

VRG_Folder - 0393

I. Greek Amphora Types

A. Koan

1. Unstamped: (R 6. From excavations by Faucheux and others, 1943-44.

Pl.). Neck fragment. Fragment preserves part of rim, neck, and shoulder, and stump of one handle. P.H., 0.150m.; R.H., 0.017m.; est. M.D., 0.110m.; est. R.D., 0.140m.; H.W., 0.053m.; H.T., 0.027m.; Neck ht. incl. rim, 0.113m.; est. Neck diam., 0.110m. Fine, finely micaceous hard pale pinkish buff to deep tannish clay; frequent small red bits; beige to pinkish yellow-buff surface. Surface covered with veiny vegetation marks and with pieces of cement. Looks like pozzolana. Very thin-walled. Clay not at all Pompeian but handle thickish and flares up sharply. Rim flat on top and somewhat insloping. Very similar to that of Cat. 2 and 3, the former one of which has some of the same veiny incrustations. Neck set deeply into shoulder.

2. Unstamped: (R 10. From excavations by Faucheux and others, 1943-44.

Pl.). Neck fragment. Fragment preserves pieces of neck and one handle, and very small bit of rim. P.H., 0.130m.; R.H., 0.015m.; est. M.D., 0.085m.; est. R.D., 0.110m.; H.W., 0.050m.; H.T., 0.022m.; est. neck diam., 0.085m. Slightly micaceous (scattered gold mica) deep tannish buff clay; frequent tiny reddish and dark bits and a few white ones; pale greenish cream surface. Some of the same veiny incrustations as on #1. Rim flat on top; handle flares up sharply; thin-walled.

3. Unstamped: (R 11. From excavations by Faucheux and others, 1943-44.

Pl.). Neck fragment. Fragment preserves pieces of rim and neck and stump of one handle. P.H., 0.102m.; R.H., 0.013m.; est. M.D., 0.090m.; est. R.D., 0.115m.; H.W. at attachment, 0.051m.; H.T. at attachment, 0.022m. Micaceous (gold mica), rather coarse deep tannish buff clay; scattered light and dark bits; pale greenish cream surface. Has some of the same veiny marks

as other similar pieces, and traces of cement. Rim flat on top and sloping down to inside; handle flares up sharply; thin-walled.

4. **Unstamped:** (R 14. From excavations by Faucheux and others, 1943-44.

Pl.). Neck fragment. Fragment preserves pieces of rim, neck, and one handle. P.H., 0.095m.; R.H., 0.010m.; est. M.D., 0.090m.; est. R.D., 0.115m.; H.W., 0.044m.; H.T., 0.022m. Micaceous pale pinkish yellow-buff clay; scattered reddish and dark bits; greenish cream surface. Rim flattish on top and sloping in toward interior of neck; thin-walled.

5. **Unstamped:** (R 20. Pl.). Rim fragment and piece of neck. P.H., 0.045m.; R.H., 0.016m.; est. M.D., 0.090m.; est. R.D., 0.120m. Fine, finely micaceous pinkish yellow-buff clay; few tiny dark bits visible; worn cream surface; concentric striations (tool marks) under rim. Bits of pozzolana; veiny incrustations.

6. **Unstamped:** (R 15. From excavations by Faucheux and others, 1943-44. Pl.). Neck fragment. Fragment preserves piece of rim and part of upper attachment of one handle. P.H., 0.105m.; R.H., 0.014m.; est. M.D., 0.115m.; est. R.D., 0.140m.. Slightly micaceous deep tannish buff clay; scattered dark, light, and at least one large red bit; surface and breaks obscured by lighter deposit. Veiny incrustations and perhaps cement. Rim rounded on top.

7. **Unstamped:** (R 19. From excavations by Faucheux and others, 1943-44. Pl.). Rim fragment and piece of neck. P.H., 0.060m.; R.H., 0.013m.; est. M.D., 0.100m.; est. R.D., 0.125m. Micaceous, hard deep pinkish buff clay; scattered tiny light and dark bits; worn lighter surface. Some veiny incrustations and heavy cement resembling pozzolana. Rim flattish on top; thin-walled.

8. **Unstamped:** (R 2. From excavations by Faucheux and others, 1943-44. Pl.). Fragment of lower neck and shoulder; mended. Est. P.H., 0.130m.; G.D., 0.177m.; Neck diam. (inner), 0.078m. Micaceous deep tannish buff clay;

frquent tiny light and dark bits; greenish cream surface. Neck set deeply into shoulder. Shoulder similar to that of Cat. 9, more downsloping than that of Cat. 1; thin-walled.

9. **Unstamped:** (R 17. From excavations by Faucheux and others, 1943-44. Pl.). Fragment of neck and shoulder. Est. P.H., 0.135m.; est. neck diam., 0.085m. Finely micaceous deep pinkish buff clay, grayish toward core; scattered tiny light and dark bits; thick pinkish yellow-buff surface. Veiny incrustations and traces of cement. Shoulder more downsloping than that of Cat. 1 and similar to that of Cat. 8; thin-walled.

10. **Unstamped:** (R 33. From excavations by Faucheux and others, 1943-44. Pl.). Handle fragment and part of upper attachment. H.W., 0.047m.; H.T., 0.028m. Micaceous (gold mica) pinkish tannish buff clay; scattered small white, dark, and red bits; cream surface. Veiny incrustation. Upflaring profile.

11. **Unstamped:** R 34. From excavations by Faucheux and others, 1943-44. Pl.). Handle fragment (upper part of handle) and piece of neck. H.W., 0.049m.; H.T., 0.020m. Micaceous pinkish yellow-buff clay; scattered dark and light bits; pale pinkish buff surface. Veiny markings as on Cat. 1. Handle not so upflaring; thin-walled.

12. **Unstamped:** (R 67. From excavations by Faucheux and others, 1943-44. Pl.). Handle fragment. Fragment preserves lower attachment. H.W., 0.045m.; H.T., 0.024m. Micaceous (gold mica), rather fine deep tannish to pale orange-buff clay; scattered light and dark bits; worn cream surface.

13. **Unstamped:** (R 42. From excavations by Faucheux and others, 1943-44. Pl.). Fragment of one rib of a double handle. H.W., 0.023m.; H.T., 0.024m. Clay apparently finely micaceous, pale pinkish tan in color; frequent very tiny dark bits; tan surface.

- 14. **Unstamped:** (R 52. From excavations by Faucheux and others, 1943-44. Pl.). Fragment of one rib of a double handle. H.W., 0.027m.; H.T. 0.021m. Micaceous (gold mica) pale orange-buff clay; scattered small light and dark bits; traces of grayish surface.
- 15. **Unstamped:** (R 41. From excavations by Faucheux and others, 1943-44. Pl.). Fragment of one rib of a double handle. H.W., 0.025m.; H.T., 0.025m. Finely micaceous, rather fine, hard pinkish yellow-buff clay; scattered tiny dark bits; traces of lighter surface.
- 16. **Unstamped:** (Begley 24.6. From excavations by Faucheux and others, 1943-44. Pl.). Fragment of one rib of a double handle. Fragment preserves piece of lower attachment. H.W., 0.025m.; H.T., 0.023m. Finely micaceous deep yellowish tan clay; scattered tiny light and dark bits; surface obscured by tannish deposit.
- 17. **Unstamped:** (Begley 24.3. From excavations by Faucheux and others, 1943-44. Pl.). Fragment of one rib of a double handle, much worn by water action. H.W., 0.026m.; H.T., 0.024m. Micaceous, powdery tan clay; scattered tiny dark bits; brownish deposit on surface, including breaks.
- 18. **Unstamped:** (Begley 25.4. From excavations by Faucheux and others, 1943-44. Pl.). Fragment of one rib of a double handle. H.W., 0.024m.; H.T. as preserved, 0.021m. Finely micaceous, plastery pinkish cream clay; scattered small dark bits; no surfacing visible.
- 19. **Unstamped:** (Begley 25.6. Marked "III ABC?" From excavations by Faucheux and others, 1943-44. Pl.). Fragment of one half of a double handle. H.W., 0.023m.; H.T., 0.021m. Micaceous (gold mica), hard pale orange-buff clay; frequent tiny light and dark bits; tan surface.
- 20. **Unstamped:** (Delhi, Central Antiquities Collection AK II.526 0-II [Wheeler, Fig. 9:55]. Pl.). Neck fragment, including piece of rim.

Small part of neck, and most of one handle. P.H., 0.230m.; R.H., 0.020m.; est. M.D., 0.090m.; est. R.D., 0.110m.; H.W., 0.048m.; H.T., 0.026m. Slightly micaceous, very fine pale pinkish tannish buff clay; few scattered light and dark bits; pinkish tan surface. Veiny incrustations.

B. Knidian

21. **Stamped:** Knidian Jar (Unnumbered. From excavations by Faucheux and others, 1943-44. Not photographed by Begley. Pl.). Handle fragment and attached piece of neck, the stamp worn and broken and lengthwise near curve. P.H., 0.095m.; H.W., 0.041m.; H.T., 0.023m. Finely micaceous pale rust clay; frequent white and dark bits; buff surface. Deep finger hole inside neck at attachment. Scratches on neck (perhaps after firing).

22. **Stamped:** (Begley 15.2. Marked "S2D-+5.50. 5-12-42." From excavations by Faucheux and others, 1943-44. Pl.). Handle fragment and upper attachment, the stamp lengthwise near curve. H.W., 0.042m.; H.T., 0.024m. Micaceous pale rust clay; frequent light and dark bits; yellow-buff surface. Finger impression inside attachment. Possible pozzolana adheres.

23. **Unstamped:** (Begley 19.4. From excavations by Faucheux and others, 1943-44. Pl.). Handle fragment and piece of shoulder. P.H., 0.075m.; H.W., 0.041m.; H.T., 0.026m. Slightly micaceous pale rust-buff clay; frequent dark, light, and reddish bits; beige surface. Deep finger impression at base of handle. One of three probable pieces of same Knidian jar. Veiny incrustations (trace).

24. **Unstamped:** (Begley 19.2. Marked "VI B = 1M. 16-11-43." From excavations by Faucheux and others, 1943-44. Pl.). Shoulder fragment and lower handle attachment. G.W., 0.083m.; H.W. at attachment, 0.057m. Finely micaceous pinkish yellow buff clay; scattered dark and light bits; [Betty
H.T. at attachment, 0.022 m. ^

check this] surfacing of same color. Traces of same markings as on Cat. 25. Deep mark under handle attachment. Three concentric striations on inside of fragment.

25. **Unstamped:** (Begley 16.1. Marked "R.27.III B = 0.50." From excavations by Faucheux and others, 1943-44. Pl.). Fragment of neck and shoulder. P.H., 0.068m.; G.W., 0.110m.; est. inner diam. of neck, 0.085m. Finely micaceous pinkish yellow-buff clay; scattered white and dark bits; surfacing of same color. Five almost parallel concentric striations along base of neck.

C. Late Rhodian

26. **Unstamped:** (Begley 7. Marked "R.13.III B = 0.60." From excavations by Faucheux and others, 1943-44. Pl.). Neck fragment and piece of upper part of handle. P.H., 0.138m.; H.W., 0.031m.; H.T., 0.043m. Finely micaceous rather sandpappy pale tannish clay; surface and breaks obscured by beige deposit. Veiny incrustations.

27. **Unstamped:** (Begley 15.1. Marked "R.47" [but not same handle with that number pictured on Begley 15.2]. From excavations by Faucheux and others, 1943-44. Pl.). Handle fragment and attached piece of neck. Est. P.H., 0.085m.; H.W., 0.034m.; H.T., 0.031m. Finely micaceous pale tannish clay; scattered tiny dark bits; yellow-cream surface.

28. **Unstamped:** (Begley 25.1. Marked "R.38.III B + 1.50." From excavations by Faucheux and others, 1943-44. Pl.). Handle fragment. H.W., 0.032m.; H.T., 0.033m. Slightly micaceous pale pinkish yellow-buff clay; scattered small light and dark bits; surface deposit obscures clay. Veiny incrustations.

29. **Unstamped:** (Begley 22.2. Marked "R.39.III B + 1.00." From excavations by Faucheux and others, 1943-44. Pl.). Handle fragment. H.W., 0.034m.;

H.T., 0.038m. Slightly micaceous apparently pale yellow-beige clay; scattered tiny dark bits; color of surface and breaks obscured by deposit. Some veiny incrustations.

30. **Unstamped:** (Marked "R.53.III A + 1.85." Pl.). Belly fragment.

G.W., 0.245m. Finely micaceous deep tannish clay; scattered small dark, light, and reddish bits; pale pinkish yellow-buff surface. Goes with Cat. 31 and perhaps Cat. 33. Cat. 30 and 31 have identical pinkish yellow-buff inner colors and markings. Thicker-walled Cat. 33 could be from different jar or different part of same jar. No apparent pozzolana, but veiny incrustations which may equal pozzolana?

31. **Unstamped:** (Marked "R.54.III B." Pl.). Belly fragment. G.W.,

0.215m. Finely micaceous deep tannish clay; scattered dark, light, and reddish bits; yellow-beige surface. Goes with Cat. 30 and perhaps Cat. 33. Pozzolana adheres. Very thick-walled: though direction of neck makes thickness seem greater.

32. **Unstamped:** (Begley 33. She says marked "III B 0.20," but I can't find

that marking. Pl.). Toe and attached pieces of belly. P.H., 0.110m.; diam. at base, 0.035m. Slightly micaceous rather sandpapery tannish clay, brown at core; scattered small light and dark bits; yellow-beige surface. Sliced and gouged. Veiny incrustations.

33. **Unstamped:** (Marked "R.56.III A + 1.85." Pl.). Belly fragment.

G.W., 0.230m. Finely micaceous tannish clay; scattered dark bits; cream surface. Thinner walled than Cat. 30 and 31 but clay looks the same. Perhaps from a different jar. Inner color also different from Cat 30 and 31. Cat. 33 inner color is tan. Apparently goes with toe Cat. 34.

34. **Unstamped:** (Begley 40. Marked "R.62.III A + 0.50." Pl.). Toe

and pieces of lower belly. P.H., 0.125m.; diam. at base, 0.034m. Finely

micaceous tan clay; scattered dark bits; dirty cream surface. Thick pozzolana-like deposit inside fragment.

35. **Unstamped:** (Madras Museum 105/70 1. Pl.). Handle fragment and upper attachment. H.W., 0.027m.; H.T., 0.033m. Slightly micaceous, rather powdery tan clay; scattered tiny dark bits; lighter surface.

36. **Unstamped:** (Madras Museum 105/70 2. Pl.). Shoulder fragment and lower attachment. G.W., 0.125m.; H.W. at attachment, 0.041m.; H.T. at attachment, 0.032m. Finely micaceous tannish clay; scattered small dark bits; lighter surface.

37. **Unstamped:** (Madras Museum 105/70 3. Pl.). Belly fragment. G.W., 0.217m. Slightly micaceous tan clay; frequent small dark bits; lighter surface.

II. Roman Amphora Types

1. Type 12a

38. **Unstamped:** (Begley 5. Marked "R.3(?).III B + 0.50." From excavations by Faucheux and others, 1943-44. Pl.). Neck fragment. Fragment preserves most of neck, piece of rim, stump of one handle, and location of attachment of other handle. P.H., 0.200m.; R.H., 0.014m.; est. M.D., 0.080m.; est. R.D., 0.105m.; est. H.W. at attachment, 0.057m.; H.T. at attachment, 0.026m. Micaceous, coarse deep pinkish buff clay; frequent light and dark bits; dirty cream surface. Neck set deeply into shoulder. Frequent small pieces of pozzolana-like cement adheres, some with large red bits in them. Also veiny incrustations.

39. **Unstamped:** (Begley 14.1 [no other marks visible]. From excavations by Faucheux and others, 1943-44. Pl.). Rim fragment and piece of neck. P.H., 0.082m.; R.H., 0.023m.; est. M.D., 0.120m.; est. R.D., 0.155m. Finely

micaceous pale pinkish tannish buff; very frequent dark bits (?); worn yellow-cream surface. Deposit obscures surface, including breaks. Pozzolana-like mortar adheres. Some veiny marks.

40. **Unstamped:** (Begley 20.1. Marked "R.29.III A + 0.50." From excavations by Faucheux and others, 1943-44. Pl.). Handle fragment. Fragment preserves upper attachment. H.W., 0.054m.; H.T., 0.027m. Micaceous (gold), coarse pale rust clay; frequent dark and light (conspicuous ?) bits; worn yellow-cream surface. Dirty deposit on surface and breaks. Handle "pinched" near upper attachment.

41. **Unstamped:** (Begley 18.3. Marked "R.30." From excavations by Faucheux and others, 1943-44. Pl.). Handle fragment and upper attachment. H.W., 0.063m.; H.T., 0.024m. Finely micaceous pale rust clay; scattered tiny dark and light bits; surface obscured by buff deposit that also covers breaks.

42. **Unstamped:** (Begley 18.1. Marked "R.31." From excavations by Faucheux and others, 1943-44. Pl.). Handle fragment and upper attachment. H.W., 0.060m.; H.T., 0.031m. Micaceous (gold mica) deep pinkish buff clay; frequent dark, light, and red bits, including hematitz; surface pinkish yellow-buff, with rather an "oiled" look.

43. **Unstamped:** (Begley 23.1. Marked "R.32.III B - 0.70." From excavations by Faucheux and others, 1943-44. Pl.). Handle fragment and piece of lower attachment. H.W., 0.059m.; H.T., 0.030m. Micaceous, coarse pale brick red clay; frequent light and dark bits; cream surface.

44. **Unstamped:** (Begley 24.2. Marked "R.37" [now invisible]. From excavations by Faucheux and others, 1943-44. Pl.). Fragment of one rib of a double handle. H.W., 0.026m.; H.T., 0.026m. Micaceous, coarse, sandy deep pinkish yellow-buff clay; frequent dark and light bits, apparently including hematitz; lighter surface.

- 1.10
10
45. **Unstamped:** (Begley 25.2. Marked "R. 40.III A + 0.80." From excavations by Faucheux and others, 1943-44. Pl.). Fragment of one rib of a double handle. H.W., 0.029m.; H.T., 0.026m. Micaceous, coarse deep tannish buff clay; frequent tiny dark bits; dirty cream surface.
46. **Unstamped:** (Begley 20.3. Marked "R.50." From excavations by Faucheux and others, 1943-44. Pl.). Fragment of one rib of a double handle. Fragment preserves part of upper attachment. H.W., 0.028m.; H.T., 0.028m. Micaceous, coarse pale pinkish buff clay; frequent small dark bits (hematitz) and occasional red and white ones; worn, dirty cream surface.
47. **Unstamped:** (Begley 25.5. From excavations by Faucheux and others, 1943-44. Pl.). Fragment of one rib of a double handle. H.W., 0.022m.; H.T., 0.023m. Finely micaceous, coarse clay (color uncertain owing to surface deposit); frequent dark bits; cream surface.
48. **Unstamped:** (Begley 35. Marked "III.B + 1.50." From excavations by Faucheux and others, 1943-44. Pl.). Toe fragment. P.H., 0.027m. [Betty check this]; diam. at base, 0.055m. Micaceous pale brick red clay; frequent tiny dark and light bits; worn cream surface. Traces of veiny incrustations.
49. **Unstamped:** (Unnumbered. Surface find in ploughed field: 26.XII.89. Pl.). Handle fragment. H.W., 0.051m.; H.T., 0.026m. Micaceous, sandy pale rust clay; frequent dark and light bits.
50. **Unstamped:** (Madras Museum 105/70. Dubreuil Collection. Pl.). Neck fragment. Fragment preserves part of neck, and one handle; mended. P.H., 0.225m.; H.W., 0.057m.; H.T., 0.031m. Slightly micaceous pinkish yellow-buff clay; frequent dark and light bits; tan surface.
51. **Unstamped:** (Madras Museum 657/39. Dubreuil Collection. Pl.). Lower part of handle with piece of attachment. H.W., 0.052m.; H.T., 0.031m. Slightly micaceous deep tan clay; black, white, and large reddish bits; pale tan surface.

52. **Unstamped:** (AK 753-25C [Wheeler, Figure 9:60]. Pl.). Handle fragment and upper attachment. H.W., 0.055m.; H.T., 0.030m. Micaceous, very coarse, sandy deep pinkish buff clay; many large and small dark bits, including conspicuous hematitz; worn whitish surface.

53. **Unstamped:** (AK unnumbered. Pl.). Neck fragment. Fragment preserves small piece of rim, upper part of handle, and piece of neck. P.H., 0.095m.; R.H., 0.016m.; est. M.D., 0.085m.; est. R.D., 0.110m.; H.W., 0.053m.; H.T., 0.025m. Very coarse, micaceous, sandy rust clay; many dark bits, including hematitz; dirty grayish cream surface.

2. Type 14

54. **Unstamped:** (Begley 9. Marked "R.1 [R visible, and "1" is from Vinala's notes] III A + 0.50." From excavations by Faucheux and others, 1943-44.

Pl.). Neck fragment. Fragment preserves most of rim and pieces of neck, including start of one handle attachment and location of other. P.H., 0.110m.; R.H., 0.048m.; M.D., 0.120m.; R.D., 0.170m. Fine, finely micaceous, powdery pale peach-buff clay, beige toward surface; scattered small reddish, light, and dark bits. Much veiny incrustation. Some pozzolana adheres on inside and near top of rim on outside, perhaps from ancient sealing of jar.

55. **Unstamped:** (Begley 13.4. Marked "R.9 [she and others say, but I can see only "R"] III A + 1.00." From excavations by Faucheux and others, 1943-44.

Pl.). Rim fragment and small piece of neck, with part of upper attachment of one handle. P.H., 0.067m.; R.H., 0.047m.; est. M.D., 0.120m.; est. R.D., 0.165m. Fine, finely micaceous, powdery pale tannish clay, pale peach toward core; scattered very tiny dark bits and a few small red and white ones; beige surface. Lid-rest inside rim.

56. **Unstamped:** (Begley 22.1. Marked "R.35.III A + 0.50." From excavations by Faucheux and others, 1943-44. Pl.). Handle fragment. H.W., 0.043m.;

H.T., 0.042m. Finely micaceous, powdery pale tannish clay, apparently peach toward core; scattered light and dark bits; beige surface.

57. **Unstamped:** (Begley 25.3. Marked "R.36.III B + 0.50." From excavations by Faucheux and others, 1943-44. Pl.). Handle fragment. H.W., 0.043m.; H.T., 0.036m. Finely micaceous, powdery, apparently pale clay; scattered dark and reddish bits; deposit on surface, including breaks, covers surfacing, if any. Veiny incrustations. Bits of pozzolana adhere.

58. **Unstamped:** (AK X 5. Pl.). Handle fragment and upper attachment. Bit of neck preserved. H.W., 0.054m.; H.T., 0.040m. Finely micaceous, hard pinkish yellow-buff clay; scattered tiny reddish and dark bits; beige surface.

3. Type 16.2

59. **Unstamped:** (Begley 14.6. Marked "R.7.III B - 0.60." From excavations by Faucheux and others, 1943-44. Pl.). Rim fragment and tiny piece of neck. P.H., 0.058m.; R.H., 0.056m.; est. M.D., 0.160m.; est. R.D., 0.200m. Slightly micaceous, rather plastery pale yellow-buff clay; scattered tiny dark bits; pale grayish surface.

60. **Unstamped:** (Begley 13.3. Marked "VI.A + 1.00.10/10/43" [Begley says Pencil scribble now almost invisible]). From excavations by Faucheux and others, 1943-44. Pl.). Rim fragment and piece of neck. Est. P.H., 0.080m.; R.H., 0.045m.; est. M.D., 0.160m.; est. R.D., 0.205m. Slightly micaceous, rather sandpapery pale orange clay; scattered tiny dark bits; yellow-cream surface. Possible bit of pozzolana adheres. Also veiny incrustations.

61. **Unstamped:** (Unnumbered. Pl.). Rim fragment and very small piece of neck. P.H., 0.051m.; R.H., 0.051m.; est. M.D., 0.175m.; est. R.D., 0.215m. Slightly micaceous cream clay; frequent tiny dark bits; no apparent surfacing.

4. Type 17

62. **Unstamped:** (Begley 8. Marked "R.4.III A - 0.60." From excavations by Faucheux and others, 1943-44. Pl.). Neck fragment. Fragment preserves part of rim and neck, and stump of one handle; mended. P.H., 0.140m.; R.H., 0.041m.; est. M.D., 0.150m.; est. R.D., 0.170m.; H.W., 0.054m.; H.T., 0.021m. Micaceous (gold mica) deep pinkish tannish buff clay; frequent tiny light and dark bits; worn cream surface. Apparent remnants of white shell embedded on neck near handle attachment. Three parallel vertical lines on rim in same yellowish color as deposits inside fragment. Deep indentation for lid on inside of fragment, at base of rim.

63. **Unstamped:** (Begley 22.3. From excavations by Faucheux and others, 1943-44. Pl.). Handle fragment. H.W., 0.042m.; H.T., 0.025m. Finely micaceous (gold mica) deep pinkish yellow-buff clay; frequent tiny dark bits; dirty beige surface.

64. **Unstamped:** (Unnumbered. Marked "R.14.III B - 0.70"; also "R.57.III B - 0.70." From excavations by Faucheux and others, 1943-44. Pl.). Belly fragment. G.W., 0.233m. Micaceous (gold mica) coarse apparently tannish clay; frequent dark and light bits; dirty pale yellow surface. Inside thickly plastered with deep yellow-brown substance. Cf. Cat. 65 and the neck fragment Cat. 62. Also the toe Cat. 67. Cat. 64 has one white shell 0.018m. in diam. embedded in the yellow substance, as well as outlines of many other such shells once embedded in it. All perhaps once in the garum? Cf. shell-like mark on exterior of neck fragment Cat. 62. Mark approx. 0.060m. in length incised on exterior of Cat. 64. Cat. 64 appears to be a fragment of the upper belly, as start of place where lower handle attachment was set can probably be seen.

65. **Unstamped:** (Marked "R.58.III B - 0.70"; also "R.21.III B - 0.70." From excavations by Faucheux and others, 1943-44. Pl.). Belly fragment. G.W., 0.125m. Micaceous (gold mica), rather coarse deep pinkish tannish buff clay; frequent dark and light bits; dirty cream surface. Inside thickly plastered with deep yellow-brown substance. Cf. Cat. 64 and the neck fragment Cat. 62 "which has the same substance inside, as well as in three parallel lines on the outside of the rim. Cf. also the toe Cat. 67.

66. **Unstamped:** (Not in Begley. Marked "R.60.III B - 0.70." Pl.). Wall fragment. G.W., 0.067m. Micaceous (gold mica), hard "layered" mauve clay; frequent tiny dark and light bits; greenish cream surface. Yellow deposit on interior wall.

67. **Unstamped:** (Begley 37. Marked "R.61.III B + 0.50." Pl.). Toe, and pieces of lower belly. P.H., 0.160m.; diam. at base, 0.048m. Micaceous, rather coarse deep pinkish tannish buff clay; frequent small light and dark bits; dirty yellowish cream surface. Thick yellow-brown deposit inside toe, with imprints of the same round fish-forms as on the other pieces of this jar. Two round forms also on outside.

68. **Unstamped:** (Unnumbered ["W1']). From the 1990 excavations. Pl.). Fragment of belly. Same fabric as Cat. 62. G.W., 0.082m. Micaceous (gold mica) light brown clay, pinkish yellow-buff toward surface and grayish at core; scattered dark and light bits; yellow-buff surface.

5. **Type 20**

69. **Unstamped:** (R 8. From excavations by Faucheux and others, 1943-44. Pl.). Rim fragment and bit of neck. P.H., 0.043m.; R.H., 0.034m.; est. M.D., 0.100m.; est. R.D., 0.130m. Finely micaceous tan clay; frequent tiny grayish and dark, and occasional red bits; beige surface.

70. **Unstamped:** (Begley 21.1. Marked "R.54 [revised in pencil to R.51] III B. 0.00." From excavations by Faucheux and others, 1943-44. Pl.). Handle fragment and most of lower attachment. H.W., 0.040m.; H.T., 0.035m. Slightly micaceous (a few big pieces of gold and silver mica), coarse taupe clay; frequent dark, reddish, and light bits; beige surface. Has at least three low "spines" down middle, and depression in base of handle at lower attachment.

6. Miscellaneous and Unclassified

71. **Unstamped:** (Begley 14.2 [She says marked "R.16.III A + 1.60" but only dimly visible to me]. From excavations by Faucheux and others, 1943-44. Pl.). Neck fragment. Fragment preserves pieces of rim and neck and attachment of one handle. P.H., 0.117m.; R.H., 0.012m.; est. M.D., 0.090m.; est. R.D., 0.120m. Micaceous, very coarse pale rust clay, tan toward surface; frequent dark, light, and reddish bits; buff surface. Rim has line partially incised near bottom.

72. **Unstamped:** (Begley 16.2. Marked "R.18.III B 0.00." From excavations by Faucheux and others, 1943-44. Pl.). Rim fragment. P.H., 0.061m.; est. M.D., 0.100m.; est. R.D., 0.125m. Faintly micaceous pale rust clay; frequent small white bits; worn cream surface. Damage or possible place for handle attachment on one part of rim, which is channeled three times horizontally. Deep lid-rest 0.013m. in ? inside rim near top.

73. **Unstamped:** (Begley 14.3. Marked "R.23.III A + 0.50." From excavations by Faucheux and others, 1943-44. Pl.). Rim fragment and piece of neck. P.H., 0.052m.; R.H., 0.020m.; est. M.D., 0.095m.; est. R.D., 0.110m. Slightly micaceous, rather coarse deep pinkish buff clay; many tiny dark, and some larger red bits; pale rust surface. A very small amphora, thin-walled (0.007m.)

74. **Unstamped:** (AK III [?] [2E]. Pl.). Rim fragment and piece of neck that includes start of upper attachment. P.H., 0.055m.; R.H., 0.026m.; est. M.D., 0.100m.; est. R.D., 0.130m. Finely micaceous, apparently rather coarse tannish clay; scattered dark and reddish bits; tan surface, which is obscured by lighter deposit. Lid-rest inside fragment.

75. **Unstamped:** (Marked "R.22.III A - 0.60." [not photographed by Begley but seen by Stern] From excavations by Faucheux and others, 1943-44. Pl.). Rim fragment and small piece of neck. P.H., 0.038m.; R.H., 0.014m.; est. M.D., 0.095m.; est. R.D., 0.130m. Micaceous, hard pale orange clay, yellow-buff toward surface; frequent tiny dark bits; buff surface that also covers breaks. Thin-walled: 0.007m., but wide-mouthed.

76. **Unstamped:** (Begley 19.1. Marked "VI A + 1m. 30-10-43." From excavations by Faucheux and others, 1943-44. Pl.). Shoulder fragment and lower handle attachment. G.W., 0.081m.; H.W. at base, 0.042m.; est. H.T. at base, 0.036m. Micaceous pinkish tannish buff clay; frequent tiny dark bits; buff surface. Thin-walled: 0.007m. Interior wall of shoulder striated.

77. **Unstamped:** (Begley 21.3. Marked "R.43.III A + 1.00." From excavations by Faucheux and others, 1943-44. Pl.). Handle fragment and upper attachment. H.W., 0.048m.; H.T., 0.028m. Micaceous yellow-tan clay; frequent tiny dark bits; cream surface.

78. **Unstamped:** (Probably Begley 19.3. She says marked "1943." I can't see that. From excavations by Faucheux and others, 1943-44. Pl.). Very small handle fragment. H.W., 0.039m.; H.T., 0.031m. Slightly micaceous bright rust clay, tan toward surface; scattered small dark and light bits and one large white one; beige surface. Channeling lengthwise. Some veiny incrustation.

79. **Unstamped:** (Begley 25.7. Marked "R.49.III B - 0.60." From excavations by Faucheux and others, 1943-44. Handle fragment and lower attachment. H.W.,

0.028m.; H.T., 0.024m. Slightly micaceous, rather hard tan (?) clay; scattered dark bits visible; surface and breaks obscured by beige deposit.

80. **Unstamped:** (Madras Museum 72/40. Dubreuil Collection. Pl.).

Whole handle. Fragment preserves both attachments. H.W., 0.021m.; H.T., 0.022m. Coarse brownish clay; frequent light and dark bits; brick red surface. From a Punic amphora.

81. **Unstamped:** (Begley 37. Marked "R.5.III A - 0.60." Pl.). Fragment of lower belly and upper toe, the toe plugged. Est. P.H., 0.095m.; diam. at base as preserved, 0.081m. (sic); est. G.D. of plug in base, 0.054m. Very slightly micaceous coarse dark gray clay; frequent largish dark bits; beige surface. Blackened, striated interior, with finger-stripings probably represents underfired clay. Plug, apparently also of clay, is also blackened. Veiny markings. Only upper part of toe preserved. Concavity between toe and belly.

82. **Unstamped:** (Begley 34. Marked "R.66.III B + 1.50." Pl.). Toe, and attached piece of belly. P.H., 0.070m.; diam. at base, 0.036m.

Micaceous, rather sandpapery and brittle pinkish yellow-buff clay; scattered small dark and light bits; beige surface, which also covers breaks. Veiny incrustations; probably some pozzolana. Possibly from a Koan amphora?

Arikamedu Reconsidered

VIMALA BEGLEY

Abstract

Reconsidered here are the chronology and significance of the important South Indian coastal site of Arikamedu, which was excavated by Sir Mortimer Wheeler in 1945 and Jean-Marie Casal in 1947-1950. Finds of fragmentary amphorae and Arretine ware in stratified contexts led Wheeler to identify the site as an Indo-Roman trading station, which he believed was founded during the time of Augustus and lasted for about two centuries. Even though subsequent investigations revealed conflicting evidence, Wheeler's basic interpretation has gone unchallenged until now; as a result it has become increasingly difficult to formulate a coherent picture of South Indian culture sequences during the Early Historical period.

Reassessment of Wheeler's and Casal's material suggests that the date of the founding of Arikamedu should be pushed back to the middle of the third century B.C., while its first trade contacts with the Mediterranean world may have been established by the late second century B.C. The Arretine ware phase can now be dated more precisely to the first quarter of the first century A.C. (instead of the second quarter, as Wheeler had suggested); amphorae occur in substantially earlier levels, and Rouletted Ware in earlier levels still. Although the Arikamedu Rouletted Ware was probably manufactured locally, the technique of "rouletting" must have been introduced from the West, probably sometime in the second century B.C. Since Arikamedu thus seems to have functioned as a maritime trading center long before the time of Augustus, a new perspective emerges upon the question of South Indian trade with the Mediterranean area.

No excavation has had such a profound impact upon archaeological and historical research in South India as that at Arikamedu undertaken by Sir Mortimer Wheeler in 1945.¹ This was the first stratigraphic excavation in the entire peninsula and was widely hailed as providing a firm basis for constructing chronological sequences for South Indian archaeology from the Iron Age to the Early Historical period. On the basis of his finds of amphorae and Arretine Ware, and correlated data from Classical literary accounts like the *Periplus Maris Erythraei*, Wheeler proposed that Arikamedu was an Indo-Roman trading station

¹ R.E.M. Wheeler, A. Ghosh and Krishna Deva, "Arikamedu: an Indo-Roman Trading-station on the East Coast of India," *Ancient India* 2 (1946) 17-125, hereafter cited as Wheeler et al. The artifacts from the Arikamedu excavations are now dispersed and can be found in several collections. The bulk of Wheeler's material is with the Archaeological Survey of India in Delhi, while some sherds are on display in museums; finds from the French excava-

which flourished during the first two centuries A.C. He dated the Arretine ware types found at Arikamedu between 20 and 50 A.C., and argued that the trading station itself was first founded during the time of Augustus. Between 1947 and 1950, further excavations were undertaken at Arikamedu by Jean-Marie Casal²; since then several other coastal sites have been partially excavated and their chronology tied to that of Arikamedu.

Scholars in disciplines other than archaeology have also relied heavily on Wheeler's dates for Arikamedu in constructing their own chronological sequences. In light of recent research, however, the dates of Arikamedu can no longer be considered as "fixed" as was perceived by Wheeler, even on the basis of his own excavated material. Granted that the excavated material was limited, he nevertheless left unexplored some significant indications of a much earlier beginning for the site. This hypothesis is corroborated by material from Casal's excavations at Arikamedu. He discovered the existence of an earlier settlement dating approximately from the second century B.C.; but, unfortunately, Casal's material has been largely ignored by archaeologists and historians in India. A reassessment of the evidence from both excavations suggests that the ancient settlement of Arikamedu was first established ca. 250 B.C. and lasted until ca. A.D. 200—a much longer period than Wheeler supposed. Accordingly, the beginnings of the settlement and its function as a trading station should now be viewed within the context of historical developments which were taking place in South India from the time of the first contacts with the Mauryan Empire of North India (ca. 322-185 B.C.)

To demonstrate this conclusion, four major aspects which have been illuminated by information gained since Wheeler's excavations are examined: 1) the physical features of the settlement in relationship to other contemporary sites; 2) its chronology and sequential phases of development; 3) the dating of the

tions are at Pondicherry, Hanoi and other places. The locations of the large number of surface collections have gone undocumented.

² J.M. Casal, *Fouilles de Virampatnam-Arikamedu* (Paris 1949; hereafter cited as Casal, *Virampatnam*); see also J.M. and G. Casal, *Site urbain et sites funéraires des environs de Pondichéry* (Paris 1956; hereafter Casal, *Site urbain*).

to
Professor Grace
with kind regards
Vimala Begley
card made

inscribed sherds; and 4) the question of how Arikamedu functioned as a trading station.

THE SITE IN CONTEXT

The site of Arikamedu, also known as Virampatnam and sometimes identified with the ancient Podouke Emporion mentioned in the *Periplus Maris Erythraei*, is located on the Ariyankuppam river, about 3 km. south of Pondicherry, in a sheltered lagoon formed by it and the Gingee river on the southeastern coast of India (ill. 1). The existence of the site has been known since the eighteenth century when its visible remains were described by Le Gentil in his *Voyage dans les mers de l'Inde*.³ From 1937 G. Jouveau-Dubreuil started collecting surface finds from the site, which are said to have included a gem with "head of Augustus in intaglio."⁴ Subsequently, other Mediterranean artifacts, including sherds of Arretine ware, came to light when the French started excavations in 1941, under the direction of Fr. L. Faucheux.⁵ Wheeler saw these artifacts in 1944 and recognized the potential of the site for the archaeology of South India. He started the first stratigraphic excavation at the site in the following year, and subsequent work was done by Casal along similar lines.

The sheltered location of Arikamedu was undoubtedly a crucial factor in its founding, since the southeastern coast of India is almost devoid of natural harbors. Moreover, all the other port sites discovered since Wheeler's excavation are also situated upon estuaries of rivers. A study of the formation of terraces along the eastern coast, undertaken by A.V.N. Sarma and the Archaeological Survey of India in 1972, has

³ Cited in Wheeler et al. 21.

⁴ Wheeler refers to the gem in Jouveau-Dubreuil's collection, although it was not seen by him because the collection was sent to the French School Museum at Hanoi. See Wheeler et al. 21.

⁵ L. Faucheux, *Une vieille cité indienne près de Pondichéry, Virampatnam* (Pondicherry 1945); see also P.Z. Pattabiramin, *Les fouilles d'Arikamedu (Podouké)* (Pondicherry 1946).

⁶ *Indian Archaeology, A Review* (hereafter cited as *IndArch*) 1972-1973, 30-32. For details of the survey, see A.V.N. Sarma, "Upper Pleistocene and Holocene Ecology of East Central South India," in K.A.K. Kennedy and G.L. Possehl eds., *Ecological Backgrounds of South Asian Prehistory* (Ithaca 1976) 179-90; and also "Upper Pleistocene and Holocene Ecology of Coastal Tamil Nadu," *Journal of Tamil Studies* 9-10 (1976) 59-86.

⁷ A brief reference to the Cauvery valley survey appears in *IndArch* 1961-1962, 36-37. In the lower Krishna valley there are several well known Buddhist sites, such as Bhattiprolu and Jaggayyapeta. Surface finds from Chebrolu include important Early Historical ceramic types; see *IndArch* 1960-1961, 1. A significant excavated site is Kesarapalli; see H. Sarkar, "Kesarapalli 1962," *Ancient India* 22 (1966) 37-74.

⁸ These sites have not been published in detail as yet, but the

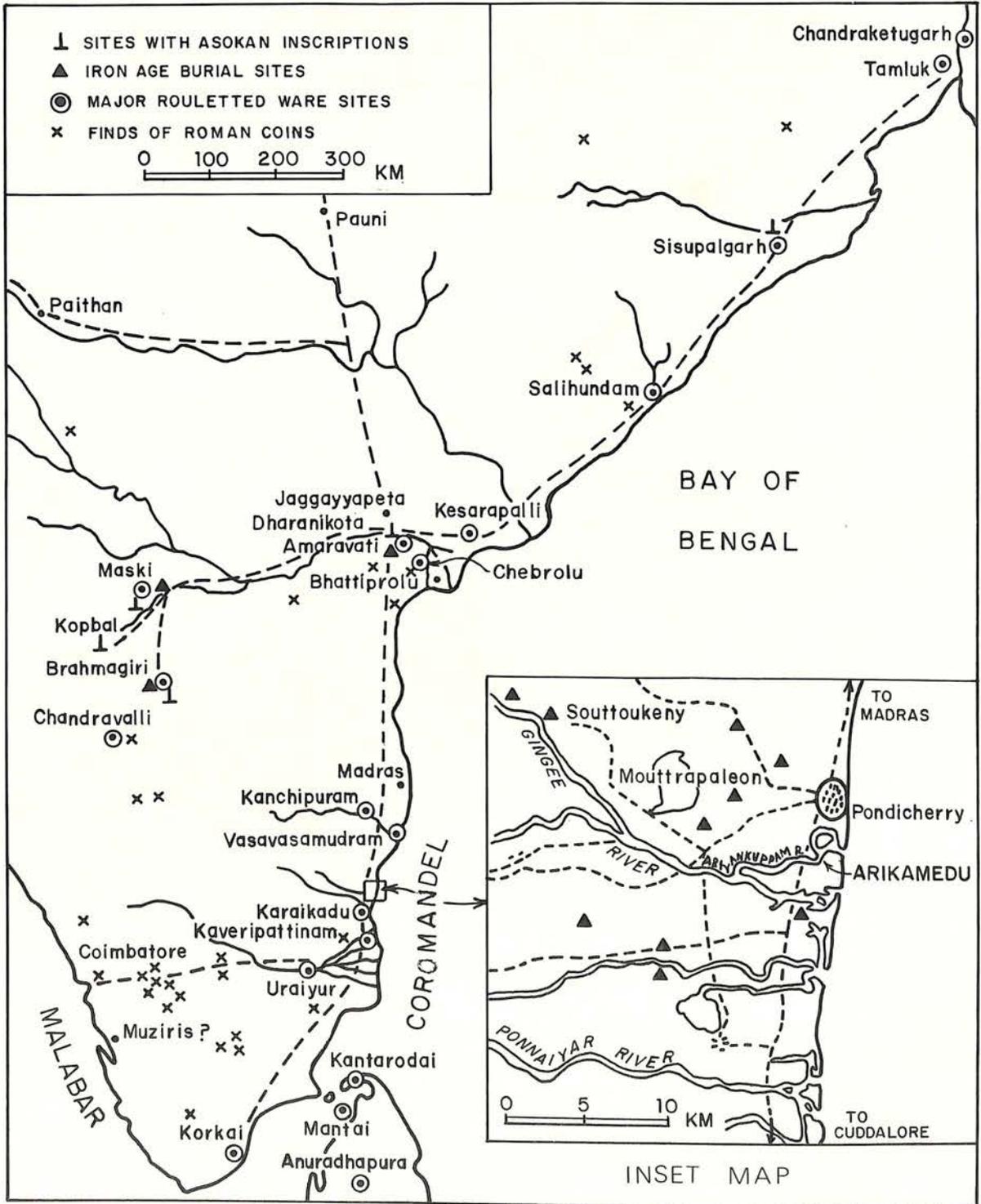
provided evidence for periodic sea-level fluctuations in earlier times. The authors suggest that the coastal settlements of this period may have lost their vitality because of the silting of the rivers draining into the Bay of Bengal.⁶

Location of ports along rivers must have facilitated commerce with the interior regions as well. Recent surveys in the lower Cauvery valley have revealed the existence of a series of interrelated sites; the cluster of sites in the lower Krishna valley also suggests a density of contemporaneous settlements.⁷ If the same pattern holds true for the Arikamedu area, future investigations along the Gingee river may also reveal the existence of a network of related settlements.

In addition to Arikamedu, several other probable port sites along the eastern seaboard have now been identified: Korkai, Kaveripattinam, Karaikadu, Vasavasamudram and perhaps Dharanikota/Amaravati, even though the last site is some 120 km. inland on the river Krishna (ill. 1).⁸ That there was a well established communication network linking the entire eastern coast of India, including northern Sri Lanka, can now be demonstrated on the basis of the distribution of Rouletted Ware, the most distinctive ceramic associated with the Early Historical period (ill. 1). Rouletted Ware was first identified at Arikamedu where it was found in the same context with imported Arretine ware, but it also occurs before and after. The site of Arikamedu therefore provides a significant link between coastal/inland trade on the one hand and the overseas commerce with the West on the other.

How Arikamedu relates to any of the known sites in its immediate vicinity is still not clear. During Ca-

brief summaries of the excavations which have appeared indicate that they are extremely important for the study of the period from the 3rd century B.C. to the beginning of the 1st century A.C. For Korkai, see "Excavations at Korkai, District Thirunelveli" in *Damila* 1 (1970) 50-54. For Kaveripattinam, see K.V. Raman, "Excavations at Pumpuhar" in *The Handbook*, published by the Exhibition Committee of the II International Tamil Conference (Madras 1968) 238-40; S.R. Rao, "Kaveripattinam Excavations," in *Archaeological Society of South India 7th Transactions, 1962-1965* (Madras 1969) 163-65; *IndArch* 1962-1963, 13; 1963-1964, 20; 1964-1965, 24-25; 1972-1973, 32-33. For Karaikadu, see *IndArch* 1966-1967, 21. For Vasavasamudram see *IndArch* 1970-1971, 33 and R. Nagaswamy and A. Abdul Majeed, *Vasavasamudram* (Madras 1978). For relevant material on the sites of Dharanikota/Amaravati, see *IndArch* 1953-1954, 38; 1958-1959, 5; 1962-1963, 1; 1963-1964, 2-4; 1964-1965, 2-3; 1973-1974, 4-5; 1974-1975, 2; 1975-1976, 79. For more recent evidence from Amaravati regarding an early stupa, see R. Subrahmanyam, "On the Nature of Utilization of Epigraphs for Art History," paper presented at the "Seminar on Indian Epigraphy: Its Bearing on Art History," held at the American Institute of Indian Studies, Varanasi, December 1979.



Ill. 1. Southern and eastern India, showing sites mentioned in the text

sal's 1950 survey of the larger Pondicherry region, he located several burial sites associated with the "Megalithic" complex.⁹ That some of these sites were contemporary with the early phases of Arikamedu is extremely likely. According to Casal, the grave goods at Souttoukeny date to the second century B.C., and if so, some of the Souttoukeny graves would overlap the early phases of the Arikamedu settlement. What interaction, if any, existed between these sites remains to be determined, but since the distance is less than 20 km. and they are located along the same river system, some communication is almost inevitable.

The original settlement at Arikamedu appears to have been situated along the east bank of the Ariyankuppam river. Surface distribution of artifacts is densest closer to the river and the excavations have revealed that the focal point of the settlement, or rather the commercial and industrial center, was in fact close to the river, probably for practical economic reasons. The site, as it stands today, has suffered considerable damage from a variety of factors, such as flooding of the river, cultivation, reutilization of bricks and the constant collection of artifacts by local residents. Along the river, flood waters continue to cut into large portions of the ancient settlement, gradually destroying the most important areas.

Wheeler's excavation divided the site into two sectors, the Northern and the Southern (ill. 2). Because of the higher elevation of the Southern Sector, its lower levels are better preserved, while ca. 3 m. of occupational strata in the Northern area are presently below sea-level. Wheeler's excavations did not reveal the full extent of the settlement; from Casal's excavations, it appears that at its peak the site extended at least 420 m. north-south along the river, while its width was some 200 m. east-west in the Northern Sector, and 100 m. or more in the Southern.¹⁰ The area occupied may have been greater, but excavations beyond these limits have so far not been undertaken and a large part of the settlement to the west has been permanently destroyed by the river. The data from

other more or less contemporary settlements are still insufficient to define a pattern that may be applicable to Arikamedu as well. Nevertheless, the nature of the structures excavated so far seems to indicate primarily an industrial-commercial section. Whether the residential areas were interspersed—a fairly common feature in the Indian subcontinent—or separated remains to be determined. The maximum extent of the settlement seems to have been reached during the middle phases of its long period of occupation.

CHRONOLOGY AND SEQUENCE OF PHASES

The sequence of occupational phases at Arikamedu is a complex problem. Wheeler's excavation revealed an essentially one-period site, although the stratigraphy of architectural remains in the Southern Sector led him to divide this single-period site into three structural phases (with sub-periods).¹¹ In Casal's excavations, however, earlier material was discovered which was absent from Wheeler's trenches. He attempted to resolve the problem by substituting a two-period classification, designating the earlier period as "Megalithic" and the later as "Roman," with an "intermediate" phase between them, but he still considered the occupation of the site as continuous.¹² This terminology and the divisions are not entirely satisfactory, particularly for the early phases. Consequently, a revised chronology of Arikamedu's continuous sequential phases is offered in the discussion and Table below, based upon a reassessment of all the available data. The transition from one phase to another is determined by the first occurrence of new traits in artifacts, primarily ceramics and/or architectural remains.¹³

Phase A

The earliest phase of occupation at Arikamedu was traced in the Southern Sector (see ill. 3). On the basis of the distinctive Black-and-Red pottery found here, Casal related this phase to the so-called "Megalithic" Culture of South India, as it had been defined by Wheeler in his 1947 excavations at Brahmagiri.¹⁴ The term "Megalithic" is now known to be mislead-

⁹ Casal, *Site urbain* 17-42.

¹⁰ Casal, *Site urbain* 11, pl. 1. Casal's trenches in Ar. O, P, R, S, T show the known southwestern extent of the settlement. In the northeast, his excavation in Vi. C showed thinning of occupational debris, indicating perhaps that the outskirts of the major urban area were reached.

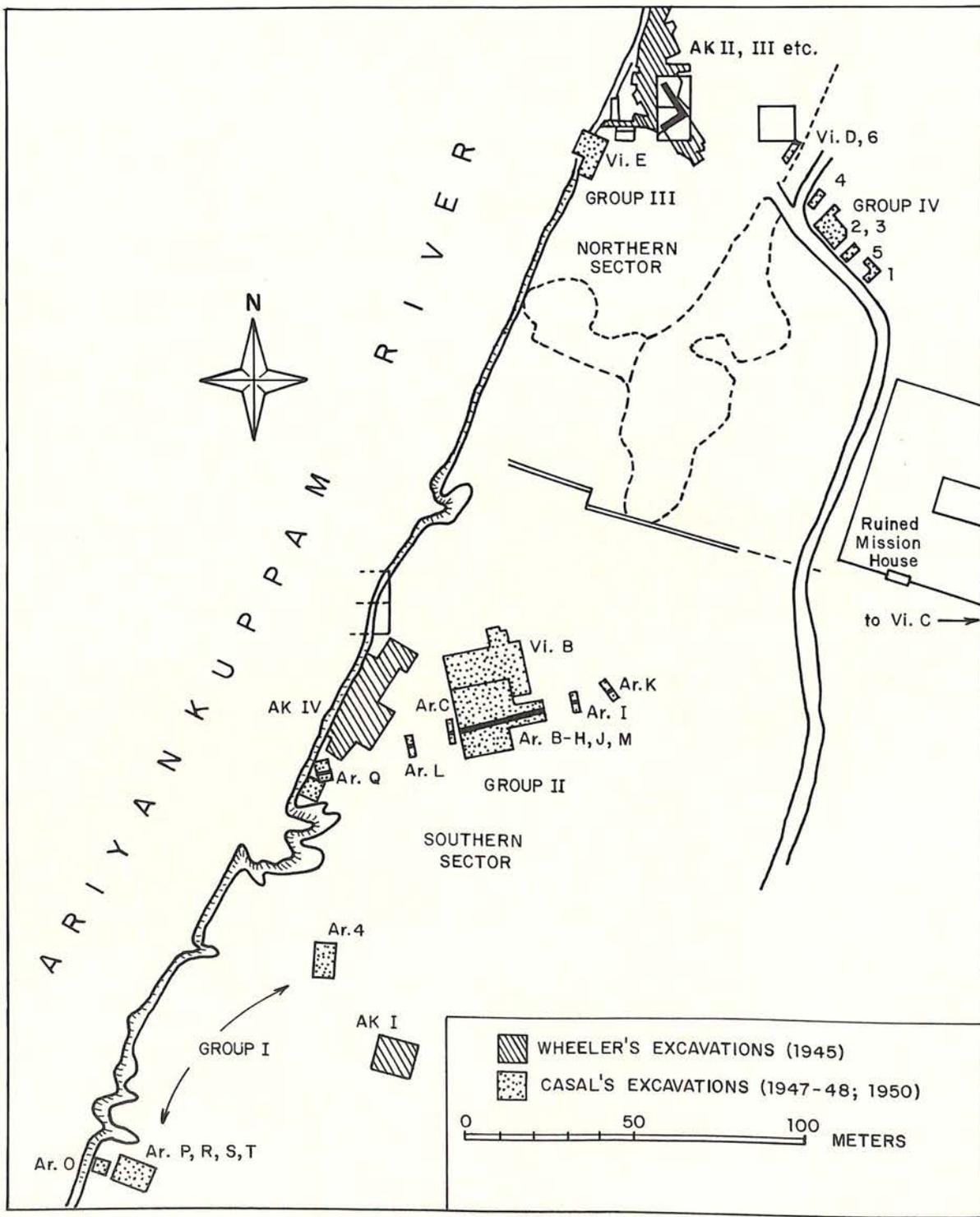
¹¹ Wheeler et al. 26-32.

¹² Casal, *Virampatnam* 18-30.

¹³ The material utilized here is from stratigraphic excavations

only. References to trenches, layers, etc., are according to the system used by the excavators.

¹⁴ R.E.M. Wheeler, "Brahmagiri and Chandravalli 1947: Megalithic and Other Cultures in the Chitaldrug District, Mysore State," *Ancient India* 4 (1948) 199-207. For a comprehensive survey and bibliography of the "Megalithic" material, see L.S. Leshnik, *South Indian Megalithic Burials, The Pandukal Complex* (Wiesbaden 1974).



III. 2. Site plan of Arikamedu. (Redrawn after Casal, *Site urbain*)

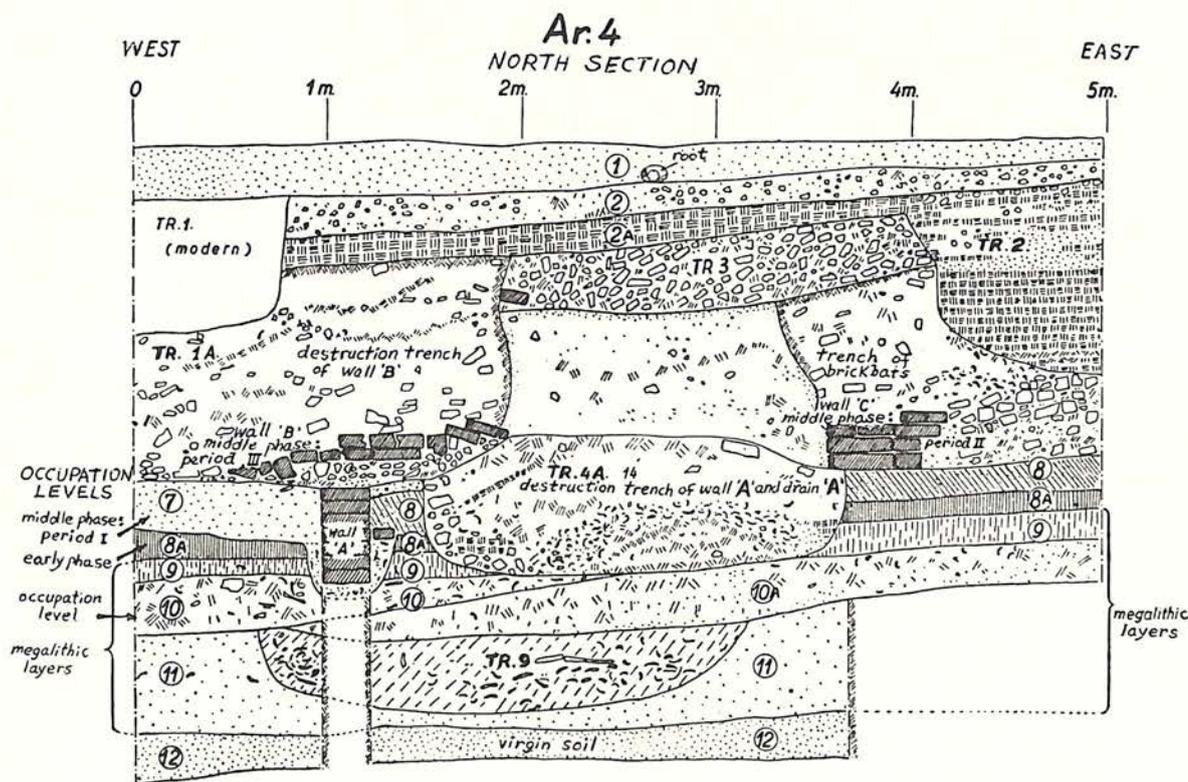
T A B L E
 REVISED CHRONOLOGICAL SEQUENCE OF ARIKAMEDU PHASES, AND CONCORDANCE WITH
 WHEELER'S AND CASAL'S EXCAVATIONS

	250	200	150	100	50	B.C./ A.C.	50	100	150	200
PHASES:	A		B	C		D	E		F	G
STRUCTURES:	post-holes		bricks; ring-wells; post-holes	"Reservoir"; ring-wells; walls; floors; lined pits; wharf (?)		cont. from Phase C	"Warehouse"; tanks; floors; ringwells' etc.	corbelled drains; walls; floors; ring-wells	stray structures	
CERAMICS: <u>Local</u>	Black-and-Red; black		Black-and-Red; Rouletted	Black-and-Red(?); Rouletted; gray; some red		Rouletted; gray; red	Rouletted; more red than gray	Rouletted; same as E (deterioration) amphorae	Rouletted decline amphorae	
<u>Imported</u>			Rouletting	amphorae; stamped designs		amphorae; Arretine	amphorae		amphorae	
<u>Inscribed Sherds</u>	one			no. uncertain		one	no. uncertain	no. uncertain	no. uncertain	
OTHER ARTIFACTS: <u>Local</u>				worked ivory; terracotta; stone celts and weights; ear ornaments, etc.		terracotta	terracotta; grinding stone		terracotta panel	
<u>Imported</u>				glass bowl; bone stylus(?)			glass bowl			
CONCORDANCE: Wheeler (1945) N. Sector S. Sector Casal (1947-48; 1950) N. Sector S. Sector	Gr. IV (?) (unstratified) Gr. I		AK II Gr. IV (?) Gr. I, II	AK II AK I (?) Gr. III, IV (?) Gr. I, II		AK II AK IV Gr. IV Gr. I, II	AK II AK IV Gr. I, II	AK IV Gr. I, II	AK IV Gr. I, II	

VIMALA BEGLEVY

[AJA 87

2.06



Ill. 3. Section of Arikamedu trench Ar. 4, Southern Sector. (After Casal, *Virampatnam* fig. 3)

ing, since it implies that the culture is always characterized by burials marked with large stones, which is frequently not the case. Since the first occurrence of iron is a more consistent feature, perhaps a better general designation would be Iron Age cultures. Another diagnostic trait is the use of inverted firing for the production of Black-and-Red Ware. These groups were extensively distributed in South India and have been assigned a wide range of dates spanning almost the entire first millennium B.C. At sites where stratified sequences are available, Iron Age cultures precede cultures associated with Rouletted Ware, which is also the case at Arikamedu.

Only a limited area in the Southern Sector (Casal's Group I) can definitely be assigned to Phase A.¹⁵ In the Northern Sector, "Megalithic" Black-and-Red Ware was also observed in Casal's Group IV but, be-

cause of disturbed strata, its precise association is uncertain. The only indications of building activity in this phase are a few post-holes. An important find, however, is a Black-and-Red Ware sherd with a five-letter inscription in early Brahmi script from the so-called "Megalithic" layers of Casal's Ar. R5 (Group I).¹⁶ Not only is this the earliest inscription at Arikamedu, but it is the only Brahmi inscription from "Megalithic" layers of any stratified site known so far. Brahmi and Tamil-Brahmi inscriptions are now reported from Korkai, but their stratigraphic position is not yet clearly established.¹⁷

The most important internal evidence for dating Phase A is this inscribed sherd (ill. 9a). Since Brahmi script was apparently first introduced into South India during the reign of Asoka, the sherd would be no earlier than the middle of the third century B.C. A

¹⁵ The clearest evidence for a separate phase is in Casal's Group I. In Ar. 4 and 4N, layers 10, 10A and 11 contain mostly "Megalithic" pottery followed by successive layers of later phases; see Casal, *Virampatnam* 20-21, fig. 3. Similar pottery is also reported from the undisturbed prestructural levels of Ar. O, P, R, S, T (p. 24) and is distributed on the surface along the river in the Southern Sector.

¹⁶ Casal, *Virampatnam* 63, pl. 13D. The inscription was examined by M. J. Filliozat, who remarks that the characters resemble those of the 1st century A.C. at Arikamedu, as well as those in use from the 3rd century B.C.

¹⁷ "Excavations at Korkai" (*supra* n. 8) 53-54.

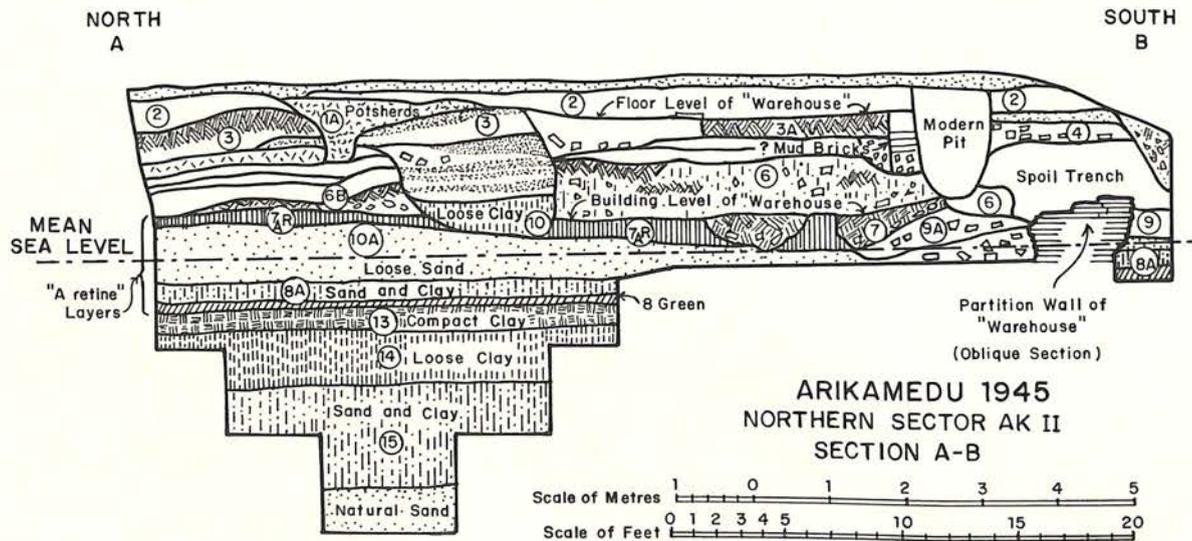
third-second century B.C. date for the spread of Iron Age cultures into that area is consistent with the evidence from other sites—such as Kaveripattinam, which has a single radiocarbon date of B.C. 315 ± 100 ,¹⁸ or Souttoukeny, the jewelry from which is dated by Casal to the second century B.C. on stylistic grounds. The total duration of occupation during Phase A is, however, difficult to determine. The average depth of deposit in this phase is about 70 cm., but no satisfactory gauge for strata accumulation has been established for Iron Age settlements. Wheeler, with some reservation, had suggested about two centuries for the one-meter-plus deposit (3–4 feet) belonging to the “Megalithic” culture at Brahmagiri.¹⁹ If we apply this rough calculation to Arikamedu, Phase A might represent about one hundred years of occupation—that is, approximately mid-third to mid-second century B.C.

Phase B

Phase B, which corresponds to Casal’s “Intermediate phase” (or “overlap layers”), demonstrates the beginning of new features in many spheres of activity.

In ceramics, Rouletted Ware occurs for the first time, but in association with the “Megalithic” Black-and-Red Ware; in architecture, the first bricks occur and perhaps also the first construction of terracotta ring-wells. The clearest stratigraphic evidence, once again, comes from Casal’s excavations in the Southern Sector, with which some of Wheeler’s material may be collated.²⁰ The area of the settlement had expanded considerably in the Southern Sector (Casal’s Groups I and II). What was happening in the Northern Sector is less clear. It is quite likely that the beginning of the settlement in that area also dates from about the same time. But, unfortunately, because of the high water-table, only very limited excavations in the early levels of the Northern Sector were carried out; it is therefore difficult to subdivide the approximately 2.44 m. (8 feet) of pre-Arretine ware deposit reported by Wheeler in AK II (ill. 4).

At this point, the evidence provided by the stratigraphic position of the amphora sherds should be considered. Wheeler mentions that Rouletted Ware occurs in all layers, and amphora sherds in all except the lowest, in his trenches in the Northern Sector.²¹ In



Ill. 4. Section of Arikamedu trench AK II, Northern Sector. (After Wheeler et al. fig. 2)

¹⁸ D.P. Agrawal and S. Kusumgar, “Tata Institute Radiocarbon Date list V,” *Radiocarbon* 10 (1968) 131–43 (sample no. TF-402, p. 135). This and the following date (infra n. 40) have been calculated using the 5730 half-life. The MASCA correction factor has not been applied.

¹⁹ Wheeler (supra n. 14) 201.

²⁰ In Group I, Ar. 4 and 4N, layers 9 and 8A show overlap of Rouletted Ware and Black-and-Red ware: Casal, *Virampattinam*

fig. 3. Although the Ar. O, P, R, S, T area is much disturbed by later activities, some of the ring-wells in this area may also belong to this phase (p. 22). In Group II, Ar. C, layers 14 and 8N also show ceramic overlap (fig. 6). Consequently, Casal equates layer 8A of Ar. 4 with layer 8N of Ar. C. Ar. B and B-extension are also said to represent an overlap phase, but the cross sections of the trenches are not reproduced.

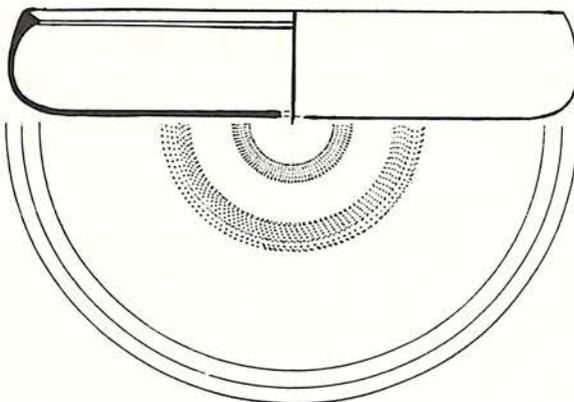
²¹ Wheeler et al. 22, 41, 46; see also fig. 2. Wheeler and Krishna

Wheeler's view, the absence of amphora sherds in only one level could be accidental, because the area of excavation was limited. But Casal also does not report any amphora sherds in his "overlap" layers in the Southern Sector, which would suggest that the occurrence of Rouletted Ware *precedes* the import of Mediterranean amphorae.²² If this is the case, then it seems likely that the earliest layer of Wheeler's Northern Sector (AK II) also represents a pre-amphora phase. The occurrence of "Megalithic" Black-and-Red Ware in the Northern Sector (Casal's Group IV) has been mentioned above. Some Black-and-Red Ware is reported from Wheeler's pre-Arretine ware layers as well, but at the time of excavation it was not known to be diagnostic of the "Megalithic" period.²³ The presence of Black-and-Red Ware suggests that during Phase B the occupation area was expanded in the Southern Sector, and perhaps extended to parts of the Northern Sector as well.

With the increase in the area of occupation, growth in population may also be assumed. The influx of outsiders or outside influences seems to be borne out by the introduction of new traits. Brick architecture, the construction of ring-wells and the use of Brahmi script are known elements of the Mauryan period. Archaeological evidence for their use and adaptation is beginning to emerge for several areas of Andhra Pradesh and Tamil Nadu between the third century B.C. and the first century A.C.²⁴ Further discussion on how these areas relate to each other must await the publication of detailed reports.

The most significant artifact type of Phase B is Rouletted Ware, which is now known to have a very wide distribution in Eastern India and which has become a major means of dating associated cultures (ill. 5). The problem of Rouletted Ware—its composition, distribution and dating—is only briefly discussed here. At Arikamedu it is reported to be a fine ware, wheel-turned, fired under reducing conditions and frequently black-slipped, with the slip usually turning gray, sepia or brown. The most common shape is the dish, frequently with a beaked rim and decorated

with rouletted patterns on the inner side of the base.²⁵ No spectrographic studies of the Rouletted Ware from Arikamedu or any other site, except Anuradhapura in Sri Lanka, have been made,²⁶ nor are most of the sites published in detail, which limits the scope of any comparative study.



Ill. 5. Arikamedu Rouletted Ware, Type 1. (After Wheeler et al. fig. 12a)

Wheeler and Casal maintained that the finer varieties of Rouletted Ware were imported to Arikamedu from the West. Wheeler even suggested that the pottery was derived from Arretine ware while Casal points out similarities with earlier Mediterranean types—the latter appears to be a more likely source.²⁷ But it should be stressed that, except for the technique of "rouletting" or "chattering," no precise parallels for fabric and shape can as yet be found. Therefore, the production centers of the ceramics remain uncertain. The technique of "rouletting" seems to have been introduced from the Mediterranean region, since it was not known to the cultures of South India at that time. As for other features of the ceramics, the simple dish shape—although not with a pronounced beak rim—has prototypes in the Iron Age Black-and-Red Ware as well as in Northern Black Polished Ware. Black-and-Red Ware is present at Arikamedu itself in the earliest levels. Northern Black Polished Ware has a

Deva both noted the stratigraphically earlier occurrence of Rouletted Ware.

²² Unfortunately, Casal does not discuss amphora sherds from his excavations, except in general terms. Therefore it is difficult to determine when and where they occur for the first time in his trenches.

²³ See, e.g., Wheeler et al. Types 6 and 7, p. 51.

²⁴ For a discussion of the material, see V. Begley, "From Iron Age to Early Historical in the Archaeology of South India," in J. Jacobson, ed., *Essays in South Asian Archaeology* (American Institute of

Indian Studies, New Delhi, in press).

²⁵ The description is by Krishna Deva in Wheeler et al. 46. For a more detailed discussion of Rouletted Ware, see Begley (*supra* n. 24).

²⁶ The two analyzed sherds from Anuradhapura were not considered to have been produced locally; see S. Deraniyagala, "The Citadel of Anuradhapura 1969: Excavations in the Gedige Area," *Ancient Ceylon* 2 (1972) 163.

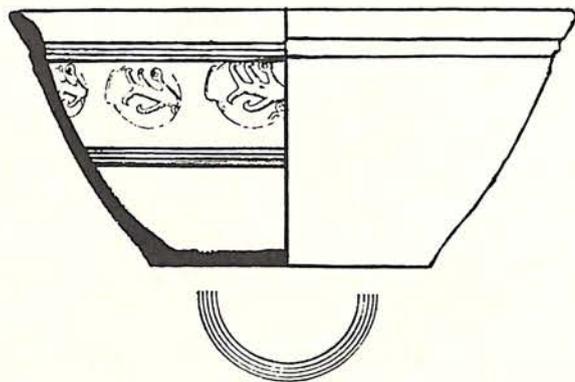
²⁷ Wheeler (*supra* n. 14) 200; Casal, *Virampatnam* 36-37.

wide range of dates—it was used in the Mauryan period and arrived in the lower Krishna valley thereafter. The technique of firing under reducing conditions was common to both traditions and inverted firing was normal in Black-and-Red Ware. Black slip with a highly lustrous finish is a distinctive feature of Northern Black Polished Ware.

At Arikamedu, Wheeler's report states that some of the Rouletted Ware sherds have high polish, although they are technically inferior to the Northern Black Polished Ware. The black slip with metallic luster occurs only on specimens from pre-Arretine and early Arretine levels, and specimens from pre-Arretine levels generally have brighter polish than those from later deposits.²⁸ These observations, in conjunction with references to fine black slipped pottery, said to be almost like Northern Black Polished Ware, at sites along the eastern coast like Sisupalgarh, Kesarapalli and Korkai, may prove significant in resolving the question of the genesis of the Rouletted Ware.²⁹ The wide distribution in eastern India of Rouletted Ware, frequently in substantial quantities, reinforces the possibility of local production with only the "rouletted" decoration being inspired by Mediterranean types. Arikamedu has other ceramic types—such as Wheeler's Types 10, 18 and 141—which were no doubt produced locally, but were probably influenced by Mediterranean types. Wheeler's Types 74/75 may also fall within this category, since it seems that they were manufactured to serve the same function as the amphora.³⁰

If we assume that the technique of "rouletting" was introduced from the West and the stamped designs on Wheeler's Type 10 were also similarly inspired, some contact with the Mediterranean region, direct or indirect, during Phase B must be postulated (ill. 6). Argu-

ments in favor of dating the first occurrence of Rouletted Ware at Arikamedu approximately to the second century B.C. may also be briefly summarized here.³¹



Ill. 6. Arikamedu stamped decoration on Wheeler's local wares Type 10. (After Wheeler et al. fig. 17a)

First is the question of the interpretation of the stratigraphic evidence itself. In the Arikamedu report, Wheeler assigns the first occurrence of Rouletted Ware to the end of the first century B.C. or the beginning of the first century A.C., preferring the later date. To be more precise, he attributes some 20 years to the occupation before the first occurrence of Arretine Ware, and 30 years to the Arretine ware levels. The crucial evidence for the relative chronological sequence of the early levels is considered to be at AK II in the Northern Sector (ill. 4). Here the layers with Arretine ware are from "8 Green" to "7AR" covering some 0.91 m. (3 feet) of deposit. Below this, Rouletted Ware occurs in 2.44 m. (8 feet) of accumulation.³²

Since the lower 3 m. or so (10 feet) of accumulation in the Northern Sector is now below mean sea-level,

For a description of the above types and illustrations, see Wheeler et al. 55-91.

²⁸ Krishna Deva in Wheeler et al. 46.

²⁹ For Sisupalgarh, see B.B. Lal, "Sisupalgarh 1948: An Early Historical Fort in Eastern India," *Ancient India* 5 (1949) 79; for Kesarapalli, see H. Sarkar, "Kesarapalli 1962," *Ancient India* 22 (1966) 45; for Korkai, see "Excavations at Korkai," (supra n. 8) 52.

³⁰ Wheeler's Type 10 is a bowl with stamped decoration, and was found in limited quantity throughout his excavations. Because of the wide variety of "fabrics" in which this shape and decoration appear, it can be presumed that the pottery was not imported but, like Rouletted Ware, its method of decoration could well have been of Mediterranean origin. Type 18, however, imitates Arretine ware shapes and is not found in pre-Arretine levels. The significance of these two types was first pointed out by Casal, *Virampatnam* 36-37. Type 141 is described as a "dish with a flaring rim and a foot-ring, and is ornamented on the interior face with a row of nicks at the rim and a stamped floral pattern on the base." It occurs sporadically in the Arretine and post-Arretine ware levels. Types 74/75 are the conical jars found throughout Wheeler's excavation.

³¹ Detailed arguments are presented in my article (supra n. 24). Casal, as a result of his own excavations, suggested the existence of Indo-Mediterranean trade during the 2nd-1st centuries B.C.

³² Wheeler et al. 24-26 and fig. 3. Even after Casal's excavations, Wheeler gave more or less the same dating to his material; see R.E.M. Wheeler, "Roman Contact with India, Pakistan and Afghanistan," in W.E. Grimes ed., *Aspects of Archaeology in Britain and Beyond* (London 1951) 354-81; and *Rome Beyond the Imperial Frontiers* (London 1955) 137-53. Wheeler's interpretation of the evidence is based upon the premise that Roman trade with India could not be earlier than the time of Augustus, consequently Mediterranean types of ceramics at Arikamedu could not be earlier. He does not seriously entertain the possibility that Mediterranean trade with Arikamedu could have been established via intermediaries before direct Roman involvement.

excavations in these layers were limited and difficult to conduct. It is not entirely clear whether these layers were submerged occupation layers, or estuarine silt into which artifacts were deposited—Wheeler was more inclined toward the latter explanation. However, abundant pottery and timber building material were recovered; Wheeler mentions that the finest Rouletted Ware came from these early layers, where it was more profuse than in later layers. When these data are combined with evidence for a definite occupation of Phase B from Casal's excavation in the Southern Sector, where Rouletted Ware occurs in the upper levels containing "Megalithic" material, it seems likely that the earliest layers of the Northern Sector (AK II) represent an actual settlement which has partially submerged because of the rising sea-level. Its duration is a matter of speculation because of limited excavations, although 20 years seem too short a time-span for an accumulation of 2.44 m. Other scholars, such as Siran Deraniyagala, have also commented on this point and suggest revision of the chronology of the Early Historical period.³³

An earlier date than the first century A.C. is also indicated by the script of the inscribed sherds from Arikamedu itself and other sites along the southeastern coast. Regarding the Arikamedu graffiti, on epigraphical grounds, N.P. Chakravarti stated: "At first sight the script found on the graffiti from Arikamedu appears to belong to the first or second century B.C. when compared with the script of other Brahmi inscriptions, particularly those found in the North."³⁴ But Wheeler maintained that the inscribed sherds belonged to the first-second century A.C. because of the "secure" archaeological dating of the site. Accordingly, the dating of the inscribed sherds was modified by him to bring it in line with his short chronology for the early levels.

More recently, however, Subrahmanyam has dated some inscribed Rouletted Ware sherds from Salihundam—a Buddhist site north of Arikamedu—also to the second and first centuries B.C., and suggested that the lower dates of Rouletted Ware should be revised.³⁵ But the question was not pursued by other scholars. The dates of the inscribed sherds from Urai-

yur, a major findspot of Rouletted Ware on the Cauvery in Tamil Nadu, should also be re-examined.³⁶

Archaeological evidence from two early coastal sites in Tamil Nadu, excavated since Wheeler's work at Arikamedu, is also consistent with an early date for the first appearance of Rouletted Ware on the southeastern coast. Excavations at Kaveripattinam—located south of Arikamedu, on the mouth of the river Cauvery—have revealed the remains of an Iron Age settlement which existed before the introduction of Rouletted Ware.³⁷ A large structure there has been considered by the excavators to have been a wharf, with a single radiocarbon date of B.C. 315±100.³⁸ The other site is Korkai—farther south, originally along the coast on the Tamraparni river—where excavations have reportedly yielded a variety of artifacts, including "imported" ceramics and inscribed sherds.³⁹ Unfortunately, the stratified sequence for this site is still unpublished and I was unable to examine the material. A radiocarbon date for the earliest Iron Age material is B.C. 805±95.⁴⁰

Although the radiocarbon dates are for pre-Rouletted Ware settlements, and single dates by themselves do not carry much weight, the cumulative evidence intrinsically points to the existence of first millennium B.C. settlements on the southeastern coast into which Rouletted Ware was introduced at some point. The precise date or location for the first occurrence of Rouletted Ware cannot be postulated as yet; but the available data point to the second century B.C. Future research will test this hypothesis; for the present, Phase B may be tentatively placed sometime in the second century B.C., as a transitional stage between Phases A and C.

Phase C

Phase C, which corresponds to Wheeler's pre-Arretine ware layers in both the Northern and Southern Sectors and to Casal's post-"overlap" layers in the Southern, is a period of rapid development and in many ways the most significant stage in the history of Arikamedu. For the first time, amphorae and other items of undoubted Mediterranean origin are encountered. Large scale building activities began, and both

³³ Deraniyagala (supra n. 26) 104-105; for a discussion of his dating, see Begley (supra n. 24).

³⁴ In Wheeler et al. 109.

³⁵ R. Subrahmanyam, *Salihundam, A Buddhist Site in Andhra Pradesh* (Hyderabad 1964) 8-9 and 22; see also fig. 1.

³⁶ *IndArch* 1964-1965, 25. Dates in the 1st-2nd centuries A.C. have been suggested because of the dates of Arikamedu.

³⁷ See references under Kaveripattinam (supra n. 8).

³⁸ See supra n. 18.

³⁹ See references under Korkai (supra n. 8).

⁴⁰ D.P. Agrawal, S.K. Gupta and S. Kusumgarh, "Tata Institute Radiocarbon Date List IX," *Radiocarbon* 13 (1971) 442-49 (sample no. TF 987, p. 447).

Sectors at the site were extensively occupied. In addition, some idea of local industries and the nature of traded commodities can also be obtained.

One of Casal's most significant discoveries was the remains of a brick wall (Wall A) in the Southern Sector, traced up to a length of 27 m. from the river eastward.⁴¹ According to the excavator, this was the outer wall of an artificial water reservoir. If we accept this interpretation, it would be logical to assume that water was diverted from the river into the reservoir. In the bottom of the reservoir, Casal found some shallow terracotta ring-wells. He suggested that these ring-wells were to assure a supply of water during the dry season when the water-level in the reservoir dropped to its lowest level, resolving thereby the problem of constant water supply for industrial and other purposes. It should be noted that at Kaveripattinam remains of a water reservoir were also excavated in layers associated with Rouletted Ware.⁴² Some other structures—such as "lined pits," walls, floors and ring-wells—were also contemporary with the wall of the reservoir.⁴³

It appears that the reservoir served as the focal point of the possible "industrial" complex in the Southern Sector. Casal's excavation indicates that there was a cluster of small scale workshops along the border of the reservoir, stratigraphically contemporary with it.⁴⁴ Abundant remains of working in metal, glass, semiprecious stones, ivory and shell were observed by him. These workshops may have been the

source of the large number of finished and unfinished beads found all over the site, as well as of several unfinished shell bangles and two worked ivories—one from this phase and the other later.⁴⁵ Other important finds include a bone stylus, perhaps of foreign origin, and terracotta and bone ear-ornaments of local manufacture. According to Casal, ornaments of the same type were found in excavations on the Palatine Hill in Rome in a second century B.C. context.⁴⁶ If so, these finds would constitute additional evidence for early trade between India and the Mediterranean area, and would also help corroborate the dates proposed here for Phase C.

Turning to the Northern Sector (AK II), much of the 2.44-m. pre-Arretine deposit, with the exception of the earliest layer, should be equated with this phase. That there was a structure built substantially of timber, perhaps a wharf, is evident but unfortunately none of it can be reconstructed.⁴⁷

In ceramics, definite imports from the West are the amphorae (ill. 7), which contained wine and perhaps oil as well.⁴⁸ For the same purpose, but of local production, were perhaps the conical jars (Wheeler's Types 74/75), sherds of which were found throughout Wheeler's trenches and several pointed bases in situ in the early levels of Wheeler's AK I and Casal's ViB.⁴⁹ The structures with which they are associated could have been shops or storage areas. Similar conical jars, erroneously called amphorae, have also been found in large numbers at Kanchipuram.⁵⁰

same type as no. 46. The rest of the illustrated shapes are from the Arretine and post-Arretine phases and therefore belong to the first century A.C. or later. I am grateful to Professor E.L. Will for re-examining Wheeler's material for me. She informs me that the double-handled Coan-type pieces, generally speaking, are of the first century A.C., but more precise identifications would be possible only upon an examination of the sherds, since Wheeler's description is not detailed enough. For other comments on Arikamedu amphorae see V.R. Grace, *Standard Pottery Containers of the Ancient Greek World* (*Hesperia* Suppl. 8, 1949) 175-89; and *Amphoras and the Ancient Wine Trade* (rev. ed., Princeton 1979), comments on figs. 56-61. I am grateful to Professor V.R. Grace for these references.

⁴⁹ Casal, *Site urbain* pl. 7; Wheeler et al. 32, fig. 29, pl. 33A. Wheeler's AK I was a disturbed area with a deposit 2.7 m. in depth. No detailed description or illustration of the upper levels was published but at a "Low level" 8 conical jars were found in situ. These are tentatively assigned to Phase C.

⁵⁰ These jars are in the Museum of the Department of Archaeology, Madras University, but do not include any Mediterranean amphorae. In *IndArch* 1971-1972, 42 (see also pl. 44), there is a reference to the discovery of "imitation amphorae." R. Subrahmanyam mentions that "Roman amphorae with floral designs and a dull pinkish fabric" were found at the site in addition to conical jars:

⁴¹ Casal, *Virampatnam* 26, pl. 2.

⁴² *IndArch* 1963-1964, 20: Raman (supra n. 8) 239.

⁴³ Casal, *Virampatnam* 26.

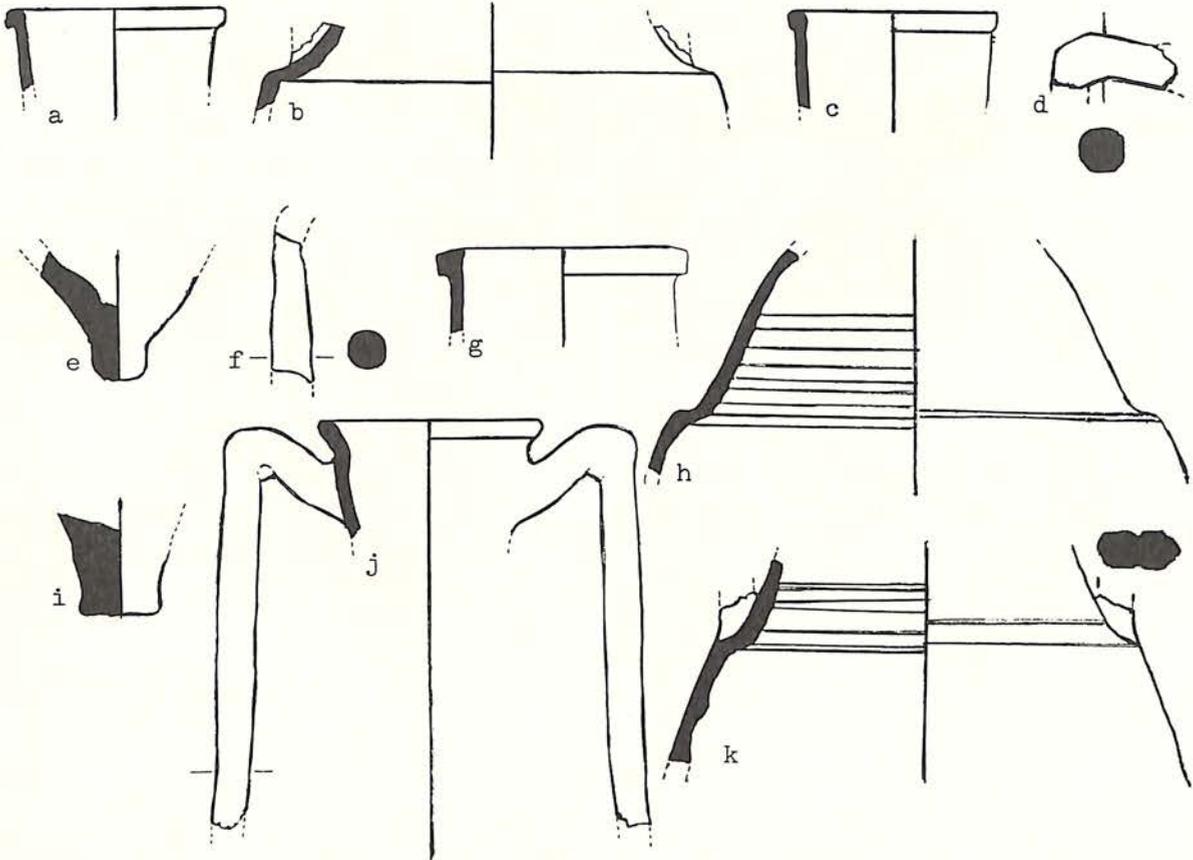
⁴⁴ Casal, *Virampatnam* 28-29.

⁴⁵ Wheeler et al. 108, fig. 43, pl. 39.

⁴⁶ See Casal, *Virampatnam* 29. The objects are said to have come from the "Casa Republicana" found during the course of excavations on the Palatine Hill. This material was apparently never published. Excavations were begun by S.M. Puglisi in 1948 but because of his death only the material from the early periods was published; see *MonAnt* 41 (1951) cols. 1-98.

⁴⁷ Wheeler maintains that this deposit accumulated quickly and assigns some 20 years to it: Wheeler et al. 24-25. This interpretation was based upon very limited and uncertain evidence, and was advanced before the discovery of an earlier settlement at the site. A different interpretation is therefore offered here. Casal also excavated in the Northern Sector, but was confronted with the problems of high level of sub-soil water and disturbed strata: cf. Casal, *Site urbain* 9-11.

⁴⁸ The amphora shapes that could be reconstructed were published by Wheeler et al. (41-45). The three profiles from pre-Arretine layers are his nos. 46-48. No. 46 is described as a rim of pinkish buff ware; no. 47 as a carinated shoulder in pink ware with yellow slip; and no. 48 as a rim of yellow slipped buff ware, of the



Ill. 7. Arikamedu imported amphorae from Northern Sector: a-c) pre-Arretine layers; d-h) Arretine layers; i-k) post-Arretine layers. (After Wheeler et al. fig. 9.46-56)

Rouletted Ware is abundant and of high quality in the pre-Arretine layers of the Northern Sector.⁵¹ Among the associated pottery, gray wares predominate over red. Especially noteworthy is a vase with stamped decoration (Wheeler's Type 10) mentioned above. Another artifact of Mediterranean origin is a fragmentary bowl of blue glass.⁵²

The date for the beginning of Phase C depends of course on the end of Phase B—which possibly occurred in the late second to early first century B.C., according to the chronology suggested here.⁵³ The termination of Phase C can be placed at about the beginning of the Christian era, on the dating of the Arretine ware from the next phase.

"Kanchipuram Excavations," *Journal of Andhra Historical Research Society* 34 (1974-1975) 27. This reference apparently is mistaken, and may relate to sherds of Arretine ware mentioned in *IndArch* 1970-1971, 32. The sherds are not illustrated and I have not seen them.

⁵¹ Wheeler et al. 46.

Phase D

The only feature that distinguishes Phase D from Phase C is the presence of Arretine ware (ill. 8), an important import from the West for determining absolute dates. No specific changes can otherwise be seen in architecture, nor are there significant changes in other ceramic types. Sherds of Arretine ware, some with potter's marks, are found in both Sectors.⁵⁴ Their precise number is uncertain—perhaps around 50—but no more than 20 sherds are reported from stratified layers. The stratigraphic position of the sherds is clearest in the Northern Sector (AK II), where they can be related to other material.⁵⁵ In the Southern Sector, Wheeler reports one sherd from a pit

⁵² Wheeler et al. fig. 42.

⁵³ More precise dates may eventually be advanced if the amphora sherds are re-examined. For the three pre-Arretine ware shapes, see supra n. 48.

⁵⁴ Wheeler et al. 34-41.

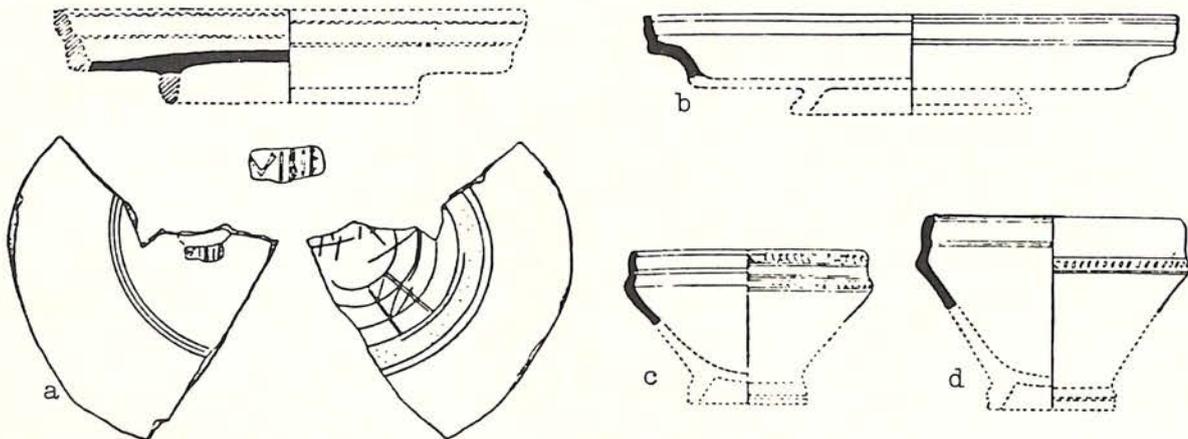
⁵⁵ Wheeler et al. fig. 2.

(Pottery Group A) which contains a large number of other fragments, including one with a Tamil-Brahmi inscription.⁵⁶ The pit is sealed by structures of the following phase and therefore is significant for dating purposes.

Among the associated wares, according to Wheeler, amphora sherds continue and Rouletted Ware remains abundant and of high quality. The quantity of red wares seems to increase, so that they are almost equal in number with gray wares. A new shape is a bowl (Wheeler's Type 18), somewhat similar to Arretine ware types,⁵⁷ which may have inspired its production.

The dates of Phase D are linked to the dating of Arretine ware in the West. Wheeler had originally given 20–50 A.C. as an all-inclusive period for the

Arretine ware sherds found at Arikamedu,⁵⁸ for two reasons. First, since Arikamedu does not show any discontinuity of occupation, he believed that cessation of import at the site could only be the result of stoppage of production. Second, he considered the simple types of Arretine ware found at Arikamedu (as against a wider range in the West) an indication of a relatively late phase of production. Regarding the first hypothesis, it should be pointed out that, although the occupation at Arikamedu was continuous, significant changes did take place in the post-Arretine ware phase. Consequently, there could be other reasons for the stoppage of this particular import.⁵⁹ As to the second argument, much work has been done on Arretine ware in the West since Wheeler's time, and more precise dates for several sites are now available.⁶⁰ On the



Ill. 8. Arretine Ware from Wheeler's and Casal's excavations. (After Casal, *Virampatnam* fig. 7)

⁵⁶ Wheeler et al. 23, 36.

⁵⁷ Wheeler et al. fig. 18. Also see Casal, *Virampatnam* 37.

⁵⁸ Wheeler et al. 22. Slightly revised dates appear in his two later publications. In "Roman Contact" (supra n. 32) 257, he mentions 25–45 A.C.; but in *Rome Beyond the Imperial Frontiers*, (supra n. 32) 148, he adds: "Moreover, some of the Arretine Ware dates probably from the first quarter of the 1st century A.D." He does not however suggest revision of dates for the pre-Arretine ware layers.

⁵⁹ H. Comfort suggests the possibility that Arretine ware imports may have ceased at Timna' and Arikamedu "at the same time and for the same reasons"; see his "Imported Pottery and Glass from Timna'," in R.B. Bowen and F.P. Albright eds., *Archaeological Discoveries in South Arabia* (Baltimore 1958) 199–212.

⁶⁰ It is not the intention here to include a discussion on the dating of Arretine ware since the subject has been treated by various experts in the field. No recent re-examination of the Arikamedu Arretine ware is known to the present author. However, the most pertinent recent evidence for the dating of Arretine ware from other sites comes from a Tiberian pottery deposit from Corinth, which

was supposedly sealed by the earthquake of A.D. 22/3. For details see K. Slane Wright, "A Tiberian Pottery Deposit from Corinth," *Hesperia* 49 (1980) 135–77; see also J.W. Hayes, "Roman Pottery from the South Stoa at Corinth," *Hesperia* 42 (1973) 416–70; M.T.M. Moevs, "New Evidence for an Absolute Chronology of Decorated Late Italian Sigillata," *AJA* 84 (1980) 319–27. For additional comparative material see, e.g., C. Albrecht, *Das Römerlager in Oberaden und das Uferkastell in Beckinghausen an der Lippe 1. Bodenbefund, Münzen, Sigillaten und Inschriften* (Darmstadt 1938); E. Ettliger and R. Fellmann, "Ein Sigillata-Depotfunde aus dem Legionslager Vindonissa," *Germania* 33 (1955) 364–73; H. Goldman ed., *Excavations at Gözli Kule, Tarsus 1. The Hellenistic and Roman Periods* (Princeton 1950) 172–200; K. Hähnle, "Ausgrabungen bei Haltern," *Mitteilungen des Altertumskommission für Westfalen* 6 (1912) 33–100; S. Loeschke, "Keramische Funde in Haltern," *Mitteilungen des Altertumskommission für Westfalen* 5 (1909) 101–322; A. Oxé, "Die Funde von Haltern seit 1925," *Bodenaltertümer Westfalens* 6 (1943) 15–76.

basis of these studies, the first quarter of the first century A.C. seems to be the most appropriate time range for the Arretine ware found at Arikamedu. Accordingly, Phase D should also be placed within the same time-span.

Phase E

The sequential development following Phase D finds clearest evidence from Wheeler's excavations, with which Casal's material may also be correlated. Judging from Wheeler's data, Phase E, which immediately follows the cessation of Arretine ware imports, exhibits some distinctive changes in ceramic preferences. Although amphorae—and therefore amphora-related trade commodities, wine and oil—continue to be imported, Rouletted Ware decreases and is said to be inferior in quality. Wheeler mentions that red wares outnumber gray wares, and spouts and lug-handles appear for the first time. What is puzzling, however, is that finer wares do not seem to have been in great demand, although the architectural activity points to economic prosperity.

During Phase E, both Sectors remained in occupation, to judge from the stratigraphic position of Arretine ware. Structures of Wheeler's "Early Phase, Sub-period 2" in the Southern Sector should be more or less contemporary with the "Warehouse" of the Northern Sector, which must have been built around the time when the importation of Arretine ware stopped.⁶¹ Evidence for continued building activity in both Sectors is also present in Casal's excavations (Groups II, III and IV).⁶²

Among the structures, the most distinctive are the "Warehouse" in the Northern Sector, and the "Dyeing Tanks" with their walled quadrangles and the "Lined Pits" in the Southern. The construction of the "Warehouse" indicates increased commerce; if the other buildings pertain to the textile industry as suggested by Wheeler, then the whole complex could indicate the emergence of an important industry of some magnitude at Arikamedu. Whether it started during Phase E, as is indicated by structural stratigraphy in Wheel-

For the study of stamps see A. Oxé and H. Comfort, *Corpus Vasorum Arretinorum* (Bonn 1968) 91-96, 518-35.

I am greatly indebted to Professor H. Comfort for his comments and suggestions. He has also drawn my attention to the two "marbled" sherds excavated by Wheeler. Wheeler et al. 36, had classified them under Arretine ware. These sherds, if re-examined, may prove to be significant for determining the date for the end of Phase D at Arikamedu. In my earlier article (*supra* n. 24) I had mentioned L. Ohlenroth's dating of Arikamedu Arretine ware as discussed by him in "Zur Datierung der Funde von Arikamedu," *Ger-*

er's excavations, or in a modest way even earlier during Phase C (Lined Pits in Casal's Group II) must remain unresolved until a larger area is cleared.

The end of Phase E was marked by extensive brick-robbing in the Southern Sector; obviously some of the structures had gone out of use or outlived their utility. The Northern Sector, on the other hand, may have been abandoned; at least that is what the present evidence suggests. Since Phase E postdates the importation of Arretine ware, its beginning should be placed in the second quarter of the first century A.C. Its duration, and that of the following two phases, can only be tentatively estimated on the basis of repeated building activity. Wheeler had calculated between one to two centuries for the structural stages. Accordingly, in the absence of any other precisely datable material, approximately 50-plus years have been assigned to Phase E and some 100 years to Phases F and G combined in the Table above.

Phase F

During Phase F, which corresponds to Wheeler's Middle Phase (Sub-periods 1, 2 and 3), building and rebuilding activity continues in the Southern Sector.⁶³ Whether or not new locations were sought to compensate for the loss of the Northern Sector remains to be examined. An innovation of this phase was the corbelled drain, a marked improvement over the drains of the earlier phases. Since the drains were very much a part of the presumed textile industrial complex, it is obvious that this particular industry continued to thrive. In ceramics there is no distinctive change. The supply of amphorae continues, implying continuity of trade with the West.

Phase G

Phase G, Wheeler's Late Phase, represents the last stage in the history of the ancient settlement of Arikamedu, during which its prosperity seems to have declined considerably. Stratigraphically, it is not entirely clear whether there was any break in the continuity of the occupation between Phases F and G.⁶⁴ Building

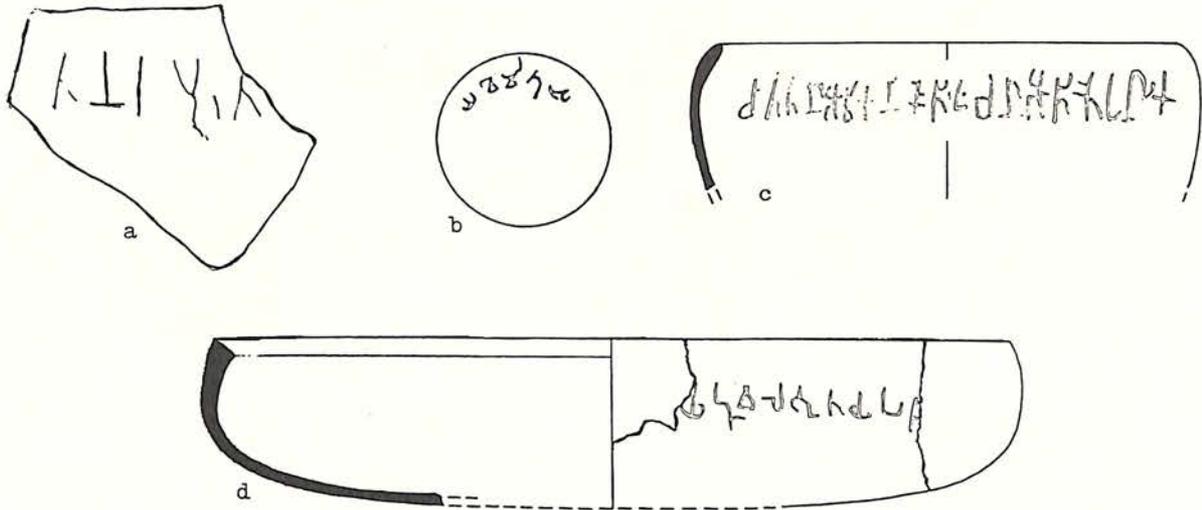
mania 20 (1952) 389-92. Since Ohlenroth's dating is no longer accepted, the dates proposed here supersede those mentioned in my earlier work.

⁶¹ Wheeler et al. 24.

⁶² Casal has correlated the structures from his excavations with Wheeler's Sub-periods on the basis of brick sizes and ceramics: *Site urbain* 9-10. However, he does not give the details of either. Therefore, a detailed analysis of the material is not possible.

⁶³ Wheeler et al. 29-31.

⁶⁴ Wheeler et al. 32.



Ill. 9. Arikamedu pottery inscribed in Brahmi script: a) from Ar. R5, Southern Sector (after Casal, *Virampatnam* pl. 13-D); b) AK IV 198 (Wheeler et al. fig. 46.3); c) AK II 571 (Wheeler et al. fig. 46.9); d) unstratified (Wheeler et al. fig. 47.20)

continued during this phase, but the structures are not aligned with those of the earlier phases. General deterioration is evident in local ceramics as well, as reported by Wheeler and Casal. Nevertheless, Wheeler points out that amphora sherds continue, implying that the source of supply was still open.

With no precise means of dating available, Phases F and G may be tentatively placed in the second century A.C., as stated above. The end of the ancient settlement may be related to the shift in trade, presuming that its economy was primarily dependent upon it. As stated earlier, some scholars believe that the fate of several sites along the eastern coast was conditioned by the drop in sea-level, or perhaps by the shifting focus of trade due to political or other factors.

THE INSCRIBED SHERDS

The revised dates proposed above for the Arikamedu sequence have a direct bearing on the study of the Tamil-Brahmi inscriptions from the site and from elsewhere (ill. 9). The Arikamedu inscriptions are graffiti on pottery; 20 inscriptions were published by Wheeler, 18 from his and two from earlier French

excavations.⁶⁵ As mentioned above, an additional inscribed sherd was excavated by Casal. More recently, yet another inscription has been published by Mahadevan.⁶⁶ A few inscribed sherds have been found at other Early Historical sites as well, such as Salihundam, Kanchipuram and Uraiyur in South India, and Kantarodai and Anuradhapura in Sri Lanka.⁶⁷ Therefore, the practice seems to have been fairly common and may have been a legacy of the Iron Age, for graffito markings were quite common on the pottery of the so-called "Megalithic" cultures and also exist at Arikamedu.⁶⁸ But when Brahmi script was introduced in South India in the middle of the third century B.C., the earlier marking system was gradually replaced by the new scripts that developed from it.

The Arikamedu inscriptions are brief (the longest has 19 characters) and frequently contain no more than a name. The pots on which the inscriptions occur show a wide variety in types and do not form a homogeneous group. Obviously it was not a specific ceramic type that was being labelled.

For the study of the development of early Tamil-Brahmi only two dates have been considered "se-

⁶⁵ Wheeler et al. 109-14.

⁶⁶ I. Mahadevan, "Arikamedu Graffiti: A Second Look," *Damila* 2.3 (1973) 63, fig. 5.

⁶⁷ No relative study of the inscriptions from these sites has yet been done. For brief references to the inscriptions from Kanchipuram and Korkai, see supra n. 8. For Salihundam, see Subrahmanyam, (supra n. 35) 84. For Anuradhapura, see Deraniyagala

(supra n. 26) 122-30. At Kantarodai one sherd inscribed in Brahmi characters was found by myself and other colleagues in 1970, during the course of a brief excavation undertaken by the University of Pennsylvania Museum. The sherd is presently in the collection of the Department of Archaeology, Colombo.

⁶⁸ Casal, *Virampatnam* fig. 21.

cure"—the dates of Asokan epigraphs and Wheeler's dates for Arikamedu. Even though the inscriptions are few and brief, much work has been done by epigraphists on defining the early forms of the language and determining the typology of the script.⁶⁹ But, as mentioned above under Phase B, because the archaeological context of the Arikamedu graffiti was considered to be securely dated to the first-second centuries A.C. by Wheeler, inscriptions which on palaeographic grounds appeared to be earlier were sometimes assigned later dates. In addition, all the graffiti from Arikamedu were collectively attributed to that time span.⁷⁰

The longer chronology and the more detailed breakdown of the sequential phases outlined here obviously imply that all the graffiti from the site were not from one specific period. This fact is also clearly evident from the forms of the characters in the inscriptions. Whether or not it will help in refining the typology of the script, the relative archaeological dating of the inscribed sherds should be attempted nevertheless. The sherd from Phase A, cited above, should be at least as early as the second century B.C., while the one from Phase D (AK IV 198), associated with Arretine ware, should date from the first quarter of the first century A.C. (ill. 9b). Six sherds from Wheeler's trenches in the Northern Sector could also be considered no later than the first century A.C.⁷¹ Unfortunately the precise stratigraphic position of most of the sherds is not published. Therefore, at present, a complete correlation with phases cannot be worked out, but it should eventually be feasible to do so from the excavation records. This approach would provide more precise dating for individual inscriptions and perhaps take us a step further in tracing the chronological development of the Tamil-Brahmi script.

We may also ask the question whether the inscriptions, brief as they are, tell us anything about the people who wrote them. First of all, of the 22 inscriptions,

19 have been identified as being in Tamil, two in Prakrit, and the last is uncertain.⁷² It may therefore be assumed that Tamil was the language in common use. The writers of the Prakrit inscriptions probably came from a different linguistic background and may have been traders. Regarding the first Prakrit inscription (AK IV 198), because of the similarity of the characters to those of the Kushan period, Mahadevan states that "the pottery was probably imported from North India, or, at any rate, the scribe was a Northerner."⁷³

The other Prakrit inscription is on an unstratified sherd, presumably from earlier French excavations, now in the collection of the French Institute, Pondicherry (no. I-13). The inscription was published by Mahadevan,⁷⁴ and probably is the same one alluded to by Filliozat.⁷⁵ On the basis of the reading of this inscription, . . . *yya de dhamo* ("pious gift of . . ."), which is quite common on votive Buddhist inscriptions, Mahadevan also raises the possibility that a Buddhist place of worship existed at Arikamedu. This would not be surprising, for glass beads with Buddhist symbols have been found there⁷⁶; other Early Historical sites, such as Dharanikota/Amaravati, Kanchipuram and Kaveripattinam, demonstrate the existence of Buddhist religious structures at or near the urban center. It should be pointed out, however, that there is still no archaeological evidence for a religious edifice of any kind at Arikamedu.

ARIKAMEDU AS A TRADING SETTLEMENT

That Arikamedu was a coastal trading settlement is indisputable. In fact the site is unique since it is the only one in all South India which has yielded evidence for continuous trade with the West over an extended period of time. Other sites are occasionally said to have items of Mediterranean origin, but the evidence so far is not adequate to vouch for extensive or direct trade. As a result of his excavations, Wheeler concluded that Arikamedu was an Indo-Roman trading

⁶⁹ See Casal, *Virampatnam* 63; as well as comments in Wheeler et al. 109-14. Relevant are also two articles by M.J. Filliozat, "Les Inscriptions de Virampatnam," *CRAI* Jan. 1947, 107-18; "Les échanges de l'Inde et l'Empire Romain aux premiers siècles de l'ère Chrétienne," *La Revue Historique* 201 (1949) 1-29. Among more recent studies are three important ones by Mahadevan, *Tamil-Brahmi Inscriptions* (Madras 1970); "Tamil-Brahmi Inscriptions of the Sangam Age," *Proceedings of the II International Conference Seminar of Tamil Studies, January 1968* (Madras 1971) 73-106; and *Damilica* 2.3 (supra n. 66) 60-64.

⁷⁰ See N.P. Chakravarti's comment in Wheeler et al. 109.

⁷¹ The six sherds from AK II are nos. 5-9 in Wheeler et al. 111-12. Since the Northern Sector was abandoned after Phase E, it

would appear that these sherds were no later.

⁷² See Mahadevan's revised reading of some of the inscriptions in *Damilica* 2.3 (supra n. 66). The inscription from Casal's excavation is not included in Mahadevan's list.

⁷³ Mahadevan, *Damilica* 2.3 (supra n. 66) 60. Filliozat, in "Les Inscriptions de Virampatnam," (supra n. 69) 117, considered this inscription to be of the 2nd-3rd century A.C., but Mahadevan's dating in the 1st century A.C. is closer to the dates assigned here to Phase D, in which this inscription occurs.

⁷⁴ Mahadevan, *Damilica* 2.3 (supra n. 66) 63.

⁷⁵ Filliozat, "Les Inscriptions" (supra n. 69) 117-18.

⁷⁶ See Casal, *Virampatnam* pl. 13C.

station which was first established during the time of Augustus and continued to flourish for about two centuries thereafter. He believed that earlier trade with the Mediterranean, if any, could only have been "spasmodic."⁷⁷ Casal, proceeding on similar lines, found evidence for the earlier intermittent trade from his "intermediate" levels. It is important to pursue the matter of trade further; to do so, it is necessary at this point to separate the commerce of the first few centuries A.C. from that of the preceding period.

Pre-Roman Phase

The archaeological evidence at Arikamedu for possible pre-Roman contacts with the Mediterranean area, discussed above under Phases B and C, suggests that there was some systematic trade between the southeastern coast of India and the West—probably through Arab or other intermediaries—prior to the beginning of Indo-Roman trade in the first century A.C. Furthermore, the evidence from Casal's excavations indicates that Arikamedu was first settled after the period of Mauryan contact with South India. Asokan inscriptions clearly point to diplomatic connections between the Mauryans and the Mediterranean area during the third century B.C., for Asoka sent cultural missions to the kingdoms of contemporary Hellenistic rulers—specifically Antiochus II Theos of Syria, Ptolemy II Philadelphus of Egypt, Antigonos Gonatas of Macedonia, Magas of Cyrene and Alexander of Epirus.⁷⁸

Asokan missionaries most probably traveled overland, for the northern route of communications was well established from the time of Alexander's invasion of the northwestern regions of the Indian subcontinent in 327/6 B.C. It is quite likely that extensive contacts with the Hellenistic world would have extended to South India as well, especially to the Coromandel coast which was known for its pearl industry. As early a writer as Megasthenes speaks of the pearl industry

of the Mannar Gulf,⁷⁹ which was probably the greatest attraction of the southeastern coast at that time.

Archaeological research has now revealed the existence of the coastal site of Korkai, with a radiocarbon date early in the first millennium B.C. Evidence from other coastal sites for pre-first century A.C. settlements and trade networks has also been set out in the discussion of Phase B.

At Arikamedu, the amphora sherds in Phase C are certainly of Mediterranean origin, and the stamped decorations on some of the other pottery (Wheeler's Type 10) also seem to have been influenced by Western ceramic traditions. Still earlier, in Phase B, the technique of "rouletting" also appears to have been introduced from the West. Rouletted Ware was most probably manufactured locally, but whether some actual imported prototypes exist at Arikamedu will remain uncertain until the ceramics are better analyzed.

The trade network for Rouletted Ware was vast (ill. 1), although its exact extent during the pre-Roman phase remains to be worked out precisely. It did extend at least as far north as Salihundam in Andhra Pradesh, since some of the inscribed Rouletted Ware sherds from that site date from the second and first centuries B.C. Thus, the cumulative evidence implies that there was a series of interrelated southeastern coastal settlements during the second and first centuries B.C. Arikamedu was already an established trading center during the pre-Roman phase, but witnessed intensification of trade with the beginning of the Roman phase.

Roman Phase

Many scholarly studies exist on the question of Roman trade with India; it is not the intent here to review this extensive literature.⁸⁰ The discussion below focuses primarily on the archaeological evidence for that trade at Arikamedu, and how it relates to the South Indian peninsula. The evidence from early Ta-

⁷⁷ Wheeler et al. 22.

⁷⁸ Major Rock Edict XIII of Asoka; for text and translation see E. Hultzsch, *Inscriptions of Asoka* (Corpus Inscriptionum Indicarum 1, Delhi 1969 reprint) 22-25; for identifications of names see R. Thapar, *Asoka and the Decline of the Mauryas* (Oxford 1961) 40-41.

⁷⁹ J.W. McCrindle, *Ancient India as Described by Megasthenes and Arrian* (Calcutta 1960) 60-61, 115.

⁸⁰ For Roman trade with the East, the most comprehensive general works are: M.P. Charlesworth, *Trade-routes and Commerce of the Roman Empire* (Cambridge 1926); E.H. Warmington, *The Commerce between the Roman Empire and India* (Cambridge

1928); J.I. Miller, *The Spice Trade of the Roman Empire* (Oxford 1969). Important sources dealing more specifically with the Indo-Roman trade are: P.L. Gupta, "Roman Trade in India," in S.S. Mookerji *Felicitation Volume* (Varanasi 1969) 169-80; W. Schmitthenner, "Rome and India: Aspects of Universal History During the Principate," *JRS* 69 (1979) 90-106; H.G. Rawlinson, *Intercourse Between India and the Western World* (Cambridge 1916); J. Thorley, "The Development of Trade Between the Roman Empire and the East under Augustus," *Greece and Rome* 16 (1969) 219-23; Wheeler, *Rome Beyond the Imperial Frontiers* (supra n. 32).

mil literature is limited and of uncertain date; consequently it is useful only for reinforcing the premise of a prosperous overseas trade and the arrival of foreign mercantile vessels into the harbors of South India.⁸¹

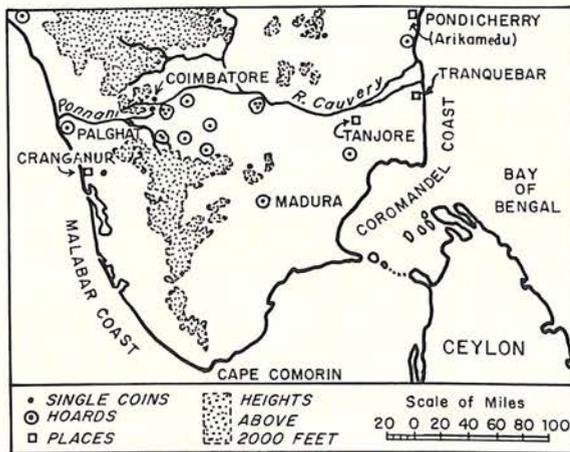
Prior to the excavations at Arikamedu, the most important artifactual evidence for Roman trade with South India was the large number of Roman *denarii* and *aurei* found in "hoards" since 1775, each containing from one to several hundred coins.⁸² Some seventy-five finds are known, totaling several thousand coins—the vast majority of which were minted during the time from Augustus to Nero. Many of the find-spots for these early coins are clustered in the Coimbatore region of peninsular India, and consequently seem to have significance for the Arikamedu trade (ill. 10). Surprisingly, no Roman coins have been found at Arikamedu, nor are they reported from other coastal sites as a general rule.⁸³

The Coimbatore region is on the main route of inland communication between the western and the eastern coasts via the Ponnani valley. The area is rich

in beryl deposits and could also have been the supply source for other commodities, such as pepper and cotton. Thus, the geophysical features of the region would partially account for the accumulation of early finds in that area.

The locations of the coin finds in the Coimbatore region, combined with references to numerous ports on the western coast in the *Periplus Maris Erythraei* led Wheeler to hypothesize that early Roman trade (i.e., from the time of Augustus to Nero) was with the southwestern (Malabar) coast and not the southeastern (Coromandel). We have no certain evidence as to when and under what circumstances Roman ships rounded the peninsula and established direct trading emporia on the southeastern coast. Despite the presence of Arretine ware in his excavations at Arikamedu, Wheeler maintained that during the first part of the first century A.C. trade was most probably carried on from the ports of the Malabar coast. From there commodities were transported overland via the Coimbatore gap to Roman emporia like Arikamedu on the east coast—the eastern emporia being necessary for controlling the indirect trade with the North and Sri Lanka.

In 1951, Wheeler claimed that "down to the third quarter of the 1st century A.D., therefore, there was no regular direct communication between Rome and Ceylon. It follows that Roman vessels were not at that time in the habit of rounding Cape Comorin; and this inference confirms and explains the importance of the overland route from west to east through the Coimbatore gap during the period of the Coimbatore hoards, i.e. from Augustus to Nero."⁸⁴ In 1954, Wheeler reiterated this belief: "It is a fair inference that Roman agencies established in the east coast ports under Augustus and Tiberius were, so far as the Westerners were concerned, the termini of trans-peninsular routes, and that only towards the end of the 1st century were the western and eastern ports linked also by regular circumpeninsular traffic."⁸⁵ However, in the light of his and Casal's excavations at Arikamedu, it is



Ill. 10. Map of South India showing distribution of Roman coins of first century A.C. (After Wheeler, *Rome Beyond the Imperial Frontiers* fig. 17)

⁸¹ K.V. Zvelebil lists ten references to the *Yavanas* in the Tamil Sangam texts: *The Smile of Murugan* (Leiden 1973) 35, n. 1. For the dating of the literature see his *Tamil Literature* (Leiden 1975).

⁸² A list of Roman coins found in India, compiled from earlier sources, was published by Wheeler et al., 116–21, along with the Arikamedu excavation report. A revised version of the same list appears in Wheeler, "Roman Contact" (supra n. 32) 375–81. For a more up-to-date listing, see C. Rodewald, *Money in the Age of Tiberius* (Manchester 1976) table 5, n. 378. P.L. Gupta made a study of a large number of coin collections: *Roman Coins from An-*

dhra Pradesh (Hyderabad 1965). Five relatively recent finds have been reported in *IndArch* 1956–1957, 38; 1970–1971, 62; 1972–1973, 55; 1975–1976, 72; 1976–1977, 71.

⁸³ One coin is reported from the excavations at Nagarjunikonda: see *IndArch* 1956–1957, 38; one coin is said to have been found at Kaveripattinam, but no other details have been furnished by Ramani, (supra n. 8) 239.

⁸⁴ Wheeler, "Roman Contact" (supra n. 32) 370.

⁸⁵ Wheeler, *Rome Beyond the Imperial Frontiers* (supra n. 32) 144–45.

difficult to accept the proposition that direct overseas trade to and from Arikamedu did not exist before the third quarter of the first century A.C.

At present, the South Indian ceramic evidence also does not support Wheeler's claim for a direct trans-peninsular trade route from the Malabar to the Coromandel coast. Rouletted Ware occurs on the Coromandel coast and Sri Lanka, but its distribution on the Malabar coast is not yet known, while Russet-coated Painted Ware—a distinctive ceramic of the Early Historical period—is quite common in the Coimbatore region and occurs on the Malabar coast as well. Russet-coated Painted Ware is represented by only one sherd at Arikamedu, and as a rule is not found on the Coromandel coast.⁸⁶ The two ceramic types do occur simultaneously in the interior, for instance at Uraiyur on the river Cauvery.⁸⁷ The distinctive distribution of these two important and widespread ceramic types suggests that trade between the eastern and western coasts was not direct, but was instead through intermediate centers such as Uraiyur. If this hypothesis proves to be correct, then it would seem doubtful that "Roman" merchants regularly traversed the inland route from the western to the eastern coast, as Wheeler proposed.

Returning to the question of coins, P.L. Gupta interprets the numismatic evidence slightly differently from Wheeler. In trying to reconstruct the chronology of the trade on the basis of the coin types and their distribution, he concludes that in the first century A.C. trade was carried on from ports like Tondi and Muziris on the Malabar coast, and Korkai and Kaveripattinam on the Coromandel; later the trade shifted to ports farther north.⁸⁸ Although this is quite possible if we include Arikamedu on the list, nevertheless the ports of the Malabar coast have not yet been archaeologically identified; Korkai and Kaveripattinam, although partially excavated, do not have the same kind of precise documentation for Mediterranean trade as Arikamedu during the first century A.C.

At Arikamedu, the period of Roman trade starts in Phase D—i.e., toward the beginning of the first century A.C.—and continues for about two centuries,

through Phases E, F and G. The imports that survive from these phases are primarily ceramics: approximately 150 sherds of amphorae (including those from Phase C) and about 50 or so sherds of Arretine ware, representing an uncertain number of vessels. Other artifacts of Mediterranean origin consist of fragments of glass bowls, two fragmentary Roman lamps, a crystal gem and perhaps a stylus. The total number of imported artifacts is not impressive per se; in assessing the quantitative value of these finds for determining the volume of trade, it should, however, be remembered that only a mere fraction of the original site has been excavated, and that the most vital area of the settlement in the Northern Sector has been permanently destroyed by the river.

Items of export from Arikamedu were probably jewelry, specifically beads of semi-precious stones and shell bangles; worked ivories; textiles; and perhaps leather or leather-products.⁸⁹ Spices, incense and other perishables were most probably exported, but no archaeological documentation exists. Much of the industrial production must have been local, but except for shell and perhaps amethyst, raw materials must have been brought from the inland regions.

It is puzzling, however, that Arikamedu appears to be the only site of its kind so far, for one could reasonably expect other comparable trading centers on the southern part of the Coromandel coast, simply because of geography. Some of the other sites where Rouletted Ware occurs may also have been engaged in overseas trade with the West, but more extensive research is needed before definite conclusions can be drawn.

Wheeler's hypothesis that Arikamedu may have been a supply center for other settlements on the eastern seaboard (and those in Sri Lanka should also be included) has considerable validity. In fact, the hypothesis is strengthened by more recent evidence pertaining to the distribution of Rouletted Ware along the eastern coast. Since Wheeler's excavations, some archaeological work has been done in Sri Lanka as well, and three sites yielding Rouletted Ware have been excavated. At Kantarodai, in northern Sri

⁸⁶ One sherd from Arikamedu, illustrated on pl. 31.C1 of Wheeler's report, is clearly of the Russet-coated Painted Ware type, both in shape and decoration, although it is not labelled as such. Since it is from Wheeler's "Southern Sector, Early Phase," it should belong to either Phase C or D of the present classification.

⁸⁷ For summaries of the Uraiyur excavations, see *IndArch* 1964-1965, 25-26; 1965-1966, 26; 1967-1968, 30-31. Two other sites, Karur and Kodumanal, published in a recent article, also ap-

pear to fall within this category: see R. Nagaswamy, "Roman Sites in Tamil Nad: Recent Discoveries," in *Madhu: Recent Researches in Indian Archaeology and Art History* (Delhi 1981) 337-39.

⁸⁸ Gupta (supra n. 80) 172.

⁸⁹ Leather-working has been suggested by J.C. Nagpall on the basis of chemical analysis of limeshell incrustation on some of the pots from Arikamedu. See Nagaswamy and Abdul Majeed (supra n. 8) 25-27.

2.20

Lanka, a Roman-type carnelian cameo of the first century A.C. was found in the period of Rouletted Ware during the course of a limited exploratory excavation.⁹⁰ Two sherds of Rouletted Ware were found at Anuradhapura, and some are also reported from the current excavations at Mantai.⁹¹

The cumulative evidence seems to imply the existence of an extensive Rouletted Ware trade network. Many of the Rouletted Ware sites have only occasional items of Roman imports, the exception being Arikamedu (and perhaps Vasavasamudram), which has extensive material of Western origin. Therefore the archaeological evidence at present indicates two trade networks on the Coromandel coast: one along the eastern seaboard including northwestern Sri Lanka, the other trading with the Mediterranean directly—Arikamedu is part of both networks.

A large volume of the trade of this period must have come from the ports of the Roman Empire. Yet evidence that some of the merchant-sailors trading with the Mediterranean via the Red Sea may have been Tamil speakers now comes from two short Tamil-Brahmi inscriptions on potsherds found in recent excavations at the Egyptian coastal site of Quseir al-Qadim, in contexts associated with the period of Roman trade.⁹² Both inscriptions have been identified as parts of proper names, and dated on epigraphical grounds to the first or second century A.C. This is precisely the period when Arikamedu flourished as an Indo-Roman emporium, in continuation of what appears to have been the long standing function of the site as a trading center.

R.R. 6, BOX 247A
IOWA CITY, IOWA 52240

⁹⁰ The cameo was found in the 1970 excavations conducted by the University of Pennsylvania Museum, and publication of the material by Bennet Bronson is expected in the near future. For an earlier survey see V. Begley, "Archaeological Exploration in Northern Ceylon," *Expedition* 9.4 (1967) 20-29.

⁹¹ For Anuradhapura, see *supra* n. 26. The information on Mantai is from John Carswell (The Oriental Institute, University of

Chicago), who is presently excavating the site.

⁹² For the inscriptions and Mahadevan's reading, see D.S. Whitcomb and J.H. Johnson, *Quseir al-Qadim 1980* (American Research Center in Egypt Reports, Malibu 1982) 263-64. See also D.S. Whitcomb and J.H. Johnson, *Quseir al-Qadim 1978* (Cairo 1979) pl. 27.j.

CORRIGENDA

The following corrections should be made in Kristian Jeppesen, "Further Inquiries on the Location of the Erechtheion and its Relationship to the Temple of the Polias," *AJA* 87.3 (1983) 325-33:

1. P. 326, column 1, line 10: read ΤΟ ΕΝ ΤΟΙ ΓΡΟΣΤΟΜΙ[-
2. P. 333, column 1, line 9: read *προτοίσι*.

July 2, 1985

Dr. Vimala Begley
 R.R. 6, Box 247A
 Iowa City, Iowa 52240
 USA

Dear Dr. Begley:

Miss Grace has asked me to answer your letter of 11 May 1985, and also to acknowledge your letter of October 6 1982. Neither she nor her colleague, Maria Petropoulakou, are able to identify positively the amphora stamps in your photographs. If they had clearer black and white photos, together with rubbings of the stamps, they could perhaps give you more help. Meanwhile, they believe your stamped handles ~~may~~ be Knidian of the 1st c. B.C., one of them possibly of the fabricant Kleupithes. For published references, see Agora V, by Henry S. Robinson (p.20, F96); also Dr. Koehler's article, "Amphoras on amphoras" (p.285 note 6). Although Dr. Koehler describes other varieties of amphora stamps with amphoras, she illustrates only Corinthian, which yours certainly are not. Miss Grace also suggests you consult Délos XXVII, by V.R. Grace and M. Petropoulakou (ch. XIV, p.354), for a discussion of 1st c. Knidian stamps.

Miss Grace leaves Athens at the end of the week, possibly for several months, although her mailing address remains the same, and any further correspondence should be addressed again to Miss Grace, not myself.

Yours sincerely,

Claire Zimmerman

В.В. БРОК
 ДР. АТЕНСКОГО ПОСЛА

207A 3 1088

R.R. 6, Box 247A
Iowa City, Iowa 52240
U.S.A.
May 11, 1985

Professor Virginia Grace
The American School at Athens
Sovedias 54
Athens 140
Greece

Dear Professor Grace:

I am enclosing two photographs of amphorae handles from Arikamedu. The fragments are in the Pondicherry Museum, and as far as I know they are not published. The one with a number in ink must be from French excavations undertaken before Wheeler's work at the site, the other may be from surface collections.

The amphorae stamps look some what similar to the ones published by Carolyn Koehler in her article, "Amphoras on amphoras," in Hesperia (1982). But my knowledge of Greek amphorae is very limited. I showed the photographs to Elizabeth Will, she thinks they are not Roman. I would appreciate your comments, because if they are Greek the information would be very important for Arikamedu's trade.

Looking forward to hearing from you.

Sincerely,

Vimala Begley

Vimala Begley

3.03

V. Begley
R.R. 6, Box 247A
Iowa City, Iowa 52240

AIR MAIL



Professor Virginia Grace
The American School at Athens
Sovedias 54
Athens 140
Greece



S2 D4

4.5

12-11

4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

3.046

Arikamedu collection

Pondicherry Museum

(Besley 1984)



Asikamedu collection
Pondicherry Museum
(Begley 1984)

804 Ronalds Street
Iowa City, Iowa 52240
October 6, 1982

not ack,

Professor Virginia Grace
American School of Classical Studies
54 Swedias Street
Athens, 140
Greece

Dear Professor Grace:

Many thanks for your letter of August 26, and for the references to your publications dealing with the Arikamedu amphorae. I apologize for not writing earlier. I was hoping to see both your publications before I got in touch with you again. The Hesperia Suppl. we have. Amphoras and the Ancient Wine Trade is not in our library but I hope to have it soon. At your suggestion, I am also writing to Mlle. A. Hesnard.

Internal evidence at Arikamedu seems to indicate that the amphora-trade covered a fairly long period of time, i.e. from ca. first century B.C. to the second century A.C. Therefore, it is likely that there was more than one source. Stratigraphically, the earliest (published) shapes are Wheeler's 46-48. The question is could these be second-first century B.C.? They also seem to come from the same source as the prototypes for Indian Rouletted Ware. The rest of the shapes occur with Arretine ware or later and therefore are ca. first-second centuries A.C. It would be very important for the history of Arikamedu to pin-point the source and dates of the earliest amphorae (nos. 46-48).

If you come across any relevant evidence/references in the future please let me know. Thank you once again for your help.

Sincerely yours,
Vimala Begley
Vimala Begley

INDIA

4.02

American School of Classical Studies
54 Swedias St.
Athens, 140 Greece

August 26, 1982

Dr. Vimala Begley
804 Ronalds St.
Iowa City, Iowa 52240
USA

Dear Dr. Begley,

I am glad to hear that further use is being made of Wheeler's material from Arikamedu. Just at the moment, I am unable to give you precise help beyond the little that I have already published: see summary in my Picture Book, Amphoras and the Ancient Wine Trade (revised edition 1979), comments on figures 56-61. Cf. also mention of the Arikamedu material, Hesperia Suppl. VIII, 1949, p.189.

As it seems quite probable that Wheeler's material is "pseudo-Koan", i.e. Roman rather than actually from Kos, you might write to Mile. A. Hesnard:

École Française de Rome,
Palazzo Farnese,
Piazza Farnese, 67
00186 Roma

I should be interested to hear of the further progress of your studies on this subject.

Yours sincerely,

Virginia R. Grace

VRG/cz

804 Ronalds Street
Iowa City, Iowa 52240 U.S.A.
August 8, 1982

Professor Virginia Grace
American School of Classical Studies
Athens

Dear Professor Grace:

I am writing to you in connection with the possible identification and dating of some amphorae sherds which were excavated by Sir Mortimer Wheeler at Arikamedu in 1945. Enclosed are four xerox sheets from his excavation report.

I feel Wheeler's dating of Arikamedu material needs revision, but it is contingent upon the dating of several ceramic types. I understand it is now possible to date the amphorae more precisely. Stratigraphically, some of the Arikamedu amphorae sherds (especially, Wheeler's 46-48) should be pre-first century A.C. Unfortunately my knowledge of Greek or Roman archaeology is negligible, but Professor H. Comfort suggested that you may be able to help.

I would appreciate any comments or suggestions that you may have on the possible source or dating of these sherds.

Thank you and hoping to hear from you.

Sincerely,
Vimala Begley
(Dr. Vimala Begley)

R.E.M. Wheeler, et.al. "Arikamedu: An Indo-Roman Trading Station on the East Coast of South India," ANCIENT INDIA, NO. 2

In the course of the 1945 excavations, 116 amphora sherds, representing approximately the same number of vessels, were found. All sherds showing any part of the shape of the vessel are here illustrated (figs. 9 and 10).

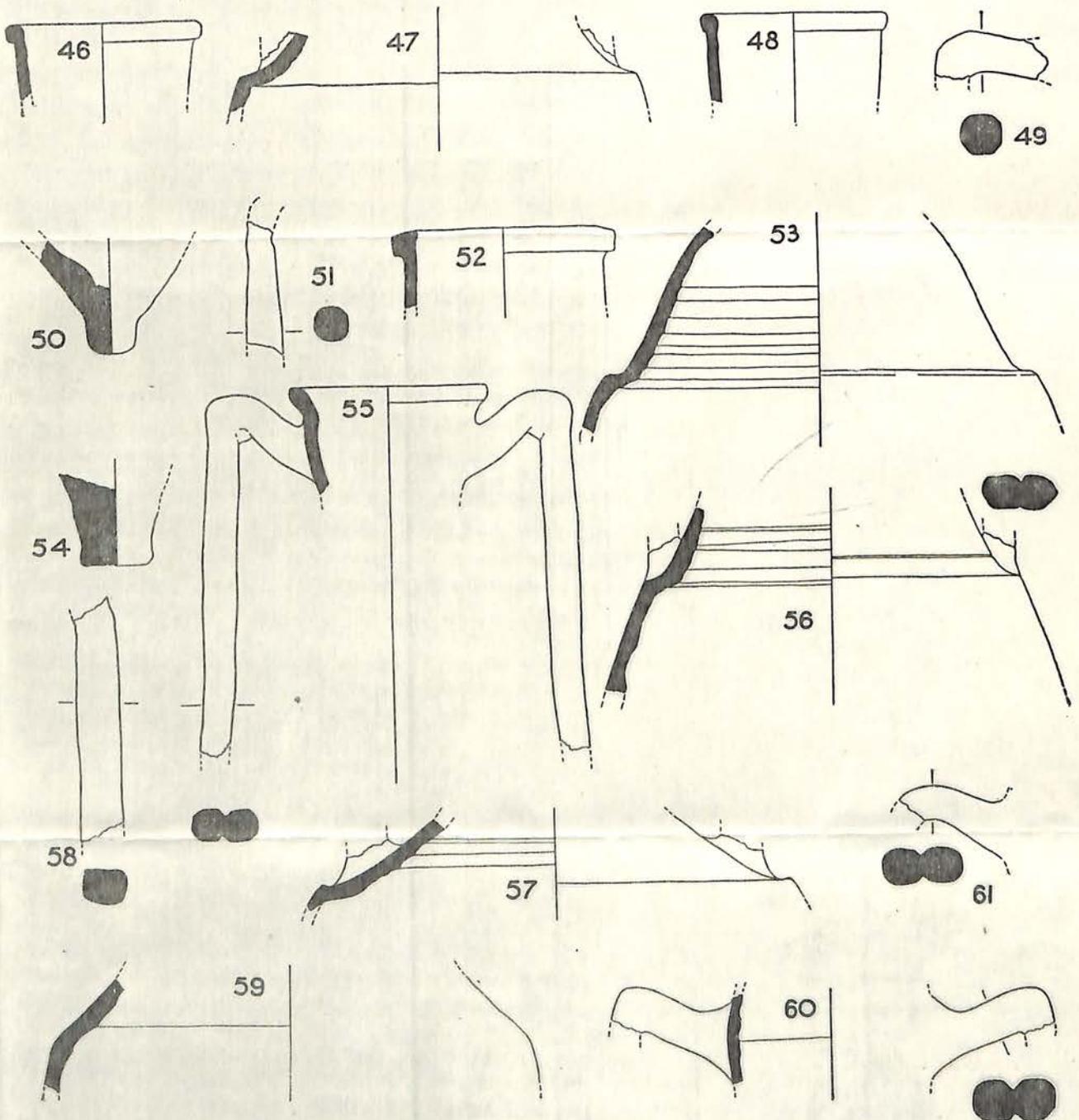


FIG. 9. Imported amphorae from stratified layers, Northern Sector. ¼

ARIKAMEDU

(a) Stratified amphorae from the Northern Sector

From pre-Arretine layers:

- 46. From AK II, stratum 14 (the lowest save one; 6 feet below present sea-level). Rim of pinkish buff ware.
- 47. Carinated shoulder, pink ware with yellow slip. From AK V, stratum 11A, underlying the wall of the 'warehouse' and equivalent to strata 13 and 14 on AK II.
- 48. Rim of yellow-slipped buff ware, same type as No. 46. From AK V, stratum 11, a pre-Arretine layer immediately below present sea-level.

From Arretine layers:

- 49. Fragment of handle of gritty pinkish buff ware from AK II, stratum 8A, which also contained a sherd of Arretine (above, p. 36).
- 50. Bluntly pointed base, of pink ware with yellow slip, from AK II, stratum 10A, which immediately overlay 8A.
- 51. Part of straight handle from AK II, stratum 7 Ar., which yielded most of the Arretine sherds from the site. Yellow ware.
- 52. From AK VIII A, stratum 7, which equates with the Arretine-producing layer 7 Ar. of AK II. Pinkish buff ware with yellow slip.
- 53. Angular shoulder from AK VIII, stratum 5, which equates with the Arretine layer 7 Ar. of AK II. Pink ware.

From post-Arretine layers:

- 54. Bluntly pointed base from AK II, stratum 7H, contemporary with the construction of the 'warehouse'. Pink ware, yellow slip.
- 55. Rim and straight high-shouldered handle, of pink ware. From AK II, stratum 9, immediately overlying 7 Ar. and equivalent to 7H (No. 54). The straight, high-shouldered handle is characteristic of the first half of the first century A.D. (Loeschke type 66, Ritterling type 73).
- 56. Angular shoulder, of pink ware with yellow slip. From the same stratum as No. 55.
- 57. Angular shoulder, pink ware with yellow slip, from AK II, stratum 7A, equivalent to that of Nos. 55 and 56.
- 58. Straight handle, pinkish ware with yellow slip, from AK II, stratum 7D, make-up of floor of 'warehouse'.
- 59. Bluntly carinated shoulder, pinkish ware with yellow slip. From AK II, stratum 6, make-up of floor of 'warehouse'.
- 60, 61. Short handles, pink ware with yellow slip, from AK V, Pit 1, subsequent to destruction of 'warehouse'. This stumpy type of handle is contemporary with the tall straight type, No. 55, but also long out-lived it.

(b) Stratified amphorae from the Southern Sector (AK IV)

- 62. Rim, pink ware, from Pottery Group A (with sigillata base stamped ITTA), immediately underlying the earliest-but-one of the brick structures.
- 63. Angular shoulder, fine pinkish buff ware, dating from the beginning of the main 'Drain Period'.
- 64. Stumpy handle, pinkish buff ware, from the same layer as No. 63.
- 65. Fragment of straight handle, from a slightly later structure of the same phase as Nos. 63-4. Pink ware with yellow slip.
- 66. Pointed base, pink ware with yellow slip. Late 'Drain Period'.
- 67. Fragment of handle of gritty pink ware. Late Phase.
- 68. Fragment of handle of fine yellow clay. Late Phase.
- 69. Fragment of straight handle, gritty pink ware. Late Phase.

(c) From mixed deposits of the Northern Sector

- 70. Fragment of handle, pink ware with yellow slip. (AK II.)
- 71. Straight handle, pink ware. (AK II.)
- 72. Rim, buff ware. (AK II.)
- 73. Part of straight handle, pink ware with buff slip. (AK II.)
- 74. Rim, pink ware. (AK II.)

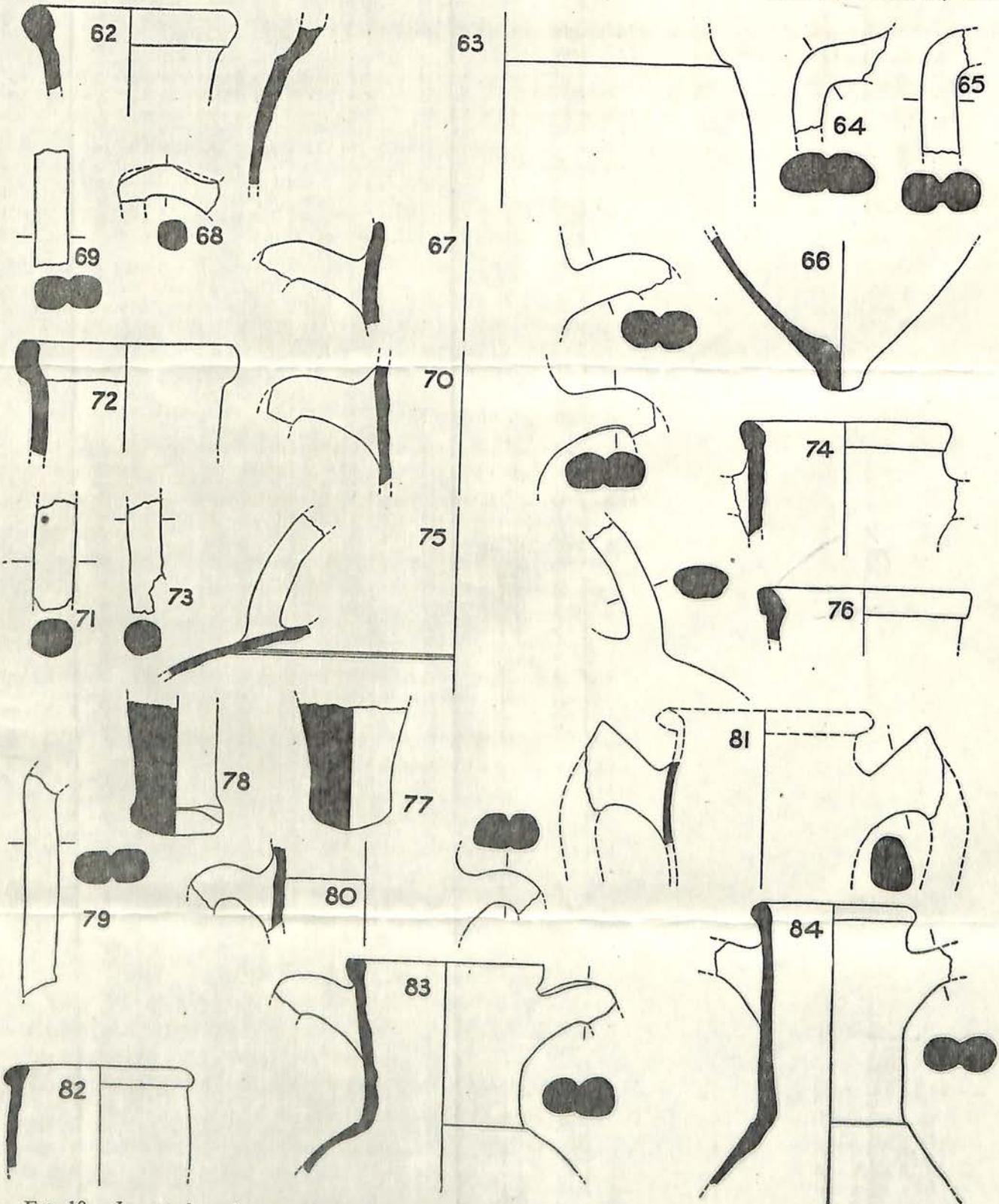


FIG. 10. Imported amphorae : 62-69, from stratified layers, Southern Sector ; 70-84, from mixed layers. $\frac{1}{4}$

ARIKAMEDU

75. Curved handle, fine pink ware with yellow slip. (AK VIII.)
76. Rim, pinkish ware with yellow slip. (AK VIII.)
77. Bluntly pointed base, pink ware with yellow slip. (AK VIII.)
78. Bluntly pointed base, pink ware. (AK VIII.)
79. Straight handle, pinkish ware with buff slip. (AK VII.)

(d) From mixed deposits of the Southern Sector

80. Fragment of handle, pink ware with yellow slip. (AK IV.)
81. Sharply shouldered handle, fine pinkish ware with yellow slip. This type of handle occurs at Haltern early in the first century A.D. and is found rarely at Hofheim towards the middle of the century. It is exceptional after A.D. 50. (AK IV.)
82. Rim of pink ware, traces of yellow slip. (AK IV.)

(e) From the previous (French) excavations

- 83-84. Necks of amphorae of light pink ware, 83 with buff slip.

Note: an amphora from Taxila

The only other Indian site known to have yielded an amphora of Mediterranean type is Taxila (Punjab), where an example (fig. 11) was found at a depth of 7 feet 4 inches in the Parthian city of Sirkap, and is dated by Sir John Marshall to the first centuries B.C.-A.D. Now in the Taxila Museum. Unlike the Arikamedu amphorae, which must represent maritime trade, the Taxila example is on general grounds more likely perhaps to have travelled overland from western Asia.

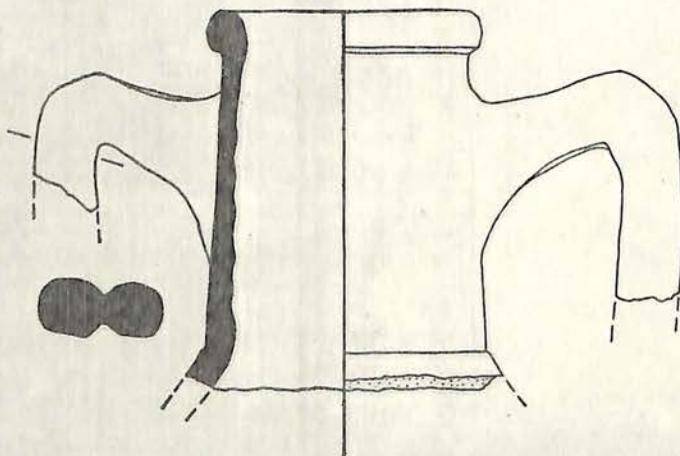


FIG. 11. Imported amphora from Taxila, Punjab. $\frac{1}{3}$

(iii) Rouletted black ware (Arikamedu Type 1)¹

A characteristic pottery-type of Arikamedu is a dish (Type 1) sometimes more than 12 inches in diameter, with an incurved and beaked rim which usually has a faceted edge. The ware has a remarkably smooth surface, is thin, brittle and well-burnt, and has an almost metallic ring. The flat interior is normally decorated with two, occasionally three, concentric bands of rouletted pattern (fig. 12 and pls. XXII B, XXV, XXVI). This pattern is not an Indian feature and may be regarded as an importation from the Mediterranean region, but it has not yet been possible to ascertain whether the type itself is of similar origin. It may

¹ This and the following sections on the pottery are contributed by Mr. Krishna Deva.

What their relation was with the pottery of "Vibius" is not clear, or which employed the other, but the Vibieni and Vibii descended from an ancient Etrurian family, the Vibia, whose name is still preserved in Bibbiena. In any case, north of Arezzo, close to S. Domenico, was the pottery of A(ulus) and C(aius) Vibius who, according to coins found, worked in the second and first centuries B.C. After the death of C. Vibius, the industry was carried on by his workers, Athenius and others. The names of workers with the Vibii include A. Vibius, C. Vibius and L. Vibius (*Corpus Inscriptionum Latinarum*, XI, 6,700, 765ff.; XV, 5,750-60; XIII, 10,009, 290-300).

Loeschcke, in *Mitteilungen der Altertums-Kommission für Westfalen*, V (1909), 186, says that, since the Vibii are found at Mont Beuvray, Neuss, Trion, Vechten and Xanten but do not occur at Haltern (occupied 11 B.C.-A.D. 16), they evidently flourished before the latter dates. He does not, however, distinguish between the two families of Vibii and Vibieni, and most of his evidence appears to relate to the Vibii. T. Knipowitsch, *Die Keramik römischer Zeit aus Olbia* (1929), 9, No. 3, Abb. 2 and p. 12, gives VIBIE (might be VIBIF), and, basing on Loeschcke, dates it to the last years of the first century B.C. The collection however has no independent documentation. Iliffe (op. cit. on p. 35, above) records VIBI and C. VIBI on dishes from the agora at Athens, but again there is (at present) no independent dating. On the other hand, F. Oswald in his *Index of Stamps on Terra Sigillata* ascribes C. Vibius of Montans, in southern France, to the period Claudius-Vespasian (c. A.D. 41-79).

It would appear therefore that members of the Vibia family were producing Arretine or related pottery from the beginning of the first century B.C. until after the middle of the first century A.D., though in the latter stages only derivative provincial wares are in question. The evidence is consistent with an earlier initial date for the Arikamedu series than I have suggested above (p. 22), but is far too confused to be determinate.

2. CAMVRI. On the interior of the flat base of a cup, probably Loeschcke type 8 or Ritterling type 5. Found on AK VII in Pit 2A, probably contemporary with the 'warehouse'. The stamp is somewhat blurred, but the cross-stroke of the A appears to have been amalgamated with the right instead of the left half of the M.

The stamp of Gaius Amurius occurs on Arretine at Olbia (Knipowitsch, as cited above), at Beisan in Palestine, at Alexandria, and in the Athens agora. See Iliffe, as cited above. In at least three instances it is recorded on dishes of Dragendorff's form 18; this form is characteristic of the last phase of Arretine production, but the date of its introduction is unknown. It occurs also on the dish known as 'Ritterling 5' which is found at Hofheim in the Claudian period (A.D. 41-54).

3. ITTA. On the interior of the flat base of a dish, form uncertain, with an orange-red glaze. Found on AK IV in Pottery Group A which just antedated the earliest, save two, of the brick walls on that site.

Possibly a retrograde stamp of the Augustan potter P. Attius. It is uncertain where he worked (? Puteoli or Arezzo). Iliffe records his stamp from the Athens agora, and it has been found (ATTI) at Mainz on Arretine of Ritterling type 5 in 'marbled' ware (Behn, *Römische Keramik*, Abb. 10, 1; whence Oswald and Pryce, op. cit., pl. XXVIII, 1), and at Haltern (Loeschcke Nos. 117 and 118). His wares were therefore in use within the period 11 B.C.-A.D. 16, the period of the occupation of Haltern.

COPIES OF ARRETINE FORMS, AND RELATED WARES (fig. 8)

Close copies of Arretine forms at Arikamedu are restricted to Dragendorff type 24/25, a small bowl with rouletted rim. The copies are of a hard greyish buff ware with polished surface, and differ in fabric sufficiently from the local wares to make it reasonably certain

that they are imports. Two examples were found in the recent excavations, one of them in a layer which also produced Arretine pottery. Other examples, of which two are illustrated (fig. 8, 44-5 and pl. XXIV, 6), were found previously by the French excavators.

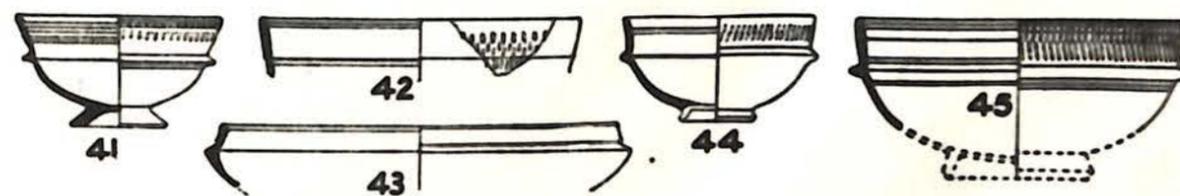


FIG. 8. 41-2 and 44-5, copies of Arretine forms; 43, similar fabric. †

Occasional sherds of similar fabric but less distinctive form probably also represent imported wares.

41. From AK II, level 8A, which also produced Arretine sherd No. 15. Copy of Dragendorff type 24/25 (Loeschcke type 12 or Ritterling type 6). Rouletted rim. Hard, polished greyish buff ware, grey below. (AK II, 456.)
42. From AK VII, level 3AN, contemporary with 'warehouse'. Fragment of bowl with rim rebated for lid. Not an Arretine form, but of the same foreign fabric as Nos. 44-5. (AK VII, 33.)
43. From a layer immediately overlying No. 42. Fragment of rouletted rim, probably of imitation of Dragendorff type 24. Grey ware, reddish buff surface. (AK VII, 34.)
- 44 and 45. From the French excavations of 1943, said to have been found at '0.60 metres below sea-level', i.e. at approximately the same horizon as the lowest Arretine sherds from the present excavations. Copies of Dragendorff type 24/25. Hard polished greyish buff ware.

(ii) Imported amphorae

Sherds of amphorae of Mediterranean type and fabric were found on all the excavated sites in every significant stratum, with the exception of the lowest (layer 15) on AK II. This layer probably represents the old foreshore, and did not yield much pottery of any kind. The exception is not therefore of importance; and it may fairly be said that, unless for a few superficial and fragmentary walls built of re-used brickbats largely in disturbed soil, the importation of amphorae continued throughout the occupation of the town, as excavated.

The function of the amphorae was doubtless that for which these vessels were commonly used in their lands of origin: namely, to contain wine or oil. Reference has already been made (above, p. 21) to Tamil records of the ancient importation of wine into India from the West, and many of the sherds of amphora from Arikamedu, including the earliest stratigraphically, preserve an internal incrustation which, on analysis, is found to contain resin,¹ a common constituent of Mediterranean wines.

A majority of the sherds is too fragmentary for a reconstruction of the types represented. But a number of them are of a pink fabric with yellow slip which, in Europe, is commonly of a date before rather than after the middle of the first century A.D.; and some of the handles are of the rectilinear and high-shouldered profile to which a similar dating applies. Stratigraphically it would appear that the arrival of amphorae preceded that of Arretine ware (notably on AK II; see above, p. 22), and amphorae continued to be imported or at least used for a considerable time after the introduction of Arretine ware had ceased. Thus on site AK IV, the earliest, save two, of the brick walls overlay a sherd of Arretine (which in turn overlay a stratum containing amphorae), but amphora-sherds are found in all strata which can be related to the subsequent structural phases.

¹ Information from the Chemist of the Archaeological Survey of India.

In the course of the 1945 excavations, 116 amphora sherds, representing approximately the same number of vessels, were found. All sherds showing any part of the shape of the vessel are here illustrated (figs. 9 and 10).

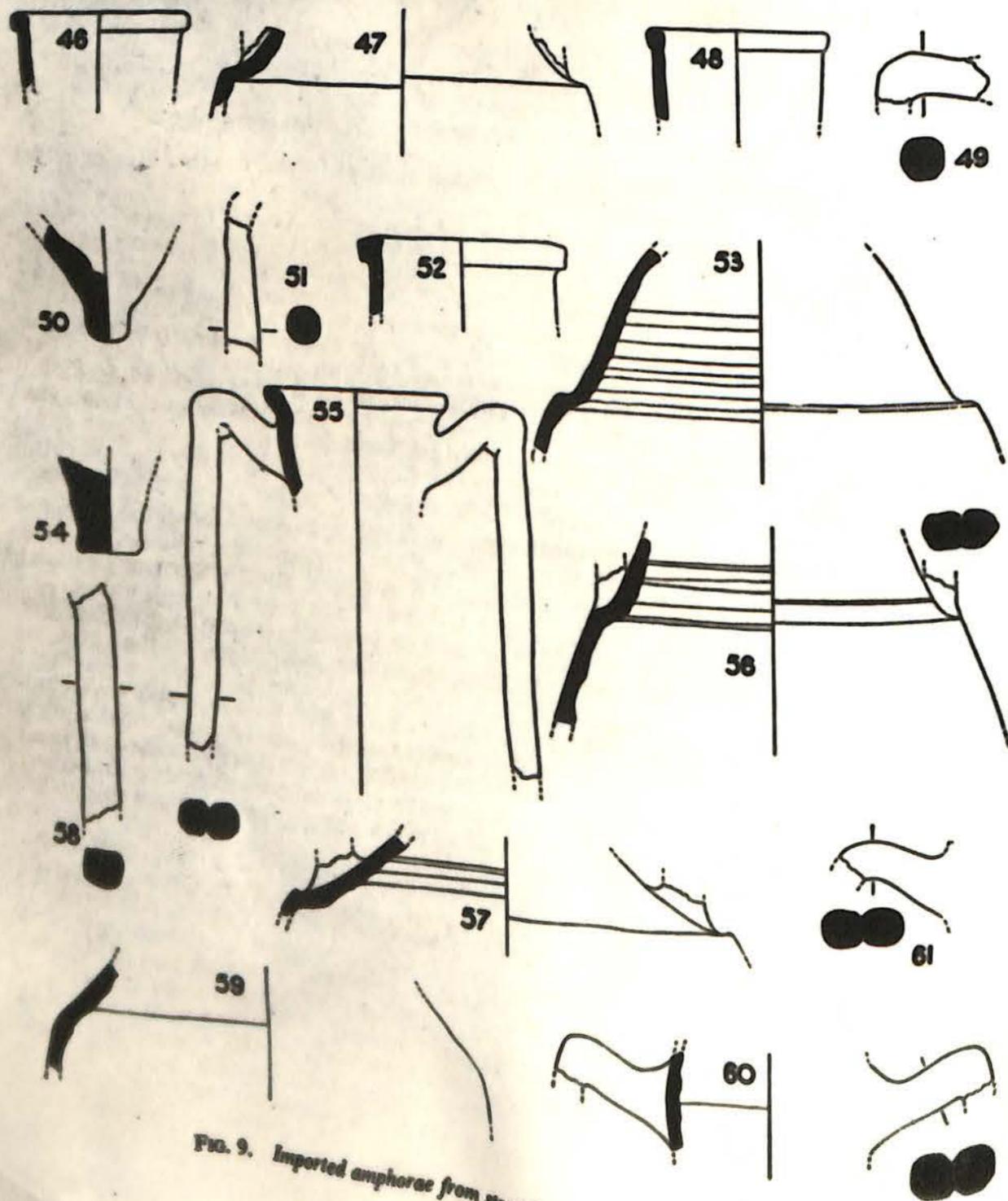


FIG. 9. Imported amphorae from stratified layers, Northern Sector. 42

ARIKAMEDU

(a) Stratified amphorae from the Northern Sector

From pre-Arretine layers:

- 46. From AK II, stratum 14 (the lowest save one; 6 feet below present sea-level). Rim of pinkish buff ware.
- 47. Carinated shoulder, pink ware with yellow slip. From AK V, stratum 11A, underlying the wall of the 'warehouse' and equivalent to strata 13 and 14 on AK II.
- 48. Rim of yellow-slipped buff ware, same type as No. 46. From AK V, stratum 11, a pre-Arretine layer immediately below present sea-level.

From Arretine layers:

- 49. Fragment of handle of gritty pinkish buff ware from AK II, stratum 8A, which also contained a sherd of Arretine (above, p. 36).
- 50. Bluntly pointed base, of pink ware with yellow slip, from AK II, stratum 10A, which immediately overlay 8A.
- 51. Part of straight handle from AK II, stratum 7 Ar., which yielded most of the Arretine sherds from the site. Yellow ware.
- 52. From AK VIII A, stratum 7, which equates with the Arretine-producing layer 7 Ar. of AK II. Pinkish buff ware with yellow slip.
- 53. Angular shoulder from AK VIII, stratum 5, which equates with the Arretine layer 7 Ar. of AK II. Pink ware.

From post-Arretine layers:

- 54. Bluntly pointed base from AK II, stratum 7H, contemporary with the construction of the 'warehouse'. Pink ware, yellow slip.
- 55. Rim and straight high-shouldered handle, of pink ware. From AK II, stratum 9, immediately overlying 7 Ar. and equivalent to 7H (No. 54). The straight, high-shouldered handle is characteristic of the first half of the first century A.D. (Loeschke type 66, Ritterling type 73).
- 56. Angular shoulder, of pink ware with yellow slip. From the same stratum as No. 55.
- 57. Angular shoulder, pink ware with yellow slip, from AK II, stratum 7A, equivalent to that of Nos. 55 and 56.
- 58. Straight handle, pinkish ware with yellow slip, from AK II, stratum 7D, make-up of floor of 'warehouse'.
- 59. Bluntly carinated shoulder, pinkish ware with yellow slip. From AK II, stratum 6, make-up of floor of 'warehouse'.
- 60, 61. Short handles, pink ware with yellow slip, from AK V, Pit 1, subsequent to destruction of 'warehouse'. This stumpy type of handle is contemporary with the tall straight type, No. 55, but also long out-lived it.

(b) Stratified amphorae from the Southern Sector (AK IV)

- 62. Rim, pink ware, from Pottery Group A (with sigillata base stamped ITTA), immediately underlying the earliest-but-one of the brick structures.
- 63. Angular shoulder, fine pinkish buff ware, dating from the beginning of the main 'Drain Period'.
- 64. Stumpy handle, pinkish buff ware, from the same layer as No. 63.
- 65. Fragment of straight handle, from a slightly later structure of the same phase as Nos. 63-4. Pink ware with yellow slip.
- 66. Pointed base, pink ware with yellow slip. Late 'Drain Period'.
- 67. Fragment of handle of gritty pink ware. Late Phase.
- 68. Fragment of handle of fine yellow clay. Late Phase.
- 69. Fragment of straight handle, gritty pink ware. Late Phase.

(c) From mixed deposits of the Northern Sector

- 70. Fragment of handle, pink ware with yellow slip. (AK II.)
- 71. Straight handle, pink ware. (AK II.)
- 72. Rim, buff ware. (AK II.)
- 73. Part of straight handle, pink ware with buff slip. (AK II.)
- 74. Rim, pink ware. (AK II.)

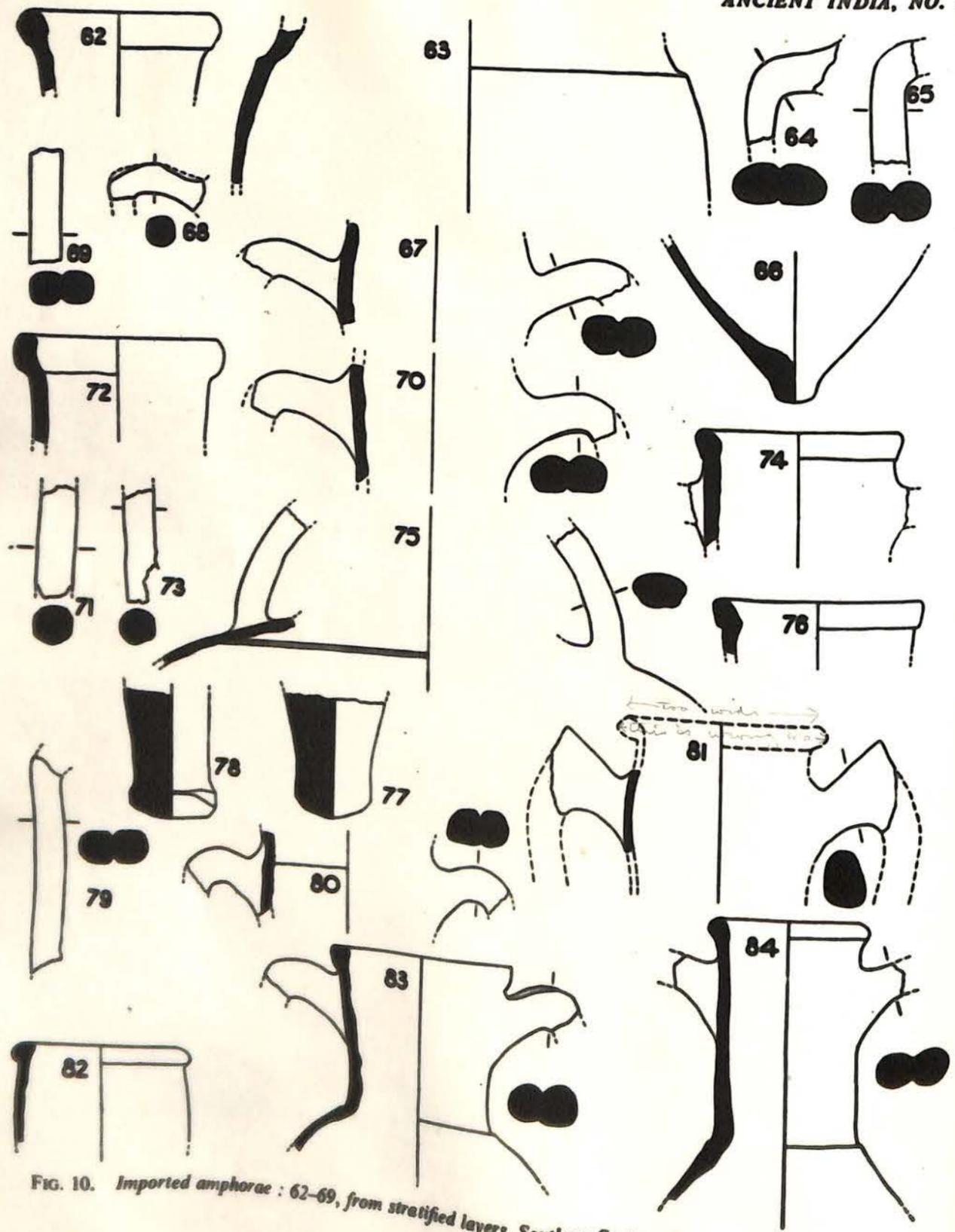


FIG. 10. Imported amphorae : 62-69, from stratified layers, Southern Sector ; 70-84, from mixed layers. †

ARIKAMEDU

- 75. Curved handle, fine pink ware with yellow slip. (AK VIII.)
- 76. Rim, pinkish ware with yellow slip. (AK VIII.)
- 77. Bluntly pointed base, pink ware with yellow slip. (AK VIII.)
- 78. Bluntly pointed base, pink ware. (AK VIII.)
- 79. Straight handle, pinkish ware with buff slip. (AK VII.)

(d) From mixed deposits of the Southern Sector

- 80. Fragment of handle, pink ware with yellow slip. (AK IV.)
- 81. Sharply shouldered handle, fine pinkish ware with yellow slip. This type of handle occurs at Haltern early in the first century A.D. and is found rarely at Hofheim towards the middle of the century. It is exceptional after A.D. 50. (AK IV.)
- 82. Rim of pink ware, traces of yellow slip. (AK IV.)

(e) From the previous (French) excavations

83-84. Necks of amphorae of light pink ware, 83 with buff slip.

Note : an amphora from Taxila

The only other Indian site known to have yielded an amphora of Mediterranean type is Taxila (Punjab), where an example (fig. 11) was found at a depth of 7 feet 4 inches in the Parthian city of Sirkap, and is dated by Sir John Marshall to the first centuries B.C.-A.D. Now in the Taxila Museum. Unlike the Arikamedu amphorae, which must represent maritime trade, the Taxila example is on general grounds more likely perhaps to have travelled overland from western Asia.

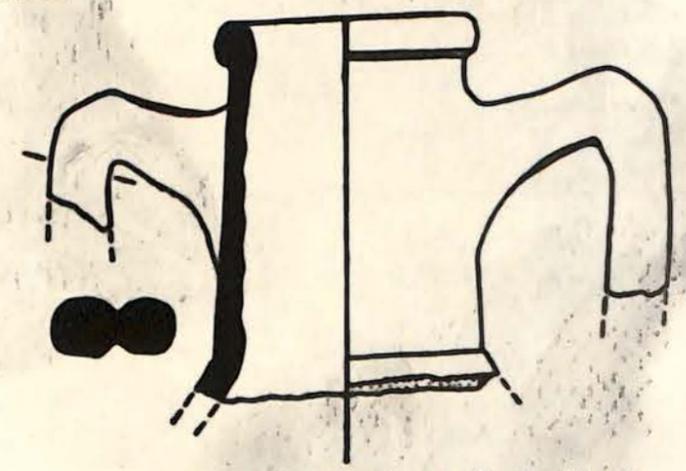


FIG. 11. Imported amphora from Taxila, Punjab. †

(iii) Rouletted black ware (Arikamedu Type I) †

A characteristic pottery-type of Arikamedu is a dish (Type 1) sometimes more than 12 inches in diameter, with an incurved and beaked rim which usually has a faceted edge. The ware has a remarkably smooth surface, is thin, brittle and well-burnt, and has an almost metallic ring. The flat interior is normally decorated with two, occasionally three, concentric bands of rouletted pattern (fig. 12 and pls. XXII B, XXV, XXVI). This pattern is not an Indian feature and may be regarded as an importation from the Mediterranean region, but it has not yet been possible to ascertain whether the type itself is of similar origin. It may

† This and the following sections on the pottery are contributed by Mr. Krishna Deva.

May 19, 1948

Dear Dr. Wheeler,

Thank you very much for your kind note of February 16th, and for the three numbers of Ancient India, which I am delighted to have. I have mislaid the copy of my letter to you; but since it was written as late as December 10th, probably it contained reference to the parallel found at Pompeii for your Rhodian fragment. With regard to the Coan-type jar, I am sometimes troubled with doubts as to whether under the Romans it may not have carried Coan-type wine, rather than actual wine from Cos; note that they had "a method of making Coan wine out of Italian," see Pliny, N.H., X, 78, and Cato, De Agricultura, CV. A large number of jars of this type seem to have been found at Pompeii. This was of course the cheap wine, in the eastern Aegean as well as in Italy; it was mixed with salt water.

I have looked through the numbers of your journal with great interest and with admiration for your standards of investigation and of publication. The supplementary use of drawings and photographs, the excellence of both, the clearness of the text, and above all the perspective with which you discuss cultures in India with relation to those in Mesopotamia, Egypt, etc., as well as archaeological studies with relation to the natural sciences and to the needs of mankind, - all suggest/ to me that you have got at least as far as we have "in the planning of archaeology as an organized science."

I hope that you may be able to continue in India.

With many thanks, then,

Yours very sincerely,

D.O.No.

From: Dr. R.E.M. Wheeler, C.I.E., M.C.

6.02

Director General of Archaeology in India.

New Delhi, the 16th Feby. 1948.



*Rec'd April 9, 1948
(in forward with Miss V. Grace)*

Dear Miss Grace,

Thank you for your extremely interesting letter of December 10th about the Arikamedu amphorae. I am keeping your notes and shall unblushingly make use of them (with proper acknowledgments). I am most grateful.

I am sending herewith a copy of each of the first three numbers of Ancient India.

Yours sincerely and gratefully,

Miss V. Grace,
The Institute for Advanced Study,
School of Humanistic Studies,
Princeton, New Jersey (U.S.A.)

Encl:- 3.

HOWARD COMFORT
HAVERFORD COLLEGE
HAVERFORD, PENNA.

August 3, 1947

Dear Virginia:

Having just returned from a vacation of several weeks, I am horrified to find that the enclosed letter, which I wrote the day before leaving, never got mailed. Apparently it got under something else on the desk as I was dashing out of my office, and has lain here ever since. You must have formed a very humble opinion of my manners, - even if you didn't have such a one before.

As for the vacation itself, it wasn't as grim as expected, though I still stick to the story that there's no place like home even in summer. In the course of it I saw Fred Waage, who is teaching summer school and getting this volume of Antioch through the press as well as he can. I don't envy him his job.

With renewed thanks, at this late date, and renewed hope that everything reached you in good shape,

Yours,

Howard

6.04

HOWARD COMFORT
HAVERFORD COLLEGE
HAVERFORD, PENNA.

June 22, 1947

Dear Virginia:

This hasty and brief note thanks you far more than is indicated by the time spent writing it, for your kindness in sending me the Arikamedu material. I trust that it is now in your hands; it was sent insured the other day. I managed to get a good deal of the text copied and had photostats of the photostats taken for some illustrations that will be very useful to me. Whether I shall actually review it or not I don't know; there is a good deal of minor misstatement in it, but his conclusions are so near to correct that the discrepancies are hardly worth mentioning unless perhaps in some Indian publication of which the readers would be likely to take Wheeler as gospel rather than look toward the basic articles in European periodicals.

Antioch will profit a little by your kindness, since it was possible to make a short paragraph of comparison between the two sites.

This year seems more than usually scrambled in getting away for the alleged vacation into which we are plunging tomorrow at an early hour. How much simpler and less nerve-racking to stay at home and enjoy one's self instead of tearing life inside out to migrate to some place where one has to keep telling one's self what a lovely time he is having! I feel especially keen on the matter this year.

With best regards and renewed thanks for your kindness,

Yours,

Howard

June 9, 1947

Dear Howard:

Many thanks for your speedy response to my query, at this busy time for you. I am much interested in your comments, and hope that you do a review.

I think I may not have mentioned to you that the article has two pages of comment in Antiquity, Vol. XXI, No. 81, March 1947, pp. 1-2. This journal is a "Quarterly Review of Archaeology", edited by O. G. S. Crawford and Roland Austin, and published at 24 Parkend Road, Gloucester, England. They start off their Editorial Notes, at the beginning of the issue, thus:

"We make no apology for directing the attention of our readers once more to the new periodical Ancient India, for the second number, which has recently reached us, contains the account of an excavation of such surpassing interest for archaeologists and historians that the news of it should be spread widely as soon as possible."

This by way of orienting you on Ancient India, as it is awkward not having seen a copy of the whole magazine. If I had looked up this reference, I would not have had to bother you with my doubts as to the significance of "2".

Yours,

Longland, on source of my photostats

6.06

HOWARD COMFORT
HAVERFORD COLLEGE
HAVERFORD, PENNA.

June 6, 1947

Dear Virginia:

I'm terribly sorry not to have answered your letter by return mail; it hit me at one of the crowdedest times of the year, and I have simply not been in my own study for several days.

I have filled in the blanks as requested, but I can't dope out what Ancient India, No. 2 (sic, in the running heads on the left-hand pages) is. It can hardly be the volume number, as that would make vol. 1 only 15 or 16 pp. long; perhaps Ancient India is a symposium, of which No. 2 is Arikamedu. Or the whole thing, pp. 1 ff., may be No. 2 of an Ancient India series. I have not tried to nail it down bibliographically through our ~~University~~ library, but if it appeared in 1946, it ought now to be in the British publishers' lists, and perhaps some light might come from that source. Nobody in the Union Catalogue at Philadelphia had ever heard of it, but there could be good explanations for that. As a matter of fact, I have not found any indication that the publication date is 1946, except that the ~~work was~~ excavation was completed in June, 1945. The title-page of the whole volume is not included with the photostats.

Of course I should have acknowledged the receipt of the package, but that also was just one of those things. I am naturally unendingly grateful, and after making some additional notes from it - presumably next week - I'll return the whole works. It is of sufficient importance, and there are enough mistakes in the text, perhaps to merit a review of some kind; I haven't made up my mind. On the other hand, the general conclusions are pretty nearly correct, perhaps two or three decades too late but this would be a small matter for the general purposes of chronology, and any criticism in print might seem like sniping. The evidence is not at all the same as the evidence of Antioch; I wish I knew why.

With renewed thanks, and the hope that this reaches you in time to be useful,

Sincerely,

Howard

Howard Comfort

at end of note 27 add: ^{to} (show number of Hesperia)
- text somewhat altered)
to make an Addendum

Recently fragments of such jars (unstamped) have been reported from a settlement
in southeast India with Roman pottery: see R.E.M. Wheeler, "Arikamedu: an Indo-
on the East Coast of India

Roman Trading Station", Ancient India, 2, 1946, pp. 16-124, particularly pp. 41-45
with
Figs. 9-11.

Some fragments of small double handles are of Rhodian clay, and it is not
entirely certain that all the rest, even, were made in one place, though the
long period of production would probably account for observed differences in
fabric.

The Special Delivery
on the envelope addressed
to you is in hopes the
message will not be lost
amongst. of. recess papers,
not really expecting more
speed in the mail.

* So this 2 must be 1. according to pages
a volume (probably)
or a quarterly
number of A.O. for
Lippin to know?
June 2, 1947

Dear Howard,

Would you be so good as to check this for me
from the photostat I sent you on May 21? Some
proof suddenly descended on me, and I found
the note written down for addition was incomplete.
I am not sure of the exact title of the article, or its
total pages, and I want inserted (where the
red ^ sign is stuck) the pages about imported
amphoras - there are two figures or plates with
profiles, accompanied by a little text, then on four

alteration of numbers.
Please, if you can manage to
answer quickly - especially if
you have not received my letter
relating to your

6.08

CORNELL UNIVERSITY
COLLEGE OF ARTS AND SCIENCES
ITHACA, NEW YORK

DEPARTMENT OF FINE ARTS
GOLDWIN SMITH HALL

June 2, 1947

Miss Virginia Grace
The Institute for Advanced Study
Princeton
New Jersey

Dear Virginia:

Thanks for your offer to send me your photostats of the article in Ancient India. Our library will probably subscribe to the periodical so you might as well let Howard Comfort have it first. If it should prove impossible for us to get this number I may like to have your photostats later on.

With best regards,



F. O. Waage

FOW:BDW



May 21, 1947

Dear Howard:

I have bundled the photostat and directed it to you special delivery and insured for \$50. I would suggest that you keep the packaging for return, as the shape and size of the contents are unusual. I was glad to discover that our librarian had done this. I checked the pages before wrapping. All this fuss is due to the fact that I ~~order~~ ordered the photostat with no idea the article was so long (nobody had given full page references), and am in something of a dither for fear I may have to pay for it myself.

I want some prints made of certain pages, but have put this off because you seem to be in a hurry. (Should have done it before.)

Yours,

*On Jan 2, sent a reference for
him to check, and incidentally an
inquiry as to whether photostat had
arrived.*

611D

HOWARD COMFORT
HAVERFORD COLLEGE
HAVERFORD, PENNA.

May 19, 1947

Dear Virginia:

I have satisfied myself, through the Union Catalogue in Philadelphia, that there are no extant copies of Ancient India available here. Hence, since you suggest it, I should very much like to borrow your photostats,- the more so since a letter from Fred Waage this morning indicates that I am about to get proof on the Antioch material. Whether there would be any need for cross-reference to Wheeler I don't know, but I should think it extremely likely. Of course, after all these years of waiting to send me the stuff, Fred shows the inevitable editorial impatience to get it back,- which I do not mention to stimulate haste on your part, but in explanation of why, after you have sent me the photostats, there may turn out not to be any apparent use made of them after all.

Anyhow, if and when it is convenient to send them to me, I shall be most interested to see them.

Sincerely,

Howard

Howard Comfort

19 May 1947

Professor Frederick O. Waage
Department of Fine Arts
Goldwin Smith Hall
Cornell University
Ithaca, New York

Dear Fred:

About the Ancient India article, the Peabody Museum in Cambridge has the only copy I know of in this country, and they would not lend it to us because it was in so great demand. What we have is a negative photostat of their copy. This turned out to be a great deal longer than I expected, 108 pages of text and figures plus 41 plates, in somewhat larger format than Hesperia.

I should think you might like to order a copy from the publisher. If so, M. Seyrig gives me the following note:

"Ancient India, bulletin of the Archaeological Survey of India, is published by the Manager of Publications, Delhi! It is, in my opinion, an essential journal. . . I only object to the title 'An Indo-Roman Trading Station': while it is perfectly clear that the wares are Roman, they certainly no more imply an Indo-Roman trading station, than the finds of Chinese pottery at Hama so imply a Syro-Chinese one."

We can lend you our copy if you don't mind its unwieldy nature and are willing to look out for it in its loose-leaf condition. Howard Comfort would also like to have it, and you can judge which of you should be first.

Yours sincerely,

VG:lbr

6-12

CORNELL UNIVERSITY
COLLEGE OF ARTS AND SCIENCES
ITHACA, NEW YORK

DEPARTMENT OF FINE ARTS
GOLDWIN SMITH HALL

May 15, 1947

Miss Virginia Grace
The Institute for Advanced Study
Princeton
New Jersey

Dear Virginia:

It was good to hear from you and to find out where you were. Had I known that you were in Princeton I should have made an effort to see you when I attended the Bicentennial Conference there last month.

Many thanks for calling my attention to Wheeler's article. I ran across a reference to it a little while ago and immediately asked the library to borrow a copy of that issue of Ancient India. They have been unable to locate the periodical in this country so if there is a copy at the Institute I should be glad to know of it.

which our library might know someone for me

How long will you be at Princeton? I may not get there again before late in the summer but if you will still be there I will make a point of looking you up.

With best regards,

Fred

FOW:BDW

*Beabody news. Pass it
we have photostats (negative) but
because they weren't used it
and it's hard to find
As it is so large (specify) I will
my wife at our report*

*124
16
108 pages
+ x11 blank*

*149 pages for
on, really
imagined
some photos
one says
x2 bit large
the paper*

page 21

May 14, 1947

Dear M. Seyrig:

X
See EGYPT
fields
(Amarna
fragments -
Cairo)

Many thanks for your letter of March 15, with the drawings of a Thasian handle with its stamp, the device of which is not matched in my files. I am in correspondence with the Bons, and shall ask them if they have seen the like. I shall be very glad to publish it.

See SYRIA
fields, with
most coming
with Seyrig

Thank you very much also for your quick airmail reply to my query on Ancient India. When the librarian saw it was published in Delhi, she doubted a copy arriving before the close of my term with the Institute. But fortunately I have been renewed for another year; and in the meanwhile we had a visit from George Hanfmann from Harvard, who told us he had seen the periodical in the Peabody Museum, Cambridge. They were not willing to send it down on loan, because it is in constant demand by students and faculty! So a photostat has been procured, though if I had realized how long it is, it might have been better to go to Cambridge for immediate needs, and order our copy from India. It is certainly a very important article, and I am obliged to you for calling my attention to it, and have passed the word on to others.

As to the provenance of the amphora sherds, a good many of them seem to come from jars like the type attributed to Cos, characterized throughout by "double" or "twin" handles and a distinct offset at the base of a straight neck, the length of which seems to vary according to the date. A small plain toe (of his nos. 50 and 66) like the Rhodian is characteristic except for the early period, before the late 3rd century B.C. Sometimes the double handles are stamped, with names paralleled on Coan coins, and quite often with the club that appears also on the coins. The attribution was first made by Maiuri, Nuova Silloge Epigraphica di Rodi e Cos, Firenze, 1925, pp. 245-247, which should have been cited in my 1934 article. I have something on it, with a picture, in the forthcoming "Standard Pottery Containers, etc." which will be part of Hesperia Supplement VIII. An offset at the base of the sloping shoulder occurs on the late(?) example illustrated by Maiuri, so no. 56 for instance may well belong to the same series. No. 81 is probably Rhodian.

I have sent you by ordinary mail copies of my prospectus, "Plan for a Corpus of Greek Amphora Stamps", and of my "Note on the publication of stamped handles from excavated sites." These are mimeographed papers, on which I should be grateful for any comment of yours, and glad if you care to pass them on to others who may be interested.

With many thanks for your valued help,

Yours very sincerely,

HOWARD COMFORT
HAVERFORD COLLEGE
HAVERFORD, PENNA.

6.14
answered longhand
sent May 16

May 13, 1947

Dear Virginia:

You are a brick to have written me about R.E.M. Wheeler. I believe that I had seen some notice of the book somewhere, but had no inkling that there was such a wealth of stuff in it. I have instituted a search for it in the Philadelphia area, and hope that someone has been prudent enough to have purchased a copy that I can use. It will be most a propos, if I can find it, since I understand from Fred Waage that I am about to read proof ~~x~~ on the Antioch stuff, and there may be some instructive parallels.

I hope everything goes well with you. There was a very pleasant Athens reunion the other day in N.Y., marred only at the conclusion by thunder on the left of which you may already have heard.

Best regards to one and all, and renewed thanks.

Sincerely,

Howard

May 13 1947

WHEELER
KVIN FIRE SCAS

1947

6.15

INSTITUT FRANÇAIS D'ARCHÉOLOGIE

BEYROUTH, LIBAN

Boite postale 1424

Received April 15

please see my stamp

Dear Miss Grace,

Thank you very much for your kind letter. In the meantime, I hope, you received the drawing of my Thosian stamp.

'Ancient India, Bulletin of the Archaeological Survey of India', is published 'by the Manager of Publications, Delhi'. It is, in my opinion, an essential journal. - The article by R. Wheeler on his finds in Arikamedu is in No. 2, July 1946. It is an excellent & very detailed report, & I only object to the title "An Indo-Roman Trading-Station": while it is perfectly clear that the wares are Roman, they certainly no more imply an Indo-Roman trading station, than the finds of Chinese pottery at Hama do imply a Syro-Chinese one. If

There has been any such station, which is possible after all, though hardly probable, it will have to be proved otherwise.

Yours sincerely

Hanni Seyzig

Thank you very much for your kind letter.

Byrum, April 10, 1947

Journal of Libia, published by the Manager of Libia, is in my opinion, an excellent journal. The article by R. W. ... in No. 2, July 1946. It is an excellent & very detailed report, & I only regret to the title "An Libia - Roman ... Station": while it is perfectly clear that the word Libia, had certainly in some sense ... than the finds of Chinese ... at Hama so imply a Sino-Chinese ...

What their relation was with the pottery of "Vibius" is not clear, or which employed the other, but the Vibieni and Vibii descended from an ancient Etrurian family, the Vibia, whose name is still preserved in Bibbiena. In any case, north of Arezzo, close to S. Domenico, was the pottery of A(ulus) and C(aius) Vibius who, according to coins found, worked in the second and first centuries B.C. After the death of C. Vibius, the industry was carried on by his workers, Athenius and others. The names of workers with the Vibii include A. Vibius, C. Vibius and L. Vibius (*Corpus Inscriptionum Latinarum*, XI, 6,700, 765ff.; XV, 5,750-60; XIII, 10,009, 290-300).

'Loeschcke, in *Mitteilungen der Altertums-Kommission für Westfalen*, V (1909), 186, says that, since the Vibii are found at Mont Beuvray, Neuss, Trion, Vechten and Xanten but do not occur at Haltern (occupied 11 B.C.-A.D. 16), they evidently flourished before the latter dates. He does not, however, distinguish between the two families of Vibii and Vibieni, and most of his evidence appears to relate to the Vibii. T. Knipowitsch, *Die Keramik römischer Zeit aus Olbia* (1929), 9, No. 3, Abb. 2 and p. 12, gives VIBIE (might be VIBIF), and, basing on Loeschcke, dates it to the last years of the first century B.C. The collection however has no independent documentation. Iliffe (op. cit. on p. 35, above) records VIBI and C. VIBI on dishes from the agora at Athens, but again there is (at present) no independent dating. On the other hand, F. Oswald in his *Index of Stamps on Terra Sigillata* ascribes C. Vibius of Montans, in southern France, to the period Claudius-Vespasian (c. A.D. 41-79).'

It would appear therefore that members of the Vibia family were producing Arretine or related pottery from the beginning of the first century B.C. until after the middle of the first century A.D., though in the latter stages only derivative provincial wares are in question. The evidence is consistent with an earlier initial date for the Arikamedu series than I have suggested above (p. 22), but is far too confused to be determinate.

2. CAMVRI. On the interior of the flat base of a cup, probably Loeschcke type 8 or Ritterling type 5. Found on AK VII in Pit 2A, probably contemporary with the 'warehouse'. The stamp is somewhat blurred, but the cross-stroke of the A appears to have been amalgamated with the right instead of the left half of the M.

The stamp of Gaius Amurius occurs on Arretine at Olbia (Knipowitsch, as cited above), at Beisan in Palestine, at Alexandria, and in the Athens agora. See Iliffe, as cited above. In at least three instances it is recorded on dishes of Dragendorff's form 18; this form is characteristic of the last phase of Arretine production, but the date of its introduction is unknown. It occurs also on the dish known as 'Ritterling 5' which is found at Hofheim in the Claudian period (A.D. 41-54).

3. ITTA. On the interior of the flat base of a dish, form uncertain, with an orange-red glaze. Found on AK IV in Pottery Group A which just antedated the earliest, save two, of the brick walls on that site.

Possibly a retrograde stamp of the Augustan potter P. Attius. It is uncertain where he worked (? Puteoli or Arezzo). Iliffe records his stamp from the Athens agora, and it has been found (ATTI) at Mainz on Arretine of Ritterling type 5 in 'marbled' ware (Behn, *Römische Keramik*, Abb. 10, 1; whence Oswald and Pryce, op. cit., pl. XXVIII, 1), and at Haltern (Loeschcke Nos. 117 and 118). His wares were therefore in use within the period 11 B.C.-A.D. 16, the period of the occupation of Haltern.

COPIES OF ARRETINE FORMS, AND RELATED WARES (fig. 8)

Close copies of Arretine forms at Arikamedu are restricted to Dragendorff type 24/25, a small bowl with rouletted rim. The copies are of a hard greyish buff ware with polished surface, and differ in fabric sufficiently from the local wares to make it reasonably certain

ARIKAMEDU

that they are imports. Two examples were found in the recent excavations, one of them in a layer which also produced Arretine pottery. Other examples, of which two are illustrated (fig. 8, 44-5 and pl. XXIV, 6), were found previously by the French excavators.

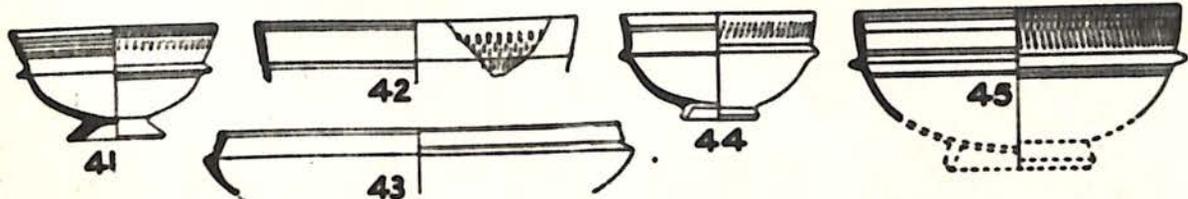


FIG. 8. 41-2 and 44-5, copies of Arretine forms; 43, similar fabric. 1/3

Occasional sherds of similar fabric but less distinctive form probably also represent imported wares.

- 41. From AK II, level 8A, which also produced Arretine sherd No. 15. Copy of Dragendorff type 24/25 (Loeschcke type 12 or Ritterling type 6). Rouletted rim. Hard, polished greyish buff ware, grey below. (AK II, 456.)
- 42. From AK VII, level 3AN, contemporary with 'warehouse'. Fragment of bowl with rim rebated for lid. Not an Arretine form, but of the same foreign fabric as Nos. 44-5. (AK VII, 33.)
- 43. From a layer immediately overlying No. 42. Fragment of rouletted rim, probably of imitation of Dragendorff type 24. Grey ware, reddish buff surface. (AK VII, 34.)
- 44 and 45. From the French excavations of 1943, said to have been found at '0.60 metres below sea-level', i.e. at approximately the same horizon as the lowest Arretine sherds from the present excavations. Copies of Dragendorff type 24/25. Hard polished greyish buff ware.

(ii) Imported amphorae

Sherds of amphorae of Mediterranean type and fabric were found on all the excavated sites in every significant stratum, with the exception of the lowest (layer 15) on AK II. This layer probably represents the old foreshore, and did not yield much pottery of any kind. The exception is not therefore of importance; and it may fairly be said that, unless for a few superficial and fragmentary walls built of re-used brickbats largely in disturbed soil, the importation of amphorae continued throughout the occupation of the town, as excavated.

The function of the amphorae was doubtless that for which these vessels were commonly used in their lands of origin: namely, to contain wine or oil. Reference has already been made (above, p. 21) to Tamil records of the ancient importation of wine into India from the West, and many of the sherds of amphora from Arikamedu, including the earliest stratigraphically, preserve an internal incrustation which, on analysis, is found to contain resin,¹ a common constituent of Mediterranean wines.

A majority of the sherds is too fragmentary for a reconstruction of the types represented. But a number of them are of a pink fabric with yellow slip which, in Europe, is commonly of a date before rather than after the middle of the first century A.D.; and some of the handles are of the rectilinear and high-shouldered profile to which a similar dating applies. Stratigraphically it would appear that the arrival of amphorae preceded that of Arretine ware (notably on AK II; see above, p. 22), and amphorae continued to be imported or at least used for a considerable time after the introduction of Arretine ware had ceased. Thus on site AK IV, the earliest, save two, of the brick walls overlay a sherd of Arretine (which in turn overlay a stratum containing amphorae), but amphora-sherds are found in all strata which can be related to the subsequent structural phases.

¹ Information from the Chemist of the Archaeological Survey of India.

In the course of the 1945 excavations, 116 amphora sherds, representing approximately the same number of vessels, were found. All sherds showing any part of the shape of the vessel are here illustrated (figs. 9 and 10).

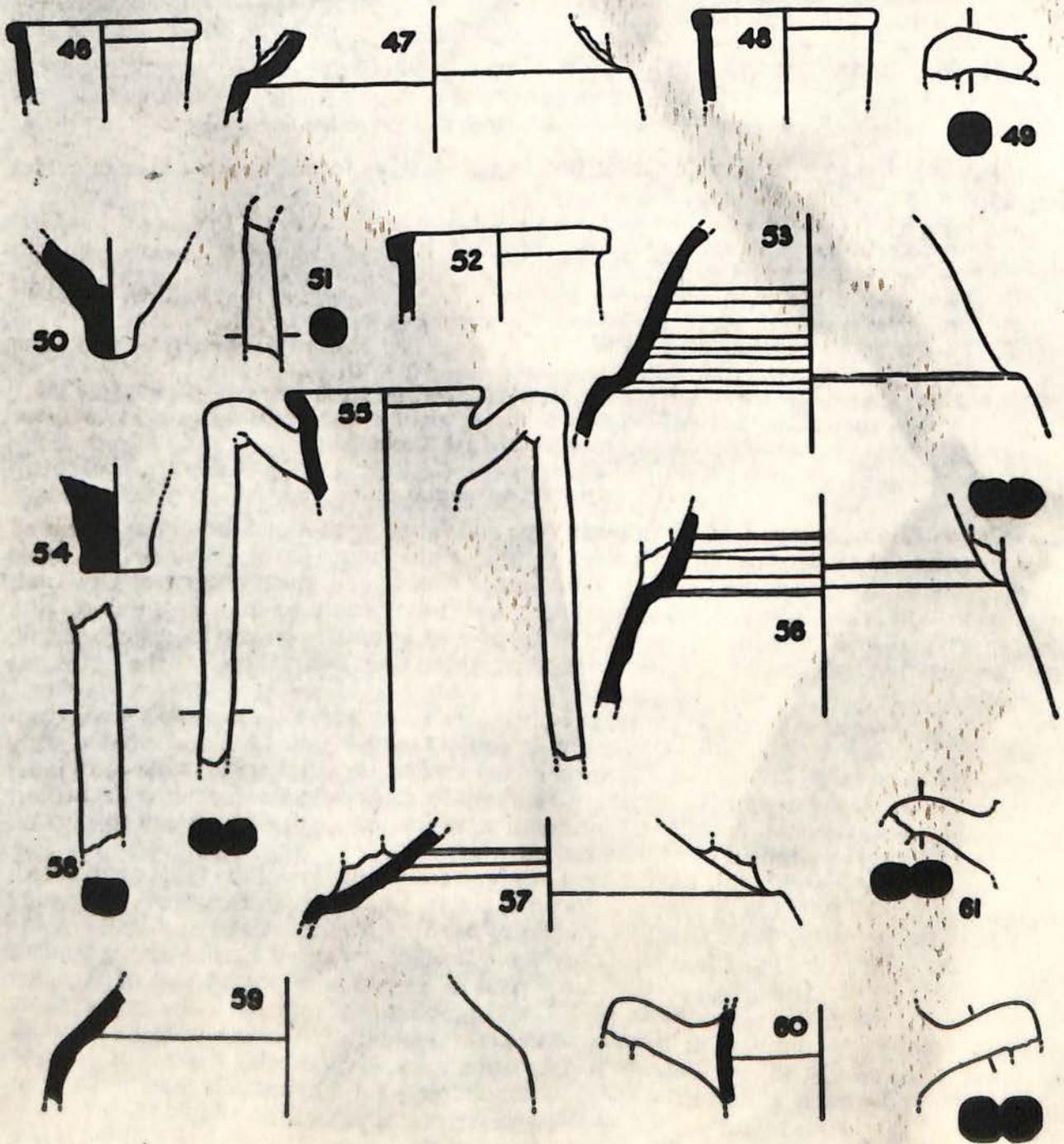


FIG. 9. Imported amphorae from stratified layers, Northern Sector. $\frac{1}{2}$

*(a) Stratified amphorae from the Northern Sector**From pre-Arretine layers:*

46. From AK II, stratum 14 (the lowest save one; 6 feet below present sea-level). Rim of pinkish buff ware.
47. Carinated shoulder, pink ware with yellow slip. From AK V, stratum 11A, underlying the wall of the 'warehouse' and equivalent to strata 13 and 14 on AK II.
48. Rim of yellow-slipped buff ware, same type as No. 46. From AK V, stratum 11, a pre-Arretine layer immediately below present sea-level.

From Arretine layers:

49. Fragment of handle of gritty pinkish buff ware from AK II, stratum 8A, which also contained a sherd of Arretine (above, p. 36).
50. Bluntly pointed base, of pink ware with yellow slip, from AK II, stratum 10A, which immediately overlay 8A.
51. Part of straight handle from AK II, stratum 7 Ar., which yielded most of the Arretine sherds from the site. Yellow ware.
52. From AK VIII A, stratum 7, which equates with the Arretino-producing layer 7 Ar. of AK II. Pinkish buff ware with yellow slip.
53. Angular shoulder from AK VIII, stratum 5, which equates with the Arretine layer 7 Ar. of AK II. Pink ware.

From post-Arretine layers:

54. Bluntly pointed base from AK II, stratum 7H, contemporary with the construction of the 'warehouse'. Pink ware, yellow slip.
55. Rim and straight high-shouldered handle, of pink ware. From AK II, stratum 9, immediately overlying 7 Ar. and equivalent to 7H (No. 54). The straight, high-shouldered handle is characteristic of the first half of the first century A.D. (Loeschke type 66, Ritterling type 73).
56. Angular shoulder, of pink ware with yellow slip. From the same stratum as No. 55.
57. Angular shoulder, pink ware with yellow slip, from AK II, stratum 7A, equivalent to that of Nos. 55 and 56.
58. Straight handle, pinkish ware with yellow slip, from AK II, stratum 7D, make-up of floor of 'warehouse'.
59. Bluntly carinated shoulder, pinkish ware with yellow slip. From AK II, stratum 6, make-up of floor of 'warehouse'.
- 60, 61. Short handles, pink ware with yellow slip, from AK V, Pit 1, subsequent to destruction of 'warehouse'. This stumpy type of handle is contemporary with the tall straight type, No. 55, but also long outlived it.

(b) Stratified amphorae from the Southern Sector (AK IV)

62. Rim, pink ware, from Pottery Group A (with sigillata base stamped ITTA), immediately underlying the earliest-but-one of the brick structures.
63. Angular shoulder, fine pinkish buff ware, dating from the beginning of the main 'Drain Period'.
64. Stumpy handle, pinkish buff ware, from the same layer as No. 63.
65. Fragment of straight handle, from a slightly later structure of the same phase as Nos. 63-4. Pink ware with yellow slip.
66. Pointed base, pink ware with yellow slip. Late 'Drain Period'.
67. Fragment of handle of gritty pink ware. Late Phase.
68. Fragment of handle of fine yellow clay. Late Phase.
69. Fragment of straight handle, gritty pink ware. Late Phase.

(c) From mixed deposits of the Northern Sector

70. Fragment of handle, pink ware with yellow slip. (AK II.)
71. Straight handle, pink ware. (AK II.)
72. Rim, buff ware. (AK II.)
73. Part of straight handle, pink ware with buff slip. (AK II.)
74. Rim, pink ware. (AK II.)

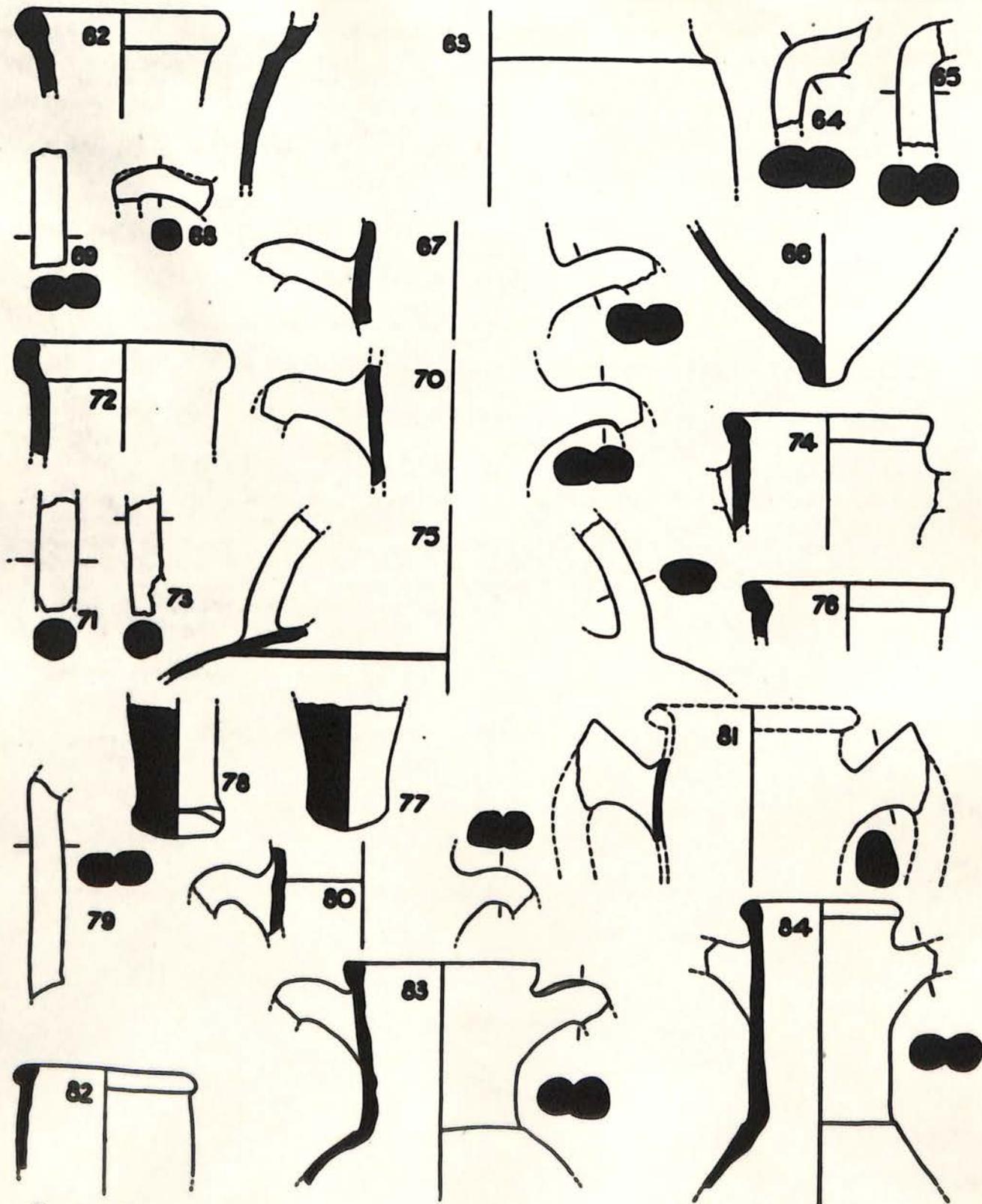


FIG. 10. Imported amphorae : 62-69, from stratified layers, Southern Sector ; 70-84, from mixed layers. †

ARIKAMEDU

- 75. Curved handle, fine pink ware with yellow slip. (AK VIII.)
- 76. Rim, pinkish ware with yellow slip. (AK VIII.)
- 77. Bluntly pointed base, pink ware with yellow slip. (AK VIII.)
- 78. Bluntly pointed base, pink ware. (AK VIII.)
- 79. Straight handle, pinkish ware with buff slip. (AK VII.)

(d) From mixed deposits of the Southern Sector

- 80. Fragment of handle, pink ware with yellow slip. (AK IV.)
- 81. Sharply shouldered handle, fine pinkish ware with yellow slip. This type of handle occurs at Haltern early in the first century A.D. and is found rarely at Hofheim towards the middle of the century. It is exceptional after A.D. 50. (AK IV.)
- 82. Rim of pink ware, traces of yellow slip. (AK IV.)

(e) From the previous (French) excavations

- 83-84. Necks of amphorae of light pink ware, 83 with buff slip.

Note : an amphora from Taxila

The only other Indian site known to have yielded an amphora of Mediterranean type is Taxila (Punjab), where an example (fig. 11) was found at a depth of 7 feet 4 inches in the Parthian city of Sirkap, and is dated by Sir John Marshall to the first centuries B.C.-A.D. Now in the Taxila Museum. Unlike the Arikamedu amphorae, which must represent maritime trade, the Taxila example is on general grounds more likely perhaps to have travelled overland from western Asia.

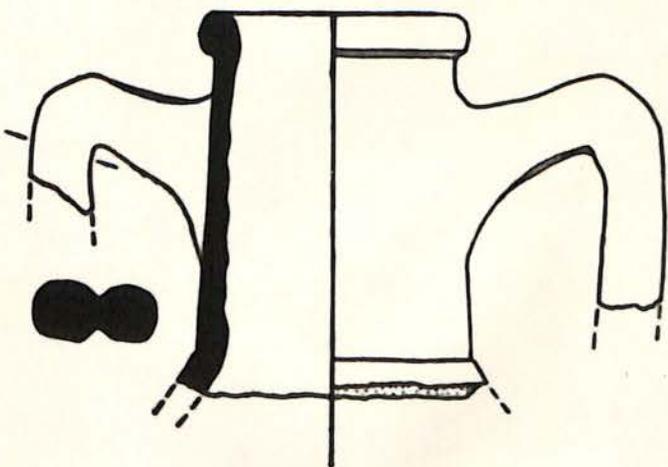


FIG. 11. Imported amphora from Taxila, Punjab. ‡

(iii) Rouletted black ware (Arikamedu Type 1)¹

A characteristic pottery-type of Arikamedu is a dish (Type 1) sometimes more than 12 inches in diameter, with an incurved and beaked rim which usually has a faceted edge. The ware has a remarkably smooth surface, is thin, brittle and well-burnt, and has an almost metallic ring. The flat interior is normally decorated with two, occasionally three, concentric bands of rouletted pattern (fig. 12 and pls. XXII B, XXV, XXVI). This pattern is not an Indian feature and may be regarded as an importation from the Mediterranean region, but it has not yet been possible to ascertain whether the type itself is of similar origin. It may

¹ This and the following sections on the pottery are contributed by Mr. Krishna Deva.

What their relation was with the pottery of "Vibius" is not clear, or which employed the other, but the Vibieni and Vibii descended from an ancient Etrurian family, the Vibia, whose name is still preserved in Bibbiena. In any case, north of Arezzo, close to S. Domenico, was the pottery of A(ulus) and C(aius) Vibius who, according to coins found, worked in the second and first centuries B.C. After the death of C. Vibius, the industry was carried on by his workers, Athenius and others. The names of workers with the Vibii include A. Vibius, C. Vibius and L. Vibius (*Corpus Inscriptiomum Latinarum*, XI, 6,700, 765ff.; XV, 5,750-60; XIII, 10,009, 290-300).

Loeschcke, in *Mitteilungen der Altertums-Kommission für Westfalen*, V (1909), 186, says that, since the Vibii are found at Mont Beuvray, Neuss, Trion, Vechten and Xanten but do not occur at Haltern (occupied 11 B.C.-A.D. 16), they evidently flourished before the latter dates. He does not, however, distinguish between the two families of Vibii and Vibieni, and most of his evidence appears to relate to the Vibii. T. Knipowitsch, *Die Keramik römischer Zeit aus Olbia* (1929), 9, No. 3, Abb. 2 and p. 12, gives VIBIE (might be VIBIF), and, basing on Loeschcke, dates it to the last years of the first century B.C. The collection however has no independent documentation. Iliffe (op. cit. on p. 35, above) records VIBI and C. VIBI on dishes from the agora at Athens, but again there is (at present) no independent dating. On the other hand, F. Oswald in his *Index of Stamps on Terra Stigillata* ascribes C. Vibius of Montans, in southern France, to the period Claudius-Vespasian (c. A.D. 41-79).

It would appear therefore that members of the Vibia family were producing Arretine or related pottery from the beginning of the first century B.C. until after the middle of the first century A.D., though in the latter stages only derivative provincial wares are in question. The evidence is consistent with an earlier initial date for the Arikamedu series than I have suggested above (p. 22), but is far too confused to be determinate.

2. CĀMVRI. On the interior of the flat base of a cup, probably Loeschcke type 8 or Ritterling type 5. Found on AK VII in Pit 2A, probably contemporary with the 'warehouse'. The stamp is somewhat blurred, but the cross-stroke of the A appears to have been amalgamated with the right instead of the left half of the M.

The stamp of Gaius Amurius occurs on Arretine at Olbia (Knipowitsch, as cited above), at Beisan in Palestine, at Alexandria, and in the Athens agora. See Iliffe, as cited above. In at least three instances it is recorded on dishes of Dragendorff's form 18; this form is characteristic of the last phase of Arretine production, but the date of its introduction is unknown. It occurs also on the dish known as 'Ritterling 5' which is found at Hofheim in the Claudian period (A.D. 41-54).

3. ITTA. On the interior of the flat base of a dish, form uncertain, with an orange-red glaze. Found on AK IV in Pottery Group A which just antedated the earliest, save two, of the brick walls on that site.

Possibly a retrograde stamp of the Augustan potter P. Attius. It is uncertain where he worked (? Puteoli or Arezzo). Iliffe records his stamp from the Athens agora, and it has been found (ATTI) at Mainz on Arretine of Ritterling type 5 in 'marbled' ware (Behn, *Römische Keramik*, Abb. 10, 1; whence Oswald and Pryce, op. cit., pl. XXVIII, 1), and at Haltern (Loeschcke Nos. 117 and 118). His wares were therefore in use within the period 11 B.C.-A.D. 16, the period of the occupation of Haltern.

COPIES OF ARRETINE FORMS, AND RELATED WARES (fig. 8)

Close copies of Arretine forms at Arikamedu are restricted to Dragendorff type 24/25, a small bowl with rouletted rim. The copies are of a hard greyish buff ware with polished surface, and differ in fabric sufficiently from the local wares to make it reasonably certain

that they are imports. Two examples were found in the recent excavations, one of them in a layer which also produced Arretine pottery. Other examples, of which two are illustrated (fig. 8, 44-5 and pl. XXIV, 6), were found previously by the French excavators.

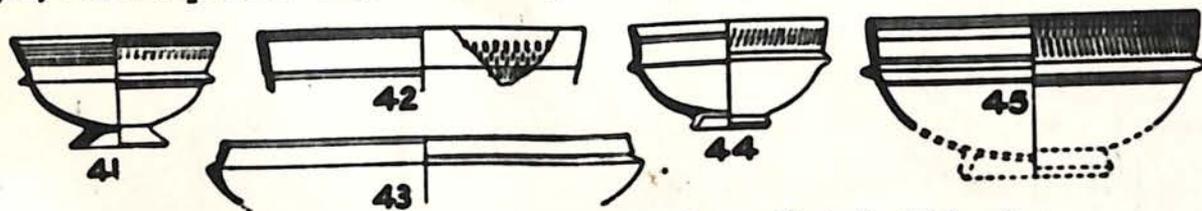


FIG. 8. 41-2 and 44-5, copies of Arretine forms; 43, similar fabric. †

Occasional sherds of similar fabric but less distinctive form probably also represent imported wares.

41. From AK II, level 8A, which also produced Arretine sherd No. 15. Copy of Dragendorff type 24/25 (Loeschcke type 12 or Ritterling type 6). Rouletted rim. Hard, polished greyish buff ware, grey below. (AK II, 456.)
42. From AK VII, level 3AN, contemporary with 'warehouse'. Fragment of bowl with rim rebated for lid. Not an Arretine form, but of the same foreign fabric as Nos. 44-5. (AK VII, 33.)
43. From a layer immediately overlying No. 42. Fragment of rouletted rim, probably of imitation of Dragendorff type 24. Grey ware, reddish buff surface. (AK VII, 34.)
- 44 and 45. From the French excavations of 1943, said to have been found at '0.60 metres below sea-level', i.e. at approximately the same horizon as the lowest Arretine sherds from the present excavations. Copies of Dragendorff type 24/25. Hard polished greyish buff ware.

(ii) Imported amphorae

Sherds of amphorae of Mediterranean type and fabric were found on all the excavated sites in every significant stratum, with the exception of the lowest (layer 15) on AK II. This layer probably represents the old foreshore, and did not yield much pottery of any kind. The exception is not therefore of importance; and it may fairly be said that, unless for a few superficial and fragmentary walls built of re-used brickbats largely in disturbed soil, the importation of amphorae continued throughout the occupation of the town, as excavated.

The function of the amphorae was doubtless that for which these vessels were commonly used in their lands of origin: namely, to contain wine or oil. Reference has already been made (above, p. 21) to Tamil records of the ancient importation of wine into India from the West, and many of the sherds of amphora from Arikamedu, including the earliest stratigraphically, preserve an internal incrustation which, on analysis, is found to contain resin,¹ a common constituent of Mediterranean wines.

A majority of the sherds is too fragmentary for a reconstruction of the types represented. But a number of them are of a pink fabric with yellow slip which, in Europe, is commonly of a date before rather than after the middle of the first century A.D.; and some of the handles are of the rectilinear and high-shouldered profile to which a similar dating applies. Stratigraphically it would appear that the arrival of amphorae preceded that of Arretine ware (notably on AK II; see above, p. 22), and amphorae continued to be imported or at least used for a considerable time after the introduction of Arretine ware had ceased. Thus on site AK IV, the earliest, save two, of the brick walls overlay a sherd of Arretine (which in turn overlay a stratum containing amphorae), but amphora-sherds are found in all strata which can be related to the subsequent structural phases.

¹ Information from the Chemist of the Archaeological Survey of India.

In the course of the 1945 excavations, 116 amphora sherds, representing approximately the same number of vessels, were found. All sherds showing any part of the shape of the vessel are here illustrated (figs. 9 and 10).

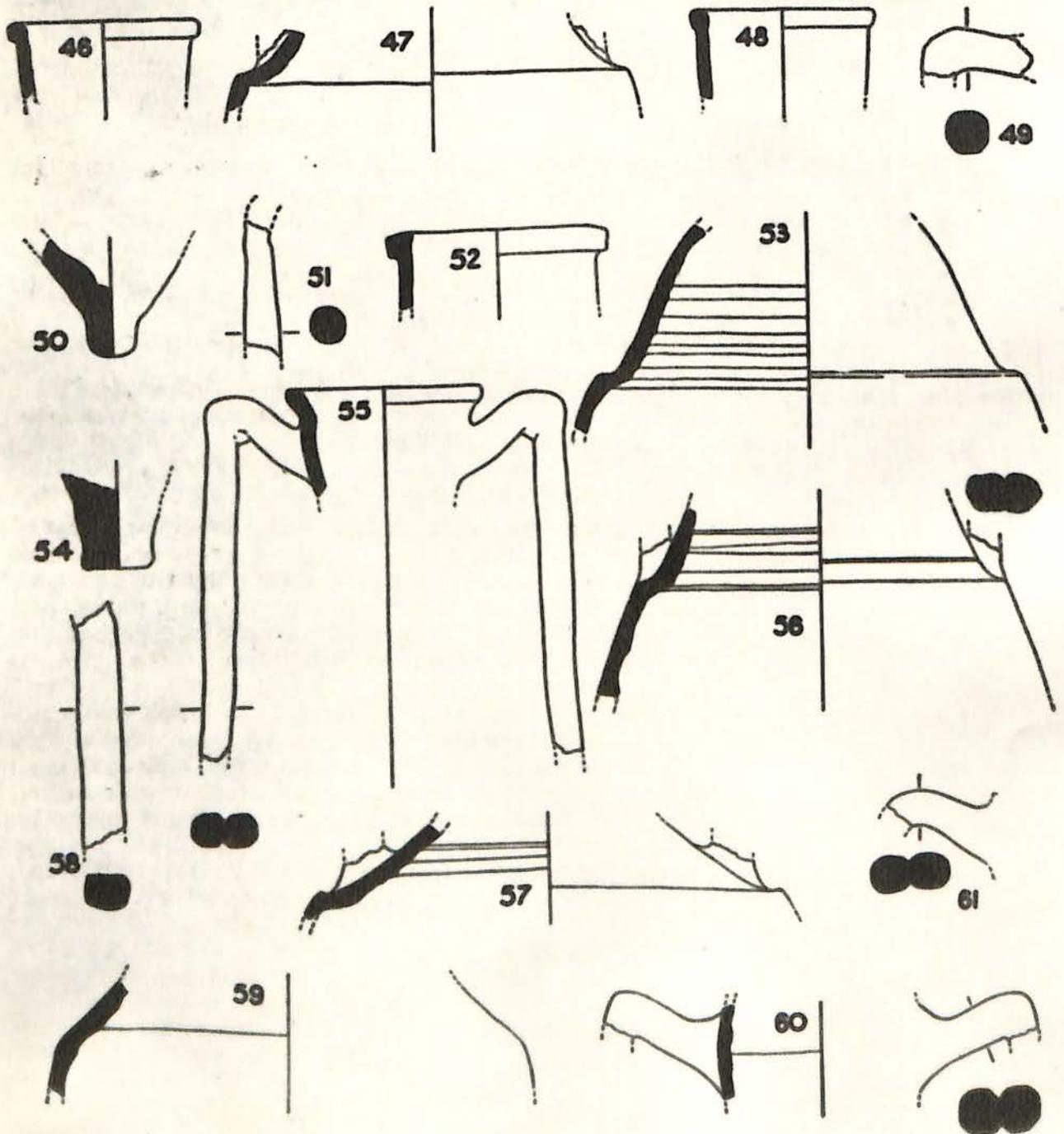


FIG. 9. Imported amphorae from stratified layers, Northern Sector. $\frac{1}{2}$

ARIKAMEDU

*(a) Stratified amphorae from the Northern Sector**From pre-Arretine layers:*

46. From AK II, stratum 14 (the lowest save one; 6 feet below present sea-level). Rim of pinkish buff ware.
47. Carinated shoulder, pink ware with yellow slip. From AK V, stratum 11A, underlying the wall of the 'warehouse' and equivalent to strata 13 and 14 on AK II.
48. Rim of yellow-slipped buff ware, same type as No. 46. From AK V, stratum 11, a pre-Arretine layer immediately below present sea-level.

From Arretine layers:

49. Fragment of handle of gritty pinkish buff ware from AK II, stratum 8A, which also contained a shard of Arretine (above, p. 36).
50. Bluntly pointed base, of pink ware with yellow slip, from AK II, stratum 10A, which immediately overlies 8A.
51. Part of straight handle from AK II, stratum 7 Ar., which yielded most of the Arretine shards from the site. Yellow ware.
52. From AK VIII A, stratum 7, which equates with the Arretine-producing layer 7 Ar. of AK II. Pinkish buff ware with yellow slip.
53. Angular shoulder from AK VIII, stratum 5, which equates with the Arretine layer 7 Ar. of AK II. Pink ware.

From post-Arretine layers:

54. Bluntly pointed base from AK II, stratum 7H, contemporary with the construction of the 'warehouse'. Pink ware, yellow slip.
55. Rim and straight high-shouldered handle, of pink ware. From AK II, stratum 9, immediately overlying 7 Ar. and equivalent to 7H (No. 54). The straight, high-shouldered handle is characteristic of the first half of the first century A.D. (Loeschcke type 66, Ritterling type 73).
56. Angular shoulder, of pink ware with yellow slip. From the same stratum as No. 55.
57. Angular shoulder, pink ware with yellow slip, from AK II, stratum 7A, equivalent to that of Nos. 55 and 56.
58. Straight handle, pinkish ware with yellow slip, from AK II, stratum 7D, make-up of floor of 'warehouse'.
59. Bluntly carinated shoulder, pinkish ware with yellow slip. From AK II, stratum 6, make-up of floor of 'warehouse'.
- 60, 61. Short handles, pink ware with yellow slip, from AK V, Pit 1, subsequent to destruction of 'warehouse'. This stumpy type of handle is contemporary with the tall straight type, No. 55, but also long out-lived it.

(b) Stratified amphorae from the Southern Sector (AK IV)

62. Rim, pink ware, from Pottery Group A (with sigillata base stamped ITTA), immediately underlying the earliest-but-one of the brick structures.
63. Angular shoulder, fine pinkish buff ware, dating from the beginning of the main 'Drain Period'.
64. Stumpy handle, pinkish buff ware, from the same layer as No. 63.
65. Fragment of straight handle, from a slightly later structure of the same phase as Nos. 63-4. Pink ware with yellow slip.
66. Pointed base, pink ware with yellow slip. Late 'Drain Period'.
67. Fragment of handle of gritty pink ware. Late Phase.
68. Fragment of handle of fine yellow clay. Late Phase.
69. Fragment of straight handle, gritty pink ware. Late Phase.

(c) From mixed deposits of the Northern Sector

70. Fragment of handle, pink ware with yellow slip. (AK II.)
71. Straight handle, pink ware. (AK II.)
72. Rim, buff ware. (AK II.)
73. Part of straight handle, pink ware with buff slip. (AK II.)
74. Rim, pink ware. (AK II.)

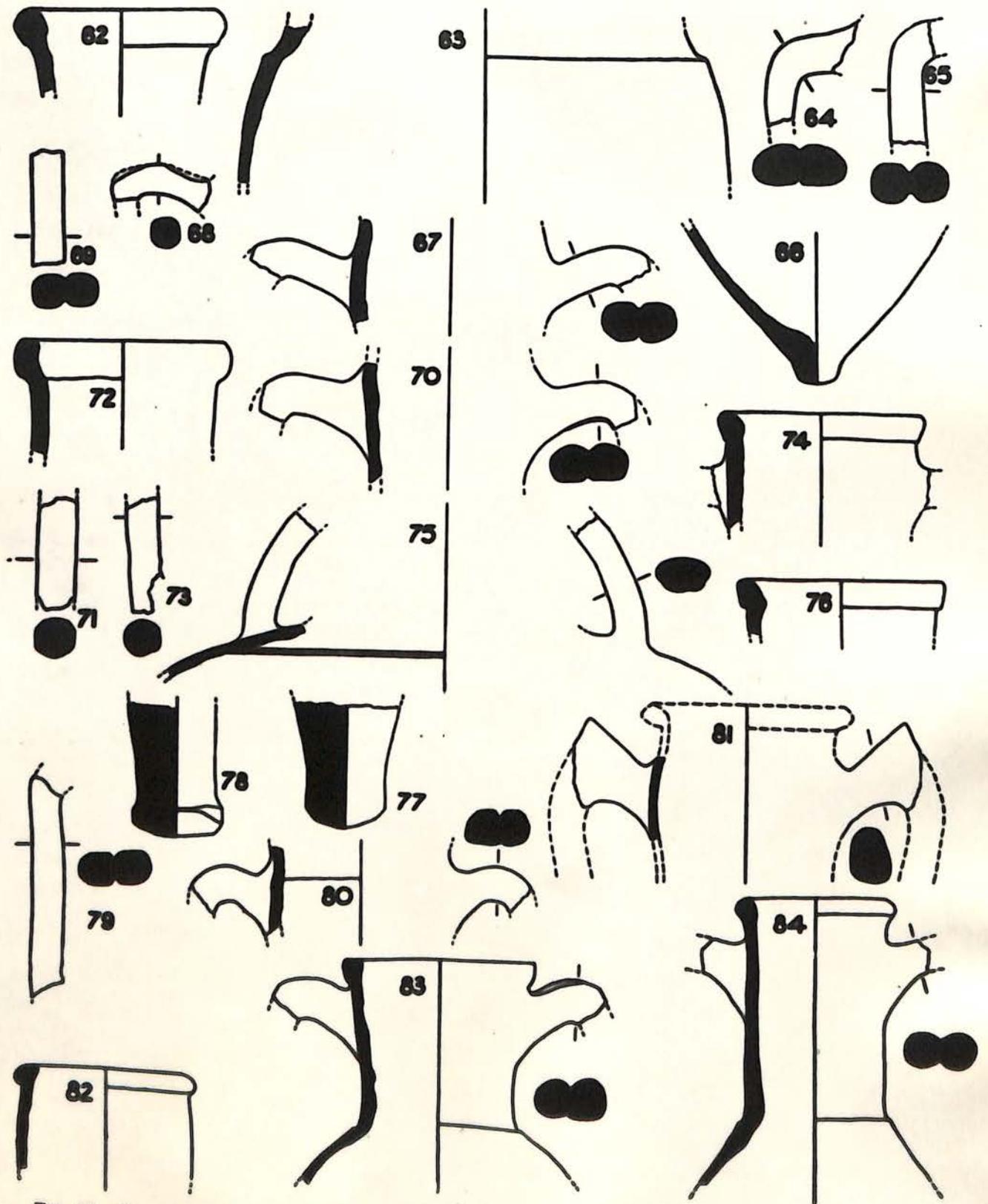


FIG. 10. Imported amphorae : 62-69, from stratified layers, Southern Sector ; 70-84, from mixed layers. †

ARIKAMEDU

- 75. Curved handle, fine pink ware with yellow slip. (AK VIII.)
- 76. Rim, pinkish ware with yellow slip. (AK VIII.)
- 77. Bluntly pointed base, pink ware with yellow slip. (AK VIII.)
- 78. Bluntly pointed base, pink ware. (AK VIII.)
- 79. Straight handle, pinkish ware with buff slip. (AK VII.)

(d) From mixed deposits of the Southern Sector

- 80. Fragment of handle, pink ware with yellow slip. (AK IV.)
- 81. Sharply shouldered handle, fine pinkish ware with yellow slip. This type of handle occurs at Haltern early in the first century A.D. and is found rarely at Hofheim towards the middle of the century. It is exceptional after A.D. 50. (AK IV.)
- 82. Rim of pink ware, traces of yellow slip. (AK IV.)

(e) From the previous (French) excavations

- 83-84. Necks of amphorae of light pink ware, 83 with buff slip.

Note: an amphora from Taxila

The only other Indian site known to have yielded an amphora of Mediterranean type is Taxila (Punjab), where an example (fig. 11) was found at a depth of 7 feet 4 inches in the Parthian city of Sirkap, and is dated by Sir John Marshall to the first centuries B.C.-A.D. Now in the Taxila Museum. Unlike the Arikamedu amphorae, which must represent maritime trade, the Taxila example is on general grounds more likely perhaps to have travelled overland from western Asia.

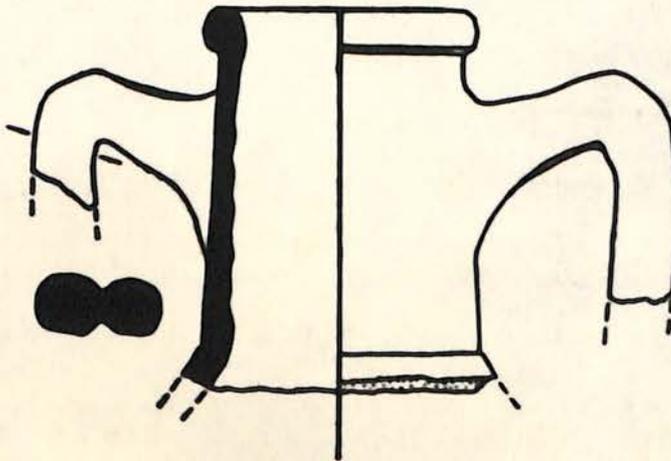


FIG. 11. *Imported amphora from Taxila, Punjab.* †

(iii) Rouletted black ware (Arikamedu Type 1)¹

A characteristic pottery-type of Arikamedu is a dish (Type 1) sometimes more than 12 inches in diameter, with an incurved and beaked rim which usually has a faceted edge. The ware has a remarkably smooth surface, is thin, brittle and well-burnt, and has an almost metallic ring. The flat interior is normally decorated with two, occasionally three, concentric bands of rouletted pattern (fig. 12 and pls. XXIIB, XXV, XXVI). This pattern is not an Indian feature and may be regarded as an importation from the Mediterranean region, but it has not yet been possible to ascertain whether the type itself is of similar origin. It may

¹ This and the following sections on the pottery are contributed by Mr. Krishna Deva.

Class—Mammalia.
 Order—Primates.
 Sub-Order—Anthropoidae.
 Family—Hominadae.¹

33. Fragment of a left human mandible of an adult with two canines, four incisors, two molars and one molar with its cusps highly eroded. From an Arretine-producing layer.
34. Fragment of a left human mandible with two premolars and two molars of a young individual. From a post-Arretine layer.
35. Fragment of the shaft of a human fibula. Both ends broken. From an Arretine layer.

6. APPENDICES

APPENDIX I

Roman coins, first century B.C. to fourth century A.D., found in India and Ceylon

Opportunity is taken to print a revised list of identified Roman coins found in India and Ceylon, and to add a map (fig. 48), on which Arikamedu is also indicated although no Roman coins have yet been found there. The map emphasizes afresh the remarkable extent of the contact of South India with the western world during the Roman principate, implying incidentally a full use of the south-western monsoon. It would appear that the Roman traders found the smaller South Indian kingdoms more amenable or accessible than the large and powerful Āndhra kingdom of the centre, although the latter, with its abundant mineral resources, may be supposed to have taken some part in the business, and indirect cultural contacts with the Mediterranean (notably in the form of clay or metal *bullae* based vaguely on Roman coinage) are discovered there from time to time.

A notable feature of the map is the great cluster of coins, particularly hoards, of the first century A.D. in the Coimbatore district of the South. This may be partially explained by the ancient beryl mines in the district (p. 123); but it is probably more significant that at this point the Eastern Ghats swing westwards and terminate upon the line of the Western Ghats, and that the valley of the Ponnani carries a natural trans-peninsular highway immediately south of the abutment. This highway must have provided a useful alternative to the long coastwise route between the Malābār and Coromandel ports, although the numerous coin-hoards suggest that it was not free from peril in the broken country of the divide.

COIN LIST²

Bihar

1. Bāmanghāṭī, Singbhum Dist. (between Chaibāsa and Balasore, on the main road running W. from the port of Tamluk on the Hughli). Hoard of gold coins, including Gordian (d. A.D. 244). A. Cunningham, *Archl. Survey Rep.*, XIII (1882), 72.

Bombay Presidency

2. Dharphul, Sholāpur Dist. 18 aurei, Commodus—Severus (d. A.D. 211). *Num. Chron.* 1st S., V (1843), 202; *Bombay Gazette*, Jan. 31, 1842; W. Elliot in *Madras Journ. of Lit. and Sc.*, XIII (1844), 215.

¹ W. T. Blandford, *The Fauna of British India, Mammalia*, I (1889-91), 3; Reynolds, *The Vertebrate Skeleton* (Sidney, 1913), p. 47.

² I gladly acknowledge help from Mr. T. G. Aravamuthan in the revision of this list.

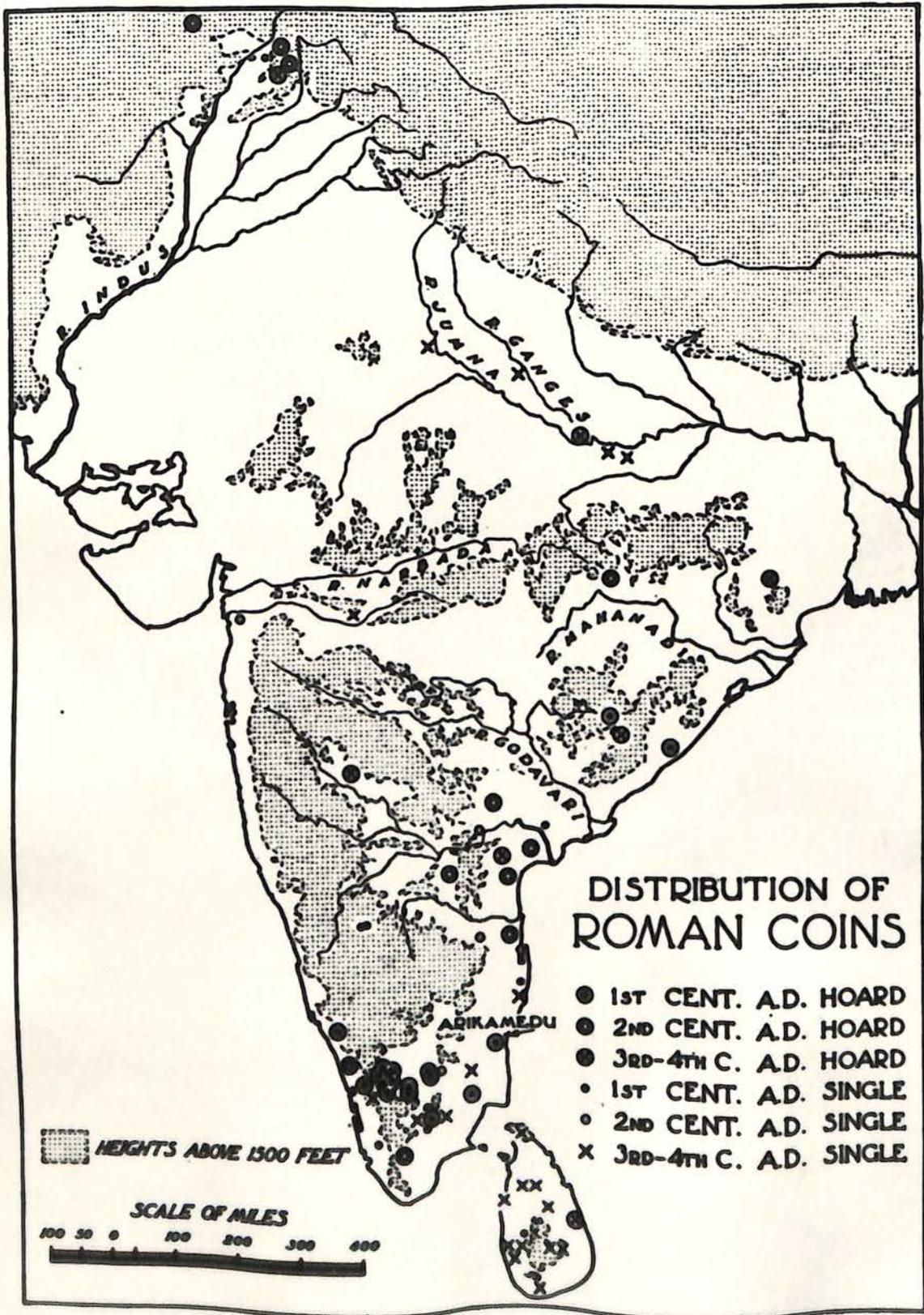


FIG. 48

- 3. Nagdhara, Jalālpur Tk., Surat Dist. Aureus of Lucius Verus (A.D. 166-7). O. Codrington in *Journ. of the Bombay Branch of the Roy. Asiatic Soc.*, XVIII (1890-4), 30-8.
- 4. Waghoda, Raver Tk., East Khandesh Dist. Aureus of the Severi (A.D. 202-20). O. Codrington in *J.B.B.R.A.S.*, XVIII (1890-4), 38.

Central Provinces

- 5. Chajerbedha, Bilāspur Dist. 2 aurei of Commodus (d. A.D. 192). Information supplied through Mr. T. G. Aravamuthan.

Madras Presidency

- 6. Athirāla, Pullampet Tk., Cuddapah Dist. Aureus of Trajan (d. A.D. 117). W. Elliot in *Madras Journ. of Lit. and Sc.*, 1844, pp. 214-5; and in *Ind. Ant.*, II (1873), 241-2.
- 7. Coimbatore Dist. Denarius of Augustus (d. A.D. 14). W. Elliot in *Madras Journ. of Lit. and Sc.*, XIII (1884), 214; *Num. Chron.*, I (1843-4), 162; J. Bird in *J.B.B.R.A.S.*, I (1883), 293ff.
- 8. Coimbatore Dist. 2 denarii of Tiberius (d. A.D. 37). *Madras Mus. A. Rep.*, 1912, pp. 4, 9.
- 9. Gumāda, Jeypore Tk., Vizagapatam Dist. 23 Roman gold coins, ending with Constantine the Great (d. A.D. 337). *Madras Mus. A. Rep.*, 1928, p. 4.
- 10. Kaliyamputtur, Madurā Dist. (near boundary of Madurā and Coimbatore Dist.). 63 gold coins in a pot, Augustus—Nerva (d. A.D. 98). *Madras Journ. of Lit. and Sc.*, XVII (1856-7), 114, and XIX (1857-58), 157-8.
- 11. Karivalamvandanallur, Sankaran Koyil Tk., Tinnevely Dist. Six aurei, latest of Hadrian of A.D. 118. *Madras Mus. A. Rep.*, 1933, p. 5.
- 12. Karur, Trichinopoly Dist. About 500 coins, Augustus—Tiberius (d. A.D. 37) in a pot. H. Little in *Madras Christian College Mag.*, I (1883), 219-26; *Madras Mus. A. Rep.*, 1893, pp. 6-7.
- 13. Karur, Trichinopoly Dist. 5 aurei, including one of Claudius (d. A.D. 54). W. Elliot in *Madras Journ. of Lit. and Sc.*, XIII (1884), 214.
- 14. Karur, Trichinopoly Dist. Aureus of Marcus Aurelius (d. A.D. 180). R. Sewell in *J.R.A.S.*, 1904, p. 617.
- 15. Karuvur, Coimbatore Dist. Hoard of aurei, Augustus—Claudius (d. A.D. 54). Thurston, *Madras Gov. Mus. Cat. Coins No. 1* (1874), p. 1; No. 2 (1888), p. 8. *Madras Journ. of Lit. and Sc.*, XIII (1884), p. 214.
- 16. Karuvur, Coimbatore Dist. Large hoard of denarii, Augustus—Tiberius (d. A.D. 37), in a pot. Thurston, *Madras Gov. Mus. Cat. Coins No. 2* (1888), p. 21; *Madras Christian College Mag.*, October, 1883, pp. 219ff.
- 17. Kattanganni, Dharapuram Tk., Coimbatore Dist. 233 denarii, Augustus—Tiberius (d. A.D. 37). *Madras Mus. A. Rep.*, 1913, pp. 4, 8.
- 18. Kotped, Jeypore Tk., Vizagapatam Dist. 4 Roman denarii, Augustus—Tiberius (d. A.D. 37). *Madras Mus. A. Rep.*, 1915, pp. 5, 6.
- 19. Kottayam, Malabar Dist. Large hoard of aurei, Augustus—Nero (d. A.D. 68). *J.A.S.B.*, XX (1851), 371-87; R. Caldwell, *A Description of Roman Imperial Aurei found near Calicut, Trivandrum* (1851); *Madras Mus. A. Rep.*, 1882, p. 5.
- 20. Kulattuppalaiyam, Dharapuram Tk., Coimbatore Dist. Aureus of Theodosius (d. A.D. 395). *Madras Mus. A. Rep.*, 1934.
- 21. Madurā town. 11 Roman gold coins ending with Nero, dated A.D. 61-2. *Madras Mus. A. Rep.*, 1917, pp. 4, 5, 8.

ARIKAMEDU

- 22. Madurā town. Stray finds of copper coins, including Honorius and Arcadius (c. A.D. 400). R. Sewell, *List of the Antiquarian Remains in the Presidency of Madras*, I (1882), 291.
- 23. Madurā Dist. Aureus of Domitian (d. A.D. 96). *Madras Gov. Mus. Cat. Coins*, No. 2 (1894), p. 29.
- 24. Mahābalipuram, Chingleput Dist. Coin of Theodosius (d. A.D. 395). J. Prinsep in *J.A.S.B.*, I (1832), 406.
- 25. Mahābalipuram, Chingleput Dist. Coin possibly of Theodosius, late fourth century. *Arch. Sur. India, Southern Circle, A. Rep.*, 1888, pp. 2-4, 5.
- 26. Mallayapalem, Guntur Dist. 4 Roman aurei, ending with Antoninus Pius (d. A.D. 161). *Madras Mus. A. Rep.*, 1915, pp. 4, 5, 6.
- 27. Mambalam, Madras city. Coin of Augustus (d. A.D. 14). *Madras Mus. A. Rep.*, 1930, p. 6, and 1931, p. 2.
- 28. Nāgārjunikonḍa, Palnad Tk., Kistna Dist. Gold coin of Hadrian (d. A.D. 138). *Arch. Sur. India A. Rep.*, 1936-7, p. 61.
- 29. Nandyal, Kurnool Dist. Upwards of 52 gold coins, ending with Antoninus Pius (d. A.D. 161), in a pot. *Madras Mus. A. Rep.*, 1935, p. 5.
- 30. Nellor. Hoard of Roman coins in a pot, latest recorded a coin of Antoninus Pius (d. A.D. 161). Davidson in *Asiatic Researches*, II (1790), 331-2.
- 31. Ongole Tk., Guntur Dist. Hoard of coins of which two gold solidi of Nero and Hadrian (d. A.D. 138) are recorded. *Madras Mus. A. Rep.*, 1905, pp. 5 and 8.
- 32. Pennar, Coimbatore Dist. Denarius of Augustus. W. Elliot in *Madras Journ. of Lit. and Sc.*, XIX (1888), 228.
- 33. Pollachi, Coimbatore Dist. Hoard of denarii in a pot, said to be Augustus—Tiberius (d. A.D. 37). *Indian Antiquary*, IV (1875), 302; F. Buchanan, *A Journey from Madras*, II (1807), 318-9.
- 34. Salihundam, Chicacole Tk., Vizagapatam Dist. 11 denarii of Tiberius (d. A.D. 37). *Madras Mus. A. Rep.*, 1899, pp. 5, 9.
- 35. Tanjore. Silver-washed coin of Diocletian (d. A.D. 305). *Madras Mus. A. Rep.*, 1937, p. 7.
- 36. Tondamanathan, Cuddalore Tk., South Arcot District. 6 Roman gold coins, Tiberius—Nero (d. A.D. 68). *Madras Mus. A. Rep.*, 1918, pp. 3, 7.
- 37. Vellalur, Coimbatore Dist. 'A find of silver denarii', *Madras Mus. A. Rep.*, 1891, p. 8; E. Thurston in *Num. Chron.*, 1891, pp. 199-202; *Madras Mus. Catalogue of Coins* No. 2 (1894), p. 24.
- 38. Vellalur, Coimbatore Dist. 121 denarii of Augustus (d. A.D. 14). *Madras Mus. A. Rep.*, 1932, pp. 8, 9.
- 39. Vellalur, Coimbatore Dist. 522 denarii, Augustus—Claudius (d. A.D. 54) in a pot. W. Elliot in *Madras Journ. of Lit. and Sc.*, XIII (1844), 212-4; J. Bird in *J.B.B.R.A.S.*, I (1843), 294.
- 40. Vidiyadurrapuram, Bezvada Tk., Kistna Dist. Denarius of Tiberius (d. A.D. 37). *Arch. Sur. of India, Southern Circle, A. Rep.*, 1888, pp. 2-4, 5.
- 41. Vinukonda, Guntur Dist. 15 Roman gold coins, ending with Caracalla (d. A.D. 217). *Num. Chron.* 3rd S., IX (1889), 325-8.

Punjab, N.-W. Frontier Province and Afghanistan

- 42. Jalālābād, Afghanistan. In the Ahin Posh stūpa, with Kushan coins, were 3 Roman aurei, the latest of Antoninus Pius (d. A.D. 161). Waterhouse in *Pr. of the Asiatic Soc. of Bengal* (1879), pp. 77-9; A. F. R. Hoernle, *Ib.*, pp. 122, 134-5.

- 43. Manikyālā, Rawalpindi Dist., Punjab. 5 aurei, latest of A.D. 158-9. A. F. R. Hoernle in *Pr. A.S.B.*, LIII (1886), 86-9.
- 44. Manikyālā, Rawalpindi Dist., Punjab. 7 worn Republican denarii of the first century B.C., with Kushan coins of first-second century A.D. A. Court in *Journ. of the Asiatic Soc. of Bengal*, III (1834), 558-9; J. Prinsep, *ib.*, 564-5; A. Cunningham, *ib.*, 635-7.
- 45. Pakli, Hazara Dist., N.-W. Frontier. Hoard of denarii, the latest known being one of Hadrian (d. A.D. 137). *Num. Chron.* 3rd S., XIX (1889), 263.
- 46. Taxila, Rawalpindi Dist., Punjab. Denarius of Tiberius (d. A.D. 37). *Arch. Surv. India A. Rep.*, 1935, pp. 29-30, 83.

United Provinces

- 47. Allahabad. Coins of Diocletian (A.D. 283-93). J. Prinsep in *J.A.S.B.*, I (1832), 476.
- 48. Chunār, Mirzāpur Dist. Copper coin of Numerianus (A.D. 283). J. Prinsep in *J.A.S.B.*, I (1832), 392-408, 476.
- 49. Kanauj, Kanauj Tk., Farrukhābād Dist. Copper coin of Diocletian (A.D. 283-93). H. H. Wilson in *Asiatic Researches*, XVII, 561; J. Prinsep in *J.A.S.B.*, I (1832), 476.
- 50. Mathurā (Muttra). Gold coin of Caracalla (d. A.D. 217). Information from Curator of Curzon Museum, Mathurā.
- 51. Mirzāpur. Coin of Carinus, minted A.D. 283-4. *J.A.S.B.*, I (1832), 392-408, 476.

Cochin State

- 52. Eyyal, 22 miles N.-W. of Trichur. Found on the slope of a hill east of the village in an earthenware pot, 1945. 12 gold coins : of Trajan (Cos II), 1; Nero, 2; Claudius, 1; Tiberius, 8. About 50 silver coins, late Republican—Augustus. Also about 12 silver punch-marked coins, with some unstamped pieces of silver. Date of deposit, c. 100 A.D.; the Roman silver and the punch-marked coins are much worn, whereas the aurei are fresh. Information and photographs from the State Archaeologist, Cochin State.

Hyderabad State

- 53. Gaiparti, Suriapet Tk., Nalgonda Dist. 3 Roman gold coins, latest of Antoninus Pius and dated A.D. 140-4. *A. Report of Arch. Surv. of the Nizam's Dominions*, 1933, pp. 7, 39.

Mysore State

- 54. Chaniravalli, Chitaldrug Tk. Denarius of Augustus (d. A.D. 23). *Arch. Surv. Mysore A. Rep.*, 1909, p. 30.
- 55. Chandravalli, Chitaldrug Tk. At least two denarii of Tiberius were found here in 'Excavation 15' in 1929 and are now in the Mysore Museum. They have not been published, but there is apparently a reference to one of them in *Excavation at Chandravalli, Supplement to the Annual Report of the Mysore Archaeological Department*, 1929 (pub. 1931), p. 25.
- 56. Yaswantpur, Bangalore Dist. 163 denarii, Augustus—Claudius (d. A.D. 54), in a pot. L. Rice, *Find of Roman Coins near Bangalore* (1891); and E. Thurston, *Madras Govt. Mus. Cat. Coins No. 2* (1894), pp. 26-8.

Pudukkottai State

57. Karukkakkuriochi, Alangudi Tk. Hoard of aurei, ending with Vespasian (*d. A.D. 79*). G. F. Hill in *Num. Chron.*, III, XVIII (1898), 304-20; G. G. Rodgers, *ib.*, III, XIX (1899), 263-5.

Travancore State

58. Poonjar, about 150 miles north of Trivandrum. Gold coin of Augustus, found 1945. Early first century A.D.

*Ceylon*¹

59. Ampitiya. Coin of Arcadius (*d. A.D. 408*).
 60. Anurādhapura. Coins of Theodosius, Arcadius and Indo-Roman coins in various places.
 61. Attikuli, in Mannar Dist. Constantius, Theodosius and Arcadius.
 62. Badulla. Coins of Aurelian and Arcadius.
 63. Balapittya. Hoard of fourth century coins down to Arcadius.
 64. Batticaloa. 5 coins of Arcadius and Honorius (*d. A.D. 423*).
 65. Boragoda. 40 coins, Constantius II—Honorius.
 66. Colombo. Many coins, Constantine II—Honorius.
 67. Gintota. 6 of Constantine II, Arcadius and Honorius.
 68. Hikkaduwa. 17 coins, Constantius II—Arcadius.
 69. Kalmunai, Eastern Provinces. Arcadius or Honorius.
 70. Kalpitiya. Coin of Honorius.
 71. Kantarodni, in Jaffna peninsula. 150 fourth century bronze down to Honorius.
 72. Kitalagama. Coins of Theodosius and Arcadius.
 73. Kolugala, in Turpana. 220 coins, Constantine I—Honorius.
 74. Kurunegala Dist. Coins of Nero and Vespasian.
 75. Mantota. Antonine coins.
 76. Matara. Coin of Maximian II.
 77. Pandirippu, Eastern Province. 1 fourth century coin.
 78. Pidarikulam, Giant's Tank. Coins of Gratian and Valentinian II or Theodosius I.
 79. Sigiriya. 1,675 fourth century coins down to Honorius.
 80. Udappu. Coins of Theodosius and Arcadius or Honorius.

APPENDIX II

*Semi-precious stones*²

(Map, fig. 49)

Of precious stones, diamonds, rubies and sapphires were obtained in India for the Roman market: the first presumably from the Cuddapah and Kurnool system of the Deccan and the Vindhyan system of the centre; rubies probably from Ceylon, Salem and Mysore in southern India, and possibly Rewa in central India; sapphires also from Ceylon, Salem and the upper Godāvāri. More extensive was the trade in Indian pearls, fished chiefly in the Palk Strait and the Gulf of Mannār, between Ceylon and the mainland, where the port of Kolkhoi served as a primary depot.

¹ See H. W. Codrington, *Ceylon Coins and Currency* (Colombo Museum, 1924); and J. Still in the *Journ. of the Royal Asiatic Soc.* (Ceylon Branch), XIX (1907).

² Information from the Geological Survey of India, and from J. Coggin Brown, *India's Mineral Wealth* (Oxford, 1936), pp. 283ff.

Class—Mammalia.
 Order—Primates.
 Sub-Order—Anthropoidae.
 Family—Hominadae.¹

33. Fragment of a left human mandible of an adult with two canines, four incisors, two molars and one molar with its cusps highly eroded. From an Arretine-producing layer.
34. Fragment of a left human mandible with two premolars and two molars of a young individual. From a post-Arretine layer.
35. Fragment of the shaft of a human fibula. Both ends broken. From an Arretine layer.

6. APPENDICES

APPENDIX I

Roman coins, first century B.C. to fourth century A.D., found in India and Ceylon

Opportunity is taken to print a revised list of identified Roman coins found in India and Ceylon, and to add a map (fig. 48), on which Arikamedu is also indicated although no Roman coins have yet been found there. The map emphasizes afresh the remarkable extent of the contact of South India with the western world during the Roman principate, implying incidentally a full use of the south-western monsoon. It would appear that the Roman traders found the smaller South Indian kingdoms more amenable or accessible than the large and powerful Āndhra kingdom of the centre, although the latter, with its abundant mineral resources, may be supposed to have taken some part in the business, and indirect cultural contacts with the Mediterranean (notably in the form of clay or metal *bullae* based vaguely on Roman coinage) are discovered there from time to time.

A notable feature of the map is the great cluster of coins, particularly hoards, of the first century A.D. in the Coimbatore district of the South. This may be partially explained by the ancient beryl mines in the district (p. 123); but it is probably more significant that at this point the Eastern Ghats swing westwards and terminate upon the line of the Western Ghats, and that the valley of the Ponnani carries a natural trans-peninsular highway immediately south of the abutment. This highway must have provided a useful alternative to the long coastwise route between the Malābār and Coromandel ports, although the numerous coin-hoards suggest that it was not free from peril in the broken country of the divide.

COIN LIST²

Bihar

1. Bāmanghāṭī, Singbhum Dist. (between Chaibāsa and Balasore, on the main road running W. from the port of Tamluk on the Hughli). Hoard of gold coins, including Gordian (d. A.D. 244). A. Cunningham, *Archl. Survey Rep.*, XIII (1882), 72.

Bombay Presidency

2. Dharphul, Sholāpur Dist. 18 aurei, Commodus—Severus (d. A.D. 211). *Num. Chron.* 1st S., V (1843), 202; *Bombay Gazette*, Jan. 31, 1842; W. Elliot in *Madras Journ. of Lit. and Sc.*, XIII (1844), 215.

¹ W. T. Blanford, *The Fauna of British India, Mammalia*, I (1889–91), 3; Reynolds, *The Vertebrate Skeleton* (Sidney, 1913), p. 47.

² I gladly acknowledge help from Mr. T. G. Aravamuthan in the revision of this list.

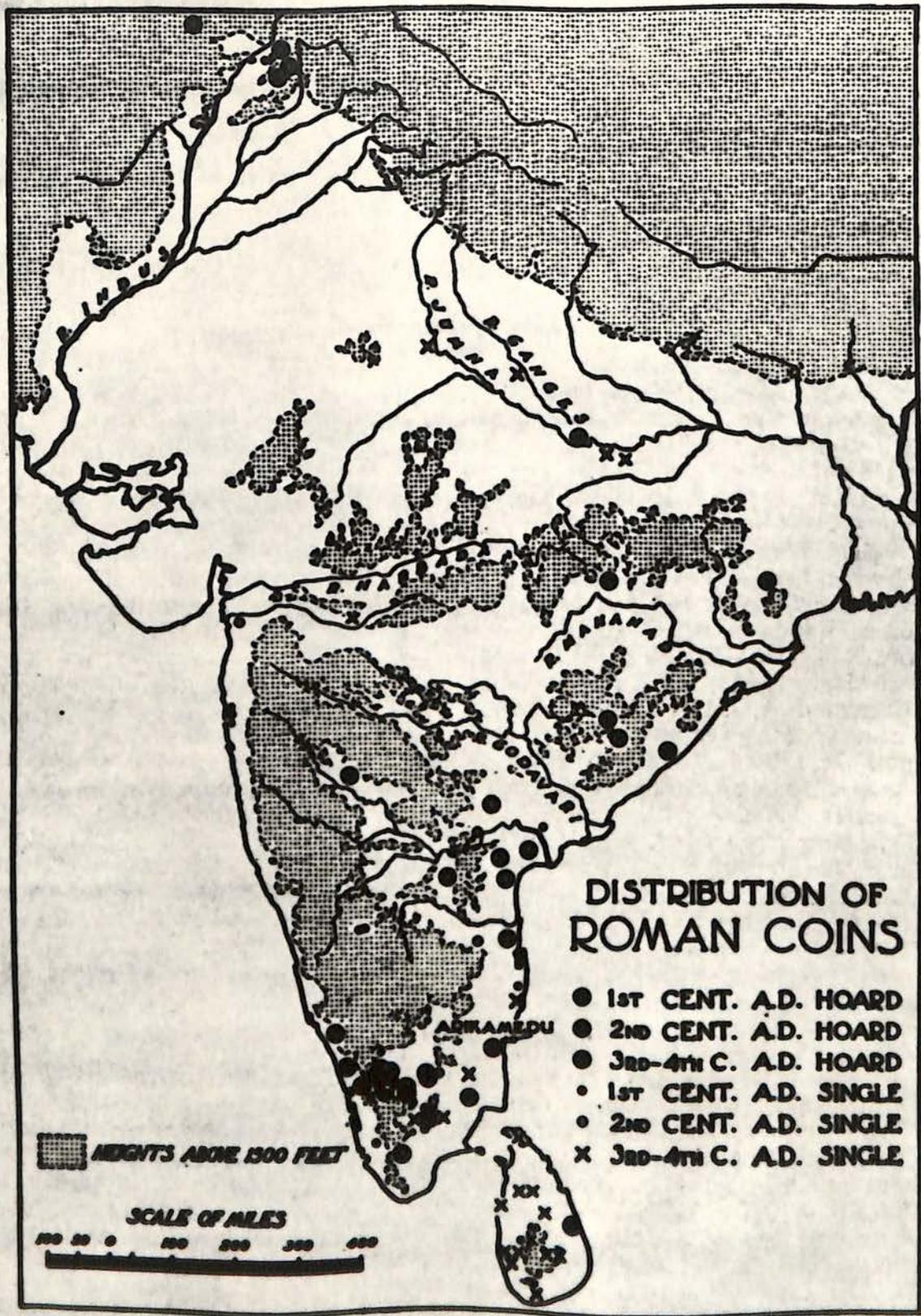


FIG. 48
117

3. Nagdhara, Jalālpur Tk., Surat Dist. Aureus of Lucius Verus (A.D. 166-7). O. Codrington in *Journ. of the Bombay Branch of the Roy. Asiatic Soc.*, XVIII (1890-4), 30-8.
4. Waghoda, Raver Tk., East Khandesh Dist. Aureus of the Severi (A.D. 202-20). O. Codrington in *J.B.B.R.A.S.*, XVIII (1890-4), 38.

Central Provinces

5. Chajerbedha, Bilāspur Dist. 2 aurei of Commodus (d. A.D. 192). Information supplied through Mr. T. G. Aravamuthan.

Madras Presidency

6. Athirāla, Pullampet Tk., Cuddapah Dist. Aureus of Trajan (d. A.D. 117). W. Elliot in *Madras Journ. of Lit. and Sc.*, 1844, pp. 214-5; and in *Ind. Ant.*, II (1873), 241-2.
7. Coimbatore Dist. Denarius of Augustus (d. A.D. 14). W. Elliot in *Madras Journ. of Lit. and Sc.*, XIII (1884), 214; *Num. Chron.*, I (1843-4), 162; J. Bird in *J.B.B.R.A.S.*, I (1883), 293ff.
8. Coimbatore Dist. 2 denarii of Tiberius (d. A.D. 37). *Madras Mus. A. Rep.*, 1912, pp. 4, 9.
9. Gumāda, Jeypore Tk., Vizagapatam Dist. 23 Roman gold coins, ending with Constantine the Great (d. A.D. 337). *Madras Mus. A. Rep.*, 1928, p. 4.
10. Kaliyamputtur, Madurā Dist. (near boundary of Madurā and Coimbatore Dist.). 63 gold coins in a pot, Augustus—Nerva (d. A.D. 98). *Madras Journ. of Lit. and Sc.*, XVII (1856-7), 114, and XIX (1857-58), 157-8.
11. Karivalamvandanallur, Sankaran Koyil Tk., Tinnevely Dist. Six aurei, latest of Hadrian of A.D. 118. *Madras Mus. A. Rep.*, 1933, p. 5.
12. Karur, Trichinopoly Dist. About 500 coins, Augustus—Tiberius (d. A.D. 37) in a pot. H. Little in *Madras Christian College Mag.*, I (1883), 219-26; *Madras Mus. A. Rep.*, 1893, pp. 6-7.
13. Karur, Trichinopoly Dist. 5 aurei, including one of Claudius (d. A.D. 54). W. Elliot in *Madras Journ. of Lit. and Sc.*, XIII (1884), 214.
14. Karur, Trichinopoly Dist. Aureus of Marcus Aurelius (d. A.D. 180). R. Sewell in *J.R.A.S.*, 1904, p. 617.
15. Karuvur, Coimbatore Dist. Hoard of aurei, Augustus—Claudius (d. A.D. 54). Thurston, *Madras Gov. Mus. Cat. Coins* No. 1 (1874), p. 1; No. 2 (1888), p. 8. *Madras Journ. of Lit. and Sc.*, XIII (1884), p. 214.
16. Karuvur, Coimbatore Dist. Large hoard of denarii, Augustus—Tiberius (d. A.D. 37), in a pot. Thurston, *Madras Gov. Mus. Cat. Coins* No. 2 (1888), p. 21; *Madras Christian College Mag.*, October, 1883, pp. 219ff.
17. Kattanganni, Dharapuram Tk., Coimbatore Dist. 233 denarii, Augustus—Tiberius (d. A.D. 37). *Madras Mus. A. Rep.*, 1913, pp. 4, 8.
18. Kotpad, Jeypore Tk., Vizagapatam Dist. 4 Roman denarii, Augustus—Tiberius (d. A.D. 37). *Madras Mus. A. Rep.*, 1915, pp. 5, 6.
19. Kottayam, Malabar Dist. Large hoard of aurei, Augustus—Nero (d. A.D. 68). *J.A.S.B.*, XX (1851), 371-87; R. Caldwell, *A Description of Roman Imperial Aurei found near Calicut*, Trivandrum (1851); *Madras Mus. A. Rep.*, 1882, p. 5.
20. Kulattuppalaiyam, Dharapuram Tk., Coimbatore Dist. Aureus of Theodosius (d. A.D. 395). *Madras Mus. A. Rep.*, 1934.
21. Madurā town. 11 Roman gold coins ending with Nero, dated A.D. 61-2. *Madras Mus. A. Rep.*, 1917, pp. 4, 5, 8.

ARIKAMEDU

- 22. Madurā town. Stray finds of copper coins, including Honorius and Arcadius (c. A.D. 400). R. Sewell, *List of the Antiquarian Remains in the Presidency of Madras*, I (1882), 291.
- 23. Madurā Dist. Aureus of Domitian (d. A.D. 96). *Madras Gov. Mus. Cat. Coins*, No. 2 (1894), p. 29.
- 24. Mahābalipuram, Chingleput Dist. Coin of Theodosius (d. A.D. 395). J. Prinsep in *J.A.S.B.*, I (1832), 406.
- 25. Mahābalipuram, Chingleput Dist. Coin possibly of Theodosius, late fourth century. *Arch. Sur. India, Southern Circle, A. Rep.*, 1888, pp. 2-4, 5.
- 26. Mallayapalem, Guntur Dist. 4 Roman aurei, ending with Antoninus Pius (d. A.D. 161). *Madras Mus. A. Rep.*, 1915, pp. 4, 5, 6.
- 27. Mambalam, Madras city. Coin of Augustus (d. A.D. 14). *Madras Mus. A. Rep.*, 1930, p. 6, and 1931, p. 2.
- 28. Nāgārjunikonda, Palnad Tk., Kistna Dist. Gold coin of Hadrian (d. A.D. 138). *Arch. Sur. India A. Rep.*, 1936-7, p. 61.
- 29. Nandyal, Kurnool Dist. Upwards of 52 gold coins, ending with Antoninus Pius (d. A.D. 161), in a pot. *Madras Mus. A. Rep.*, 1935, p. 5.
- 30. Nellor. Hoard of Roman coins in a pot, latest recorded a coin of Antoninus Pius (d. A.D. 161). Davidson in *Asiatic Researches*, II (1790), 331-2.
- 31. Ongole Tk., Guntur Dist. Hoard of coins of which two gold solidi of Nero and Hadrian (d. A.D. 138) are recorded. *Madras Mus. A. Rep.*, 1905, pp. 5 and 8.
- 32. Pennar, Coimbatore Dist. Denarius of Augustus. W. Elliot in *Madras Journ. of Lit. and Sc.*, XIX (1888), 228.
- 33. Pollachi, Coimbatore Dist. Hoard of denarii in a pot, said to be Augustus—Tiberius (d. A.D. 37). *Indian Antiquary*, IV (1875), 302; F. Buchanan, *A Journey from Madras*, II (1807), 318-9.
- 34. Salihundam, Chicacole Tk., Vizagapatam Dist. 11 denarii of Tiberius (d. A.D. 37). *Madras Mus. A. Rep.*, 1899, pp. 5, 9.
- 35. Tanjore. Silver-washed coin of Diocletian (d. A.D. 305). *Madras Mus. A. Rep.*, 1937, p. 7.
- 36. Tondamanathan, Cuddalore Tk., South Arcot District. 6 Roman gold coins, Tiberius—Nero (d. A.D. 68). *Madras Mus. A. Rep.*, 1918, pp. 3, 7.
- 37. Vellalur, Coimbatore Dist. 'A find of silver denarii', *Madras Mus. A. Rep.*, 1891, p. 8; E. Thurston in *Num. Chron.*, 1891, pp. 199-202; *Madras Mus. Catalogue of Coins* No. 2 (1894), p. 24.
- 38. Vellalur, Coimbatore Dist. 121 denarii of Augustus (d. A.D. 14). *Madras Mus. A. Rep.*, 1932, pp. 8, 9.
- 39. Vellalur, Coimbatore Dist. 522 denarii, Augustus—Claudius (d. A.D. 54) in a pot. W. Elliot in *Madras Journ. of Lit. and Sc.*, XIII (1844), 212-4; J. Bird in *J.B.B.R.A.S.*, I (1843), 294.
- 40. Vidiyadurrapuram, Bozwada Tk., Kistna Dist. Denarius of Tiberius (d. A.D. 37). *Arch. Sur. of India, Southern Circle, A. Rep.*, 1888, pp. 2-4, 5.
- 41. Vinukonda, Guntur Dist. 15 Roman gold coins, ending with Caracalla (d. A.D. 217). *Num. Chron.* 3rd S., IX (1889), 325-8.

Punjab, N.-W. Frontier Province and Afghanistan

- 42. Jalālābād, Afghanistan. In the Ahin Posh stūpa, with Kushan coins, were 3 Roman aurei, the latest of Antoninus Pius (d. A.D. 161). Waterhouse in *Pr. of the Asiatic Soc. of Bengal* (1879), pp. 77-9; A. F. R. Hoernle, *ib.*, pp. 122, 134-5.

43. Manikyālā, Rawalpindi Dist., Punjab. 5 aurei, latest of A.D. 158-9. A. F. R. Hoernle in *Pr. A.S.B.*, LIII (1886), 86-9.
44. Manikyālā, Rawalpindi Dist., Punjab. 7 worn Republican denarii of the first century B.C., with Kushan coins of first-second century A.D. A. Court in *Journ. of the Asiatic Soc. of Bengal*, III (1834), 558-9; J. Prinsep, *Ib.*, 564-5; A. Cunningham, *Ib.*, 635-7.
45. Pakli, Hazara Dist., N.-W. Frontier. Hoard of denarii, the latest known being one of Hadrian (d. A.D. 137). *Num. Chron.* 3rd S., XIX (1889), 263.
46. Taxila, Rawalpindi Dist., Punjab. Denarius of Tiberius (d. A.D. 37). *Arch. Surv. India A. Rep.*, 1935, pp. 29-30, 83.

United Provinces

47. Allahabad. Coins of Diocletian (A.D. 283-93). J. Prinsep in *J.A.S.B.*, I (1832), 476.
48. Chunār, Mirzāpur Dist. Copper coin of Numerianus (A.D. 283). J. Prinsep in *J.A.S.B.*, I (1832), 392-408, 476.
49. Kanauj, Kanauj Tk., Farrukhābād Dist. Copper coin of Diocletian (A.D. 283-93). H. H. Wilson in *Asiatic Researches*, XVII, 561; J. Prinsep in *J.A.S.B.*, I (1832), 476.
50. Mathurā (Muttra). Gold coin of Caracalla (d. A.D. 217). Information from Curator of Curzon Museum, Mathurā.
51. Mirzāpur. Coin of Carinus, minted A.D. 283-4. *J.A.S.B.*, I (1832), 392-408, 476.

Cochin State

52. Eyyal, 22 miles N.-W. of Trichur. Found on the slope of a hill east of the village in an earthenware pot, 1945. 12 gold coins: of Trajan (Cos II), 1; Nero, 2; Claudius, 1; Tiberius, 8. About 50 silver coins, late Republican—Augustus. Also about 12 silver punch-marked coins, with some unstamped pieces of silver. Date of deposit, c. 100 A.D.; the Roman silver and the punch-marked coins are much worn, whereas the aurei are fresh. Information and photographs from the State Archaeologist, Cochin State.

Hyderabad State

53. Gaiparti, Suriapet Tk., Nalgonda Dist. 3 Roman gold coins, latest of Antoninus Pius and dated A.D. 140-4. *A. Report of Arch. Surv. of the Nizam's Dominions*, 1933, pp. 7, 39.

Mysore State

54. Chanūravalli, Chitaldrug Tk. Denarius of Augustus (d. A.D. 23). *Arch. Surv. Mysore A. Rep.*, 1909, p. 30.
55. Chandravalli, Chitaldrug Tk. At least two denarii of Tiberius were found here in 'Excavation 15' in 1929 and are now in the Mysore Museum. They have not been published, but there is apparently a reference to one of them in *Excavation at Chandravalli, Supplement to the Annual Report of the Mysore Archaeological Department*, 1929 (pub. 1931), p. 25.
56. Yaswantpur, Bangalore Dist. 163 denarii, Augustus—Claudius (d. A.D. 54), in a pot. L. Rice, *Find of Roman Coins near Bangalore* (1891); and E. Thurston, *Madras Govt. Mus. Cat. Coins No. 2* (1894), pp. 26-8.

INDIA

393