diocletian, but here again it cannot be too often stressed

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1. In our Babylonian price-lists we have equated the zuz Sasanian drachm in drm.
  2. H.A. Manandian, in *The Trade and Cities of Armenia in Relation to Ancient World Trade* (Lisbon 1965), p.120, conjecturally suggests a ratio of 10:1, but has no real basis for this suggestion.
  3. For exact weights in terms of maximum and minimum averages, see Paruck, (Furdoujee, D.J.), *Sasanian Coins* (Bombay 1924), p.38, and Mordtmann in *ZDMG*, 1880, p.147.
  4. See above section on Babylonian prices.



that we are here comparing two different classes of prices - Diocletian's are maximum prices, etc. - and that our equivalences of measures of capacity (se'ah = griva = modius castrensis, etc.; see above<sup>5</sup>) cannot be more than very approximate. Given these reservations, we may nonetheless reach certain general (and tentative) conclusions.

Wheat

According to the Edict of Diocletian (1.1, ed. Graser, p.318)

1 mod. castr. wheat: 100d. This in terms of pure silver would be about 8 gr. or a little over 2 drms.

The Babylonian prices that we have from wheat are as follows:

- A. 220/50 B. Baba Mezia 102B 1 se'ah (= mod. castr): 1 sela  
(= 4d.)
- B. 250/97 B. Sota 48A      1 se'ah wheat: 1 drn;  
100 geese: 1drn (very cheap)  
Then 1 goose: 1 drn (expensive).  
(presumably, likewise 1 se'ah wheat:  
1 drn) (Exaggerated extremes).
- C. 290/320 B. Pesahim 32A      1 griva (= se'ah) wheat: 1-4 drn.  
(perhaps theoretical)
- D. 320/339 B. Baba Mezia 65A 4 griva wheat: 1 drn.

Unfortunately this information is not susceptible of very satisfactory analysis. Two prices (A, C), spaced well apart in time, - we do not know from which season they come - suggest prices higher than that of the Edict of Diocletian. The first

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5. See Appendix B. Cf. Manandian *ibid*, pp. 124-5.

price A is suspect as it uses Palestinian terminology (sela), and is probably merely following the Palestinian (Mishnaic) formulation. The other two prices (B, D), on the other hand, suggest prices lower than that of the Edict of Diocletian.

### Silk

According to Ed. Diocletian XXIII.1 (ed. Graser p.382), 1 lb. silk: 1200d. That in terms of gr. of silver = 960 gr. silver, which is roughly 250 drms. This may perhaps be compared with the price given in B. Kiddushin 7B (290-320), according to which a bundle of silk: 50 drms. We do not, unfortunately, know how large this bundle was, but it is unlikely to have been less than half a pound in weight - a minimum. So that however we take this evidence, it seems clear that the Babylonian price is considerably lower than the Roman one.<sup>6</sup>

### Clothing

The evidence for clothing is similarly ambiguous. According to several IV cent. Babylonian sources a cloak cost about 4 drms.<sup>7</sup> That translated into Diocletian denarii is about 160d. In chap. XIX (ed. Graser pp. 369-77) of the Edict (of those cases where the prices survive) there is not a single item of clothing, and certainly no cloaks of so low a price. In fact, all the cloaks, bar the African ones (line 61, costing 500d.) cost well over



6. This is as we would have expected. Silk was considered fabulously expensive; cf. *Scriptores Historiae Augustae, Vita Aureliani* 45. See Friedländer, *Roman Life and Manners* (English ed.), vol. 2, p. 179. See also F. Hirth, *China and the Roman Orient*, (Shanghai and Hong Kong 1885, reprinted in China 1939), p.225, and note 2 *ibid*. Silk was meant to have been weighed up against gold, not only according to Roman sources (SHA *ibid*), but: "The Shuo-wen, published in A.D. 100 (see Wylie, p.8), explains the character chin, an old name for the finest ornamental silk textures, as being composed with the radical chin, i.e. gold, "because its price was then equal to that of gold." (Ko-chih-ching-yuan, ch. 27, p.4)" (Hirth *ibid*). (But was silk really so dear in China, or silk so cheap?) Cf. Ed. Diocletian XXX.2 (ed. Graser p.412), according to which 1 lb. gold, drawn out (  $\chi\rho\sigma\omicron\upsilon\ \delta\epsilon\iota\gamma\mu\epsilon\iota\sigma\tau\omicron\varsigma$  ) cost 12,000 d., while the Edict's price for 1 lb. silk (XXII, 1a, Graser p.382) is also 12,000d.

In this connection it is interesting to note that Talmudic phrase  $\text{של זָהָב} - \text{סִירִיקָן}$  "of gold" in B. Mid. 31A, and B. Hagiga 16B; (cf. Rabbinowicz, *Variae Lectiones* etc. to Hagiga, p.65 note 10, and Krauss, *Lehnwörter* II, pp. 393B-4A, and also 588B-9A, S.V.  $\text{סִירִיקָן}$ , and other Dictionaries). This may mean silk thread intertwined with gold thread (see Hirth *ibid*, pp. 353-4: cf. Ed. Diocletian XX.7 etc.), a more likely explanation than silk material merely embroidered with gold thread; (see Krauss, *Kadmoniot ha-Talmud*, 2/2 [Tel-Aviv 1945], p.74 and Herszberg, *Hayye ha-Tarbut be-Yisrael be-Tekufat ha-Mishna ve-ha-Talmud*, vol. 1 [Warsaw 1924], p.52). But, in view of the above Chinese source, may it not be that  $\text{של זָהָב} - \text{סִירִיקָן}$  means no more than pure silk (worth its weight in gold)?

Note further that according to some Mss. readings in Gen. Rab. 40.5 (  $\text{פֻּגְמָי}$  ), ed. Theodore, p.384 line 12 (in apparatus), the custom dues on silk were (in Palestine) higher than on gold; (cf. Herszberg *ibid* p.54).

The Babylonian price cited here is highly theoretical.

Perhaps these price differences are due not merely to variations in transport costs, but also to the fact that silk was woven in Babylon (and Syria) i.e. East of Rome and Byzantium. See J. Neusner, *A History of the News in Babylonia*, vol. 1 [Leiden 1965], p.90, bibliography *ibid*; also Krauss, *Kadmoniot* *ibid*. p.73, and note 4, etc.). See also *The Doctrine of Addai, The Apostle*, ed. G. Phillips (London 1876) p.33.

7. B. Baba Mezia 65A, 115A; B. Baba Kama 115A; B. Temura 6B.

over 1000d.<sup>8</sup> Thus, the Babylonian prices undoubtedly represent a far lower price-level.

#### Geese

The price of a goose by itself is given in B. Hulin 49A as 1 drm. = 40 Diocletian denarii, while according to the Edict IV, 21,22 (ed. Graser, p.325), a goose, fattened, cost 200d., not fattened 100d. Here again, the Babylonian price is considerably lower.

#### Figs.

The evidence for figs is highly ambiguous. According to the Edict of Diocletian VI.85 (ed. Graser, p.336), 1 pint of pressed Carian figs cost 4d. There are 32 sextarii in a mod. castr., so that 1 mod. castr. of these pressed figs would cost 128d. According to P. Pesahim 32A and B. Eruvin 29A, 1 griva (= mod. castr.) dried figs cost (c.290-320) 1 drm. = 40 Diocletian denarii, again much less than the Roman price.

#### Grapes

On the other hand, grapes seem to have cost far more in Babylonia than in the West. Ed. Diocletian VI.80 (ed. Graser, p.336), gives the price of table grapes, hard-fleshed or long, 4 lbs.:

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8. See *Études de Papyrologie*, 1939, for a price from Caranis, 314; tunic: 4000 dr., cloak 5000 dr. (It is not clear whether the dr. = 1d., or  $\frac{1}{2}$ d). See *Byzantine Egypt: Economic Studies*, pp. 186-7, for Egyptian prices of clothing for the early IV cent. onwards. Due to terminological difficulties in Egyptian prices of this period, it is difficult to compare this material with our own.



4d., while according to B. Pesahim 113A (c.220-50), an admittedly expensive bunch of grapes cost 1 dr. = 40 Diocletian denarii.

(Would a bunch of grapes weigh 40 lbs?)

### Wine

The evidence for wine is so unclear as not to permit even of these tentative conclusions. The prices we have listed in our price-lists above vary from 1 to 6 dr. per barrel. In one case (B. Baba Mezia 40A) we know that a barrel (danna) containing 48 kuzé: 6 drms. The danna was large. (The Dura danna of wine, quoted above,<sup>9</sup> costing 28d. 11 assaria, is evidence of the large size). If the kuza was a pint, then each kuza-pint would have cost about 5 Diocletian denarii. In fact, the cheapest wine recorded in the Edict costs 8d. per pint (II.10, ed. Graser, p. 322). However, there are too many points of uncertainty in this conjectural calculation for it to be of any real value.<sup>9a</sup>

### Cucumbers

The price of cucumbers in Babylon and the West seems to be very similar. B. Pesahim 113A states that 100 cucumbers: 1 dr. (cheap) = 40 Diocletian denarii. Thus 10 cucumbers:4d. According to Ed. Diocletian VI 28, 29 (ed. Graser, p.331), cucumbers first size, 10:4d., smaller 20:4d.

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9. In the note after the Babylonian prices. Cf. JESHO IX. 1966, p.198.

9a. Cf. M.D. Judelowich, Mehoza (Jerusalem 1947), p.21

Wages.

A text in B. Baba Mezia 76A, unfortunately undated, (also ibid 75B) informs us that the wage of a worker per day was 3-4 drms. = 120-160 Diocletian denarii. This represents a considerably lower level than that suggested by the Edict chap. VII (ed. Graser, pp. 336-46), where the average is nearer 50d. per day (lines 1b-5, 7, 10-12, 14, 30, 49, 64-66, 69 etc.).<sup>10</sup>

Dates

There is some information on dates (e.g. B. Pesahim 32A, 1 griva dates: 4 drms.; B. Pesahim 88A, 3 baskets of dates 1 drm.), but it is difficult to compare it with that of the Edict (VI. 81-3, ed. Graser, p.336), where we are told that 25 (ordinary) dates: 4d. However, it is clear from B. Pesahim ibid (and B. Ta'anit 29B) that dates were far cheaper in Babylon than they were in Palestine.<sup>11</sup> It is also known from Rabbinic sources (J. Ma'aser Sheni 4.1, 54D 16 and cf. B. Berachot 62B) that dates were cheaper in Palestine than in Rome.

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10. Some of these workers get maintenance (cf. B. Baba Mezia 83A etc.). For Egyptian wages of the IV cent. onwards, see Byzantine Egypt: Economic Studies, p.194. For Egyptian wages of the I-IV cent. see the material mentioned above.
11. See, for example, J. Newman, The Agricultural Life of the Jews in Babylonia (London 1932), p.22 and note 6, ibid, bibliography ibid.



The general upshot of what we have seen above seems to be that on the whole Babylonian price-levels were considerably lower than those of the Edict. If we are correct in suggesting that Diocletian's Edict (of maximum prices) did in fact (attempt to) bring down (even) current (Palestinian) prices, then these Babylonian prices will have been even lower than contemporary Palestinian ones. However, as we have seen, the material is by no means clear and our conclusions therefore full of uncertainties.

MAIN ABBREVIATIONS

AAH	Acta Antiqua Academia Scientiarum Hungaricae, Budapest.
Ant.	antoninianus
ANS	American Numismatic Society
ANSMN	American Numismatic Society, Museum Notes.
B.	Babli (= Babylonian Talmud)
b.	ben, bar (= son of..)
BMC	British Museum Catalogue
CIG	Corpus Inscriptiones Graecarum
CIL	Corpus Inscriptiones Latinarum
CNP	Corpus Nummorum Palestiniensis
Cod. Theod.	Codex Theodosianus
Currency	See West & Johnson
d.	denarius
Deut. Rab.	Deuteronomy Rabba
DJD	Discoveries in the Judaean Desert
dr.	drachma
drm.	(Sasanian) drachm
EB	Encyclopaedia Britannica
Eccles Rab.	Ecclesiastes Rab.
Econ. Surv. (or Survey)	Economic Survey of Ancient Rome, ed. Tenney Frank (see Frank, Tenney)
Exod. Rab.	Exodus Rabba
Gen. Rab.	Genesis Rabba
gr.	gramme
GRM	Griechische und Römische Metrologie, see Hultsch



HUCA	Hebrew Union College Annual.
ILS	Inscriptiones Latinae Selectae
INCP	International Numismatic Convention, Jerusalem 1963. Proceedings, see A. Kindler.
J	Jerushalmi (= Palestinian Talmud)
JE	Jewish Encyclopaedia
JESHO	Journal of the Social and Economic History of the Orient
JJP	Journal of Juristic Papyrology
JQR	Jewish Quarterly Review
JRS	Journal of Roman Studies
Lev. Rab.	Leviticus Rabba
M.	Mishna
MSR	Metrologicorum Scriptorum Reliquiae, ed. Hultsch.
NC	Numismatic Chronicle
NNM	Numismatic Notes and Monographs (published by ANS)
Num. Chron.	Numismatic Chronicle
NS	New Series
P	for Papyrological abbreviations see bibliography, section on papyrology.
PG	Patrologia Graeca
PL	Patrologia Latina
R	Rabbi, Rav
RE	Real-Encyclopoedia
REJ	Revue des Études Juives
RIC	Roman Imperial Coinage
sest.	sestertius

sext.            sextarius

T.              Tosefta

TAPA           Transactions of the American Philological Association

xest.           xestes



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ADDENDA

Page 119 note 2

But see Bacher, *Aggadot Amora'e Eretz Yisrael*, 3/2, p.53, who *deletes* Yair and substitutes Hama; (R. Pinhas b. Hama flor. c.330-70). He also reads  $\text{קֶּיִלָּרִיִּן}$ , meaning a key, instead of "follarion". Neither of these emendations has any textual basis.

Page 165 note 6 and p.169 note 16

Rav went to Babylon in 219/20 (*Iggeret*, ed. Lewin p.78) during the lifetime of  $\text{ר'}$  = R. Judah ha-Nasi (contra Lewin *ibid* note 3, who suggests that this took place in the life of R. Judah Nesiah, Rabbi's grandson). R. Judah ha-Nasi is mentioned explicitly in *Sefer ha-Kabbalah* of Abraham ibn Daud (c.110-80), (*Neubauer, Mediaeval Jewish Chronicles*, vol. 1, Oxford 1887, p.57; cf. *ibid* pp. 177, 182). Likewise in *Mahzor Vitry*, ed. Horowitz (Berlin 1889-97), p.482 (see note 400). This same date, stated to be 150 years after the destruction of the Temple, is also found in Nissim Gaon's introduction to the Talmud, (i.e. his introduction to his *Sefer ha-Mafte'ah*), Menahem Me'iri (1249-1306) in his introduction to *Avot* (ed. Prag., Jerusalem 1964, p.49) quotes this same tradition as coming from Nissim Gaon's *Sefer ha-Kabbalah*. It appears that he was confusing the Gaon's introduction to the *Sefer ha-Mafte'ah* with a book that he stated he would write, but probably never did, called *Sefer ha-Kabbalah*. (See S. Abramson, R. Nissim Gaon, etc., Jerusalem 1965, pp. 16-7). In the latter two sources (Nissim Gaon and the Me'iri) it is stated that the end of the editing of the Mishna was at this time, 150 years after the destruction

of the temple (= 220). Therefore R. Judah ha-Nasi, who completed the editing of the Mishna, must have still been alive c.220. This tradition, that the Mishna was completed 150 years after the destruction of the Temple, is already found in the Sefer ha-Galui of Saadiah Gaon, (cited by Baron, in his Social and Religious History of The Jews, vol. 6, 1958, p.203; cf. ibid p.425 note 63, also p.428 note 67).

The passage in Yalkut Zachariah 578 (of unknown source), which states that Rabbi (Judah ha-Nasi), Antoninus and קרבן מלך פרסי (reading in ed. princeps) - KREN Persian King (not necessarily King of Persia) - all died in the same month, must be speaking of a Roman emperor and a Persian king who died after 220; (contra S.A. Rappaport, Erech Milim, Warsaw 1914, vol. 2, p.20; according to him Rabbi died in 192, the year in which Commodus and Volgases III died). Perhaps we may suggest that Rabbi died in 222, the year in which Elagabalus (named M. Aurelius Antoninus) was murdered. Can we identify the enigmatic (presumably corrupt) KREN (KRBON in later editions) with Papak, King (first of Xir then) of Istaxr, called in the Ka'abah of Zoroaster MLK' 'RY'NSTR - King of Iran (see Chaumont, "Papak, roi de Staxr et sa cour", Journal Asiatique, 247, 1959, p.175 et seq), who probably died 222, (see R.N. Frye, The Heritage of Persia, 1962, p.320. See also Taqizadeh in Archiv Orientalni, 18, 1940, p.260 et seq, etc.)?

Sherira in his Iggeret tells us that R. Johanan died in the year 279 (ed. Lewin p.84; cf. Mahzor Vitry p.483 note 6, Neubauer ibid., p.177, 183, etc.). His statement that "R. Johanan reigned for 80 years



in Palestine after R. Hanina, who was after R. Efes, who was after Rabbenu ha-Kaddosh" (= R. Judah ha-Nasi) (Iggeret, ed. Lewin, pp. 83-4) clearly needs to be amended; (see Lewin's note 6 on p.83).

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I shall cite one further example that seems to have escaped the attention of scholars till now. In a "derasha" (homily) probably of R. Pinhas (ha-Kohen) b. Hama (flor. c.330-70), recorded in Tanhuma Exod. (Mishpatim, para 15), we read of a man who has lent his friend  $\pi\lambda\chi\lambda\ \psi\psi\ \times\iota\tau\tau\ \alpha\ \epsilon\pi\alpha\lambda\lambda$  - 200 or a myriad 300 ... (ed. princeps, Constantinople 1522, = second ed. Venice, which however has the 200 in a non-abbreviated form). (The fact that the name of the monetary denomination is not mentioned further points to this being a IV cent. text). The text as it stands clearly needs some alteration to make good sense (and style) of it, and has therefore been variously corrected to read "200 or a myriad or 300" (ed. Mantua 1563, corrected by Menahem Azariah of Pano, followed by Verona ed. 1595 etc.), or "200, or 300, or a myriad", in the Warsaw ed. of 1877, or - a radical emendation with no basis - "100, or 200, or 300", (Buber, in Tanhuma Exod. p.84 note 48), etc. However these emendations are both forced and unsatisfactory. I would therefore suggest that we shift the single "or" of the ed. princeps text one word forward, which would leave us with a loan of "two hundred myriad, or three hundred..." According to this, it would appear that probably around the mid-IV cent. ordinary men - the context shows that ordinary people are being spoken of - could lend out two to three million (denarii)!

See also Tanhuma Exod. Mishpatim para. 9, which mentions a large loan of "10 myriads" (= 1 maneh in parallel text in Exod. Rab. 31.6), worth the equivalent of houses and fields. The text is anonymous and difficult to date.

