ARCHAEOLOGY, TRADE AND SOCIETY IN NORTHEAST SUMATRA

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By the first or second century A.D. a set of integrated political and economic institutions existed in many ports on a network of maritime trade routes which connected the coasts of east Africa, western Asia, India, and Southeast Asia. China independently evolved similar procedures and institutions in her dealings with nomadic groups along her inland frontiers, and when in about the fifth century A.D. the ports in south China joined in the commerce of the Nanhai (South Seas), China used many of these institutions to regulate this commerce as well. Merchants from the West would have found practices in the Chinese ports to be little different from those already familiar from visiting other ports in the network. This system was still functioning when the Portuguese and other Europeans began trading in the Indian Ocean in the sixteenth century.

Indonesians probably participated in the Indian Ocean commercial network at a very early period. Indonesian products such as camphor, benzoin, cloves, and pepper were important commodities in Indian Ocean markets. Control over foreign trade could provide enormous wealth for rulers, and

historical evidence shows that members of elites in maritime Southeast Asia and elsewhere were deeply concerned with acquiring wealth and exotic objects to use as means of maintaining political power.

Historical reconstructions indicate that Sumatran emporia were important commercial centers by the early first millennium A.D. The sources of marketable Sumatran produce lay in the highlands, but there is little historical information regarding the routes by which the commodities were brought to the coastal emporia, and the arrangements between hinterland producers and lowland rulers which governed this internal traffic. This lack of information is to some extent the result of policies which lowland rulers pursued, in their attempt to interpose themselves between producers and foreign merchants.

Archaeological research, still in the initial stage in Sumatra, can contribute to the study of the old commercial system in two ways: by discovering and examining sites of coastal emporia, and by tracing the cultural, political and economic relationships between coastal emporia and their hinterlands. The second goal has not yet been attempted in Southeast Asia. Studies of hinterland-lowland relationships can contribute significantly to reconstructions of pre-colonial Indonesian society, and the role of long-distance trade in the development of Indonesian civilization.

In this study, which focuses on the Deli River valley of northeast Sumatra, I use historical, geomorphological and archaeological information to discover places which were important in pre-colonial trade in imported objects, and the extent to which the "gateway city" hypothesis is useful in analyzing early Sumatran economic processes. I also make some suggestions for future research in Sumatra to test hypotheses formed on the basis of this data, and consider briefly some ways in which the study of Sumatran civilization can contribute to the broader questions of the role of long-distance trade in the evolution of civilized societies generally.

BIOGRAPHICAL SKETCH

John Norman Miksic was born on October 29, 1946, in Rochester, New York, and lived in the township of Canadice until 1964. After graduating from Honeoye Central School, he attended Dartmouth College, Hanover, New Hampshire, and was awarded his A.B. in anthropology there in June 1968. A month later he joined the U.S. Peace Corps and was assigned to work with the Department of Agriculture in Malaysia.

While working in the town of Sungai Patani, Kedah, he met a teacher, Tho Heimun. They were married in March 1970, in Penang, and both continued to teach in that city until April 1972. In that year Mr. Miksic began graduate studies. After gaining a Master of Arts degree in International Affairs from Ohio University, Miksic went to study in the Department of Anthropology at Cornell in August 1974.

The Miksic family returned to Southeast Asia in 1976, and after travels in Java, began fieldwork in northeast Sumatra. Near the end of the field research a son, Ezra Yon, was born in Penang, on July 25, 1977.

Mr. Miksic returned to Ithaca in September 1977 and, with the assistance of a Foreign Language and Area

Studies grant, wrote a Ph.D. dissertation based on his Sumatran fieldwork. Mr. Miksic is currently employed in the John M. Olin Graduate Library at Cornell.

DEDICATION

To my wife, my stadial rod carrier, my pot-gluer and my artist--all in one.

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Among the faculty who have guided me during the formulation of my research problem and the completion of the dissertation I must thank Dr. J. Norman Parmer and Patricia Gall, both formerly of Ohio University; Profs. John Echols, Arthur Bloom, Stanley J. O'Connor, and Lauriston Sharp, of Cornell, all of whom guided me to a better understanding of specific problems in archaeology, geology and linguistics; and Profs. Thomas F. Lynch, John S. Henderson, Oliver W. Wolters, and Donald De Glopper, members of my doctoral committee who read and criticized the dissertation as a whole.

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Pieter Ferdinandus, Drs. Hasan Ambari, and others. I hope I was able to contribute as much to the Pusat as I received from our cooperation during the survey of the Deli River valley. I hope we can renew our cooperative relationship in the near future.

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(from R.H. Smith, "An approach to the drawing of pottery and small finds for excavation reports," World Archaeology 2/2, 1970: 212-228.)

Indented portion of potsherd - 

Embossed portion of potsherd - 

Original surface missing - 

Traces of surface color only - 

Wash - 

Slip - 

Smoke-blackening deposit after fabrication - 

Color designation (Munsell Soil Color Chart) - 5YR.6/2

Sherd of known horizontal orientation on its vessel but of unknown top-bottom orientation - 

ABBREVIATIONS

AP	Asian Perspectives
BEFEO	Bulletin de l'Ecole Francaise d'Extreme Orient
BKI	Bijdragen tot de Taal-, Land- en Volkenkunde (van Nederlandsch-Indie) uitgegeven door het Koninklijk Instituut voor Taal-, Land- en Volkenkunde (van Nederlandsch-Indie).
BKS	Berita Kajian Sumatra
BMJ	Brunei Museum Journal
BSOAS	Bulletin of the School of Oriental and African Studies
JESHO	Journal of the Economic and Social History of the Orient
JMBRAS	Journal of the Malaysian Branch of the Royal Asiatic Society
JSEAH	Journal of South East Asian History
NBG	Notulen van de algemeene en Bestuurs-vergaderingen van het Bataviaasch Genootschap van Kunsten en Wettenschappen
OV	Oudheidkundig Verslag uitgegeven door het (Koninklijk) Bataviaasch Genootschap van Kunsten en Wettenschappen

TBG	Tijdschrift voor Indische Taal-, Land- en Volkenkunde uitgegeuen door het (Koninklijk) Batiaasch Genootschap van Kunsten en Wettenschappen
TKAG	Tijdschrift van het Koninklijk Nederlandsch Aardrijkskondig Genootschap
SMJ	Sarawak Museum Journal
VBG	Vfrhandelingen van het (Koninklijk) Bataviaasch Genootschap van Kunsten en Wettenschappen

PREFACE

In 1968 I became a Peace Corps Volunteer and was assigned to work with the Department of Agriculture in the State of Kedah, Malaysia, to conduct socio-economic surveys and assist in the organization of a Farmers' Cooperative in the Merbok District. When my Malaysian coworkers learned that I had studied North American archaeology, they showed me some of the numerous temple ruins and other remains of pre-Islamic settlement in the district. Later I had an opportunity to visit the Muzium Negara in Kuala Lumpur and see some of the artifacts which had been excavated in Kedah. My interest in Southeast Asian historical archaeology dates from these experiences.

Anxious to obtain more information on ancient Kedah, I read the archaeological reports of Alastair Lamb and H.G. Quaritch Wales and the historical writings of Paul Wheatley and O.W. Wolters (see Bibliography). The work of the latter two authors revealed to me how large a proportion of the early history of Malaysia and Indonesia is known only from the records kept by other peoples, principally Arabs and Chinese. Wolters' study of Early Indonesian Commerce suggested to me that numerous archaeological sites ought to exist in Malaysia and

Indonesia and contain evidence of long-distance trade across the Indian Ocean and the South China Sea. Unfortunately the glory of such emporia as Srivijaya, whose origin and decline Wolters has traced, is at present visible to us almost entirely from its reflection in non-Malay literary sources.

Archaeological research cannot of course provide the same type of information which historical sources contain. However, archaeological research has the advantage that it obtains its data from indigenous sources (artifacts in local archaeological sites). To this extent archaeology is independent of the impressions conveyed to us through non-Indonesian media. Archaeology can both provide a check on biases which ancient sources may contain, and yield completely new data for cultural-historical reconstructions of early Indonesian society.

The study of Indonesian historical archaeology can also be relevant to more general research topics. I have chosen to focus on the evidence for Indonesian involvement in long-distance trade, and have attempted to suggest some reasons why such long-distance trade in many parts of the world in early times was carried out through a set of very similar institutions which were frequently integrated with the rest of the various cultures in specific ways. The solution to this problem of accounting for these organizational similarities lies neither in

archaeology nor history alone but in an eclectic approach which includes recourse to such fields as geography and geomorphology.

Archaeological knowledge of Malaysia and Indonesia is rudimentary for all periods. During the colonial era, very few of those individuals who conducted archaeological research in the region were trained in excavation techniques; today many would be called art historians. The situation has improved since independence, particularly during the period after about 1970, when archaeologists from Malaysia and Indonesia began to obtain more institutional and financial resources.

In the present study I have had to lean heavily on information compiled and discussed by historians. I shall be more than content if this study achieves nothing more than to suggest some relevant directions for future research combining Southeast Asian cultural history and historical archaeology which will simultaneously contribute to the solution of broader anthropological questions.

This study is divided into five chapters. The first three contain a summary of the sources which I consulted before undertaking field work in Indonesia in 1976 and 1977 and led me to believe that archaeological sites in northeast Sumatra contained evidence of long-distance commerce and its role in precolonial Indonesian society.

Chapter one investigates historical data on early

maritime trading systems of Southeast Asia. Chapter two outlines some ways in which archaeologists have used both historical sources and archaeological data to investigate the development of long-distance trade in various parts of the world. The third chapter focuses specifically on Sumatra and describes the distribution of population, resources, and previously-known archaeological sites on the island.

In chapter four the focus narrows still further. I shall examine the Deli River valley, and the sites in it which contain evidence of long-distance trading connections. This information represents the results of field work which I performed in Sumatra in 1976 and 1977 under the auspices of the Direktorat Sejarah dan Purbakala (Directorate of History and Antiquities) and the Pusat Penelitian Purbakala dan Peninggalan Nasional (National Research Centre for Archaeology). I also raise various points of comparison between the Deli sites and others in Southeast Asia.

Finally in chapter five some interpretations of the data are offered, and I compare my findings with the expectations which I had formed before undertaking field work. In conclusion I present suggestions for future research in Sumatra, and consider the significance of the Sumatran evidence for achieving a better understanding of some general problems relating to long-distance trading systems and their role in society.

CHAPTER I

HISTORICAL PERSPECTIVES ON EARLY SOUTHEAST ASIAN COMMERCE

Commercial Institutions in Indonesia and the Indian Ocean in the Sixteenth Century

After a long series of exploratory voyages, Portuguese ships succeeded in circumnavigating Africa and in the early sixteenth century established bases in Africa and India. In 1511 a Portuguese fleet conquered and occupied the port of Malacca, on the west coast of the Malay Peninsula. The strategic position of this port on the sea route for tapping the sources of cloves and other spices in east Indonesia was emphasized by the contemporary writer Tome Pires: "Whoever is lord of Malacca has his hand on the throat of Venice" (Cortesao 1944: II, 287).

The Portuguese constituted a new trading group in the Southeast Asian maritime network, and changes in that network would be expected to result. But although new patterns of alliance did develop, and some alteration of trade routes occurred (de Iongh 1977: 88),[1] it has been argued that not

[1] A study of the routes used by the early Portuguese led one writer to the conclusion that they were probably traditional passages learned from local pilots, and were very few in number (Gibson-Hill 1956). However, Muslim merchants from India began to circumvent the Straits of Malacca by sailing down the west coast of Sumatra (Kathirithamby-Wells 1969: 454; Schireke 1966: 42).

until the nineteenth century did European society substantially affect Indonesian socio-political organization. Instead the Portuguese were gradually absorbed into the Indonesian system (van Leur 1955: 117; Wolters 1970:177; van der Kraan 1975: 101; Meilink-Roelofsz 1962: 10-11).[2] Portuguese individuals, particularly soldiers who were not provided for by the Portuguese government, frequently married local women and sometimes entered the service of Indonesian rulers, occasionally attaining important positions in indigenous administrations (de Iongh 1977: 93; Boxer 1973: 134, 299-300).

The tactics used by the Portuguese in their attempt to gain control over the Indian Ocean spice trade, by occupying strategic nodes along the maritime trade routes rather than large continuous stretches of territory in producing areas, did not differ from the methods used in the eastern Mediterranean by the Venetians and other Italian trading cities (Braudel 1972: I, 340-342; Boxer 1973: 46-48, 51-52). Neither were these techniques unfamiliar to rulers of Indian and Indonesian trading centers.

Malacca, it is true, did not occupy a chain of ports or mount military expeditions to suppress competitors. Instead, during the fifteenth century when Malacca prospered

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[2] It has been similarly concluded that it may have been over two hundred years before the presence of the Spanish began to alter indigenous Philippine economic structure (Pearson 1964: 165).

under Malay rulers, "it was merely that good government and superb exchange facilities at Malacca were their own advertisement" (Wolters 1964: 321-322). Other measures were sometimes employed to encourage merchants to call at Malacca, however. During the fifteenth century reign of Iskandar Muda, trading vessels attempting to pass by without stopping were forced by Malaccan ships to enter the harbor to trade if they did not voluntarily do so (Cortesao 1944: II, 278; Wheatley 1961: 308). This tactic was not unusual in other ports of the Indian Ocean trade network. Ports in north Java followed the same practice (Moertono 1968: 135). Ibn Battuta, a fourteenth-century traveller, noted that if a ship attempted to bypass an Indian port, "They sail out in pursuit of him, bring him into the port by force, double the tax on him, and prevent him from proceeding on his journey as long as they wish" (Leeds 1961: 29). Braudel (1972: I, 105, 120) describes the use of similar tactics in the Mediterranean during the late Medieval period.

Several Portuguese writers describe the commercial arrangements prevalent in other sixteenth-century Indonesian trading centers. One of the most prominent was Pasai, on the north Sumatra coast. Pasai became the center of Gujerati Muslim trade in the Straits of Malacca after the Portuguese occupied Malacca. Its capital after 1520 was located in the Aceh valley, which like Malacca produced no

commodities for export (Reid 1975: 46). Joao de Baros remarked that "it was the custom in these kingdoms [of north Sumatra] that all imported merchandise had to be offered to the king's officials for prices fixed by the king before anything could be sold" (Dion 1970: 148). Marsden gives an identical account of Acehnese rulers' monopolistic policies during the late eighteenth century (Marsden 1966: 399).

In 1539 an Acehnese expedition was sent to Singkel, near Barus on Sumatra's west coast, presumably to enforce Acehnese claims to sovereignty in the area. Pepper, benzoin and camphor were local exports (Kathirithamby-Wells 1969: 455). During the reign of Iskandar Muda in Aceh (1607-1636), Aceh exercised substantial influence over this and other west coast ports. The prices of the pepper and gold exported from this region were fixed by Aceh (de Iongh 1977: 89), and Iskandar claimed for himself fifteen percent of the production of these commodities (Kathirithamby-Wells 1969: 460). Pepper was first brought to the Acehnese capital by Acehnese merchants, but later ships owned by the ruler were used (Kathirithamby-Wells 1969: 463).

Prospective foreign traders in Acehnese domains had to obtain a license from the ruler. Licenses to trade in ports other than the capital were rarely given. The west coast ports were controlled by panglimas sent from Aceh, whose duty was to prevent unauthorized foreign trade. In

cases where foreigners were allowed to trade in west coast ports, the panglimas acted as intermediaries between the producers and the purchasers and were permitted to collect duties (Kathirithamby-Wells 1969: 461; de Iongh 1977: 89; Marsden 1966: 399).

All indications are that the ruler occupied a dominant position in Acehnese foreign trade. Iskandar Muda was characterized as having an "apparent incompatibility with private commercial enterprise" (Reid 1975: 51), at least on the part of his own subjects. In Aceh's capital the ruler appointed four officials to the post of Shahbandar, and gave them the duty of dealing with foreign merchants (Reid 1975: 51; de Iongh 1977: 89).

Descriptions of Banten, a trading center on the western end of Java, depict a similar pattern of commercial organization. In Banten in the early 1600s the producers of pepper and other export commodities delivered their goods to the rulers, who at this time consisted of a council of nobles (van Leur 1955: 140). The foreign merchants obtained the goods from the nobles and the Shahbandar at a field outside the city gates, where local inhabitants did not participate in the dealings (van Leur 1955: 140; Meilink-Roelofsz 1962: 240).[3]

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[3] A Chinese source describing trading procedures at Sunda, west Java, in 1617 provides a corresponding example as seen from a non-European point of view (Chan 1967: 225).

Shahbandars were also present in Malacca, and Pires listed their duties in the Portuguese administration.

> They are the men who receive the captains of the junks each one according as he is under his jurisdiction. . . . These men present them to the Bemdara, allot them warehouses, dispatch their merchandise, provide them with lodging if they have documents, and give orders for the elephants. . . . Each man applies to [the Xabamdar] of his nation when he comes to Malacca with merchandise or messages. (Cortesao 1944: II, 265)

Malaccan Shahbandars were frequently of the same nationality as the merchants they dealt with, and they were part of the Malacca administration, because they levied duties on the imported goods and performed other services for the Malacca ruler (Cortesao 1944: II, 273). After the duties were levied, prices were fixed by negotiation between a seller and a group of buyers who would purchase the entire cargo at a single price and then share out the goods among themselves (Cortesao 1944: II, 273; Meilink-Roelofsz 1962: 43). The Portuguese also employed this system in the trade in silk between Macao and Japan in the late sixteenth century, of which they held a monopoly. "No individual trade was, in theory, permitted; the silk was shipped and sold by a Portuguese official as one single cargo at a fixed bulk price, each merchant participating in the venture receiving a pro rata share of the profits" (Cooper 1974: 244).

Shahbandars were also frequently traders themselves. They might act in partnership with local rulers or with

other aristocrats (de Iongh 1977: 92). They could also act on their own initiative to make treaties with foreigners (Purbatjaraka 1961: 4). Shahbandars had the capacity to settle disputes between the foreign merchants and the rulers.

The institution of the shahbandar appears to have been the main instrument by which Indonesian rulers managed foreign trade. They did not directly concern themselves with governing foreign merchants resident in their domain or the overseeing of logistic arrangements. The strategy of appointing a shahbandar from among the merchants, and giving him a stake in the successful management of the system through his commercial and customs-collecting opportunities, must have been a successful one.

The Portuguese were already familiar with the institution of the shahbandar before their conquest of Malacca. The term shahbandar is a compound word of Persian origin,[4] and accounts of Portuguese experiences in India

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[4] "Shah" means "lord, ruler" and "bandar" "designated trading center, emporium" (Purbatjaraka 1961: 1-2). It has also been explained as

> The title of an officer at native ports all over the Indian seas, who was the chief authority with whom foreign traders and ship-masters had to transact. He was often also head of the Customs. (Yule and Burnell 1903: 816-817)

In Indonesian ports local words or local derivatives of the Persian word were also used to designate an official with the same duties (Purbatjaraka 1961: 4).

note that this term was used to denote an official in Indian harbors. This official performed the same functions as his Indonesian counterpart, centering around his role as an intermediary between the rulers and foreign traders, who were segregated in designated quarters of the ports. As in Aceh, foreign traders were allowed few dealings with the indigenous population. Exchange rates were fixed by treaties and political negotiations, not through competitive bidding, at least when certain items claimed as royal monopolies were concerned (Leeds 1961).

The commercial system which the Portuguese found in the Indian Ocean and Indonesia, and adopted in many respects, appears to have been very old. The penetration of the system by outsiders (the Portuguese and later the Dutch and other Europeans) had no immediate effect on a smooth flow of traffic which has been compared to "a thin but golden thread binding the Asian world across great distances" (van Leur 1955: 78). "Before and after Vasco da Gama the Indian Ocean was an independent and virtually self-sufficient world" (Braudel 1972: I, 184).

Leeds suggests that the commercial patterns and institutions of sixteenth-century India had been in existence for "at least 1500 years" (Leeds 1961: 26). Van Leur characterized the Indonesian trading practices of the seventeenth and eighteenth centuries as having undergone little or no change for perhaps two thousand years (van Leur

1955: 65-67).

It is not possible to fix a precise point in time when the Southeast Asian commercial system gave way to a new form. The Dutch replaced the Portuguese in Malacca, but they too employed a similar combination of economic and political policies. They formed trading companies with military and diplomatic capacities and blockaded competing emporia, and seized ships belonging to rivals or trading with rival ports, though they did not hesitate to complain of piracy when the same measures were used against them.

Van Leur saw a decisive change in Indonesian commerce occurring gradually during the nineteenth and twentieth centuries, resulting from the loss of local rulers' revenues from long-distance trade (van Leur 1955: 92). The Dutch in Java unified ports and producing areas under a single administration, and encouraged private trade in luxuries as well as subsistence goods by both local residents and foreigners. Alternations in the Indonesian pattern were undoubtedly occurring before 1800 (Meilink-Roelofsz 1962: 10-11), but such changes had not yet resulted in the breakdown of the system and its replacement by a new one.

Sir Mortimer Wheeler noted that the Portuguese were not the first Europeans to become involved in the Indian Ocean trade in spices and other luxury goods, and to adopt the commercial practices which were customary in that region.

Wheeler compares the Portuguese, Danish, Dutch, French and British factory systems to the agencies of the Graeco-Roman traders of the first three centuries A.D. "Indeed it is fair to envisage Indo-European commerce of the first century A.D. pretty closely in terms of that of the 17th century" (Wheeler 1954: 125).

Similar trading corporations existed in India by the early first millennium A.D. (Indrapala 1971; Kosambi 1959; Sastri 1932; see also below, chapter three). B. Stein (1965) gives reasons for the decline of these corporations in the fourteenth through seventeenth centuries. The members of these corporations were "related by a common interest in trade that had to pass through a particular center. . . . these traders were given royal charters" (Kosambi 1959: 282). Members maintained diplomatic relations with rulers of regions where they obtained goods, and dealt in wholesaling of luxury items.

Nor were the Portuguese unaware of the history of early Roman spice trade. A geography of the Indian Ocean compiled by an Alexandrian Greek, Claudius Ptolemy, in the first or second century A.D. was translated into Latin in 1410, five years before the first Portuguese exploratory voyage along the African coast. This Geography became much sought after immediately upon its translation, and was studied at the Academy at Sagres which Prince Henry

the Navigator established (Goldstein 1965: 12, 16-17).[5]

Graeco-Roman Trade in the Indian Ocean

Two major sources can be used to compare the commercial system which the Portuguese encountered in the Indian Ocean with the Imperial Roman spice trade. One is Ptolemy's Geography, first set down around the second century A.D.; the second is an anonymous work entitled The Periplus of the Erythraean Sea ("Sailor's Guide to the Indian Ocean"), written slightly earlier. Both works describe Indian Ocean commercial institutions, and indicate that commercial practices along the spice routes were already highly standardized.

The spices and other commodities which were the objects of this trade travelled over long distances, but individual ships normally covered only a part of the route between eastern Indonesia and the west Asian ports.[6] Certain

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[5] The translation was published in Florence. Florentine humanists were interested in the problem of the location of the Spice Islands because of its theoretical relationship to the proof or disproof of Ptolemaic geographical theory. Ptolemaic theory exercised a major influence on Florentine and Portuguese cartography (Goldstein 1965: 16-18).

[6] The Roman historian Pliny, however, describes people who greatly resemble Indonesians bringing cinnamon to east Africa after a long direct sail. They returned eastward with glass and bronze, clothing, brooches, armlets, and necklaces (Miller 1969: 156). From eastern Africa the cinnamon was brought overland through Egypt as a monopoly of the Pharaoh (Miller 1969: 218).

Linguistic evidence indicates that Indonesians reached Madagascar by the earliest part of the first millennium A.D. (see Coedes 1968: 8, 265 note 49 for further references).

ports along the routes were transfer points at which merchants from the east could meet others from the west. The ports with which the Greek authors were familiar were mainly in India, and, though they knew of some places further east, they seem seldom to have gone beyond southeast India.

Pelliot cites a fifth-century text which records a journey by a native of T'an-yang, somewhere west of India, to Funan via India (Pelliot 1903: 292; Coedes 1968: 41). A relative of the Funan ruler subsequently led an embassy to northeast India, and ascended the Ganges some distance inland. "Funan" is usually identified with the Mekong Delta of Vietnam. The nature of the political entity which the Chinese knew by this name is not well understood (Jacques, 1972), but it appears that countries west of India did have at least some direct contact with Southeast Asia at this early date.

Coedes speculates that "Funan was perhaps even the terminus for navigation hailing from the eastern Mediterranean," but the Geography and the Periplus give few details about places beyond India, though some places such as Kattigara, mentioned by Ptolemy, lay somewhere east of India (Coedes 1968: 41). Two emporia may have been located in present-day Burma, one called Takola on the western coast of the Malay Peninsula (Wheatley 1961: 151 note 1), and another Sabara, near the south end of the

peninsula. Chryse, and one other unlocated city called Za-ae, are other Ptolemaic toponyms which are thought to refer to the area near the Straits of Malacca. There was also a country of the "brigands" with an emporium, Thipinobastae (Warmington 1928: 127).

The Greek merchants needed such a guide as the Periplus both to designate places where merchants and goods from further east could be found, and also because not every port was open to them. The Periplus mentions twenty-seven ports in the Red Sea and Indian Ocean; these were divided into three classes, "designated," lawful" and "authorized" (Miller 1969: 19, Schoff 1912: 51 note 1; Warmington 1928: 53). The distinctions between the various categories are not clear (Miller 1969: 19), but the category emporion which these words qualify has a specific connotation.

> [Ptolemy's] use of the word emporion is restricted. A general comparison between the Arabian, East African, and Indian coast-towns designated by the Periplus as emporion . . . and the oriental coast-towns designated by Ptolemy as emporia shows that with few exceptions, due to local alterations in political or commercial status, . . . by the single word emporion Ptolemy means a nomimon emporion--a legal mart where foreign trade is allowed and taxed. . . . In the geographer's descriptions of Indian seas (in other words, as soon as he described non-Roman but well-known territory) emporion means an authorised sea-coast (not inland) mart in the Orient where non-Roman dues were levied by non-Roman authorities. . . . (Warmington 1928: 107)

Such ports existed from the Red Sea to India and beyond, somewhere in Southeast Asia. There are instances

in which ports lost their status as emporia; no more foreign trade was then permitted (Warmington 1928: 113-114). Calling at non-designated ports could lead to the foreign ship's being escorted away under armed guard (Warmington 1928: 56).

These trading ports were sometimes linked to inland rulers, but more often they were politically separate from their hinterlands (van Leur 1955: 78). There is no evidence that foreigners penetrated inland, but Greeks and other foreigners certainly resided in the coastal emporia. Tamil kings possessed "Yavana" (Ionian) bodyguards, and by the second century A.D. "the habit of residing in India had become a widely spread one" (Warmington 1928: 68-69).

The busiest Indian coast was the southeastern or Coromandel. Greek ships and ships from east of India met in several emporia here. The ships coming from beyond India were described by the Periplus as being very large in order to carry great quantities of pepper and other commodities.[7] These goods were unloaded in southeastern India, stored in warehouses in the ports, and later re-exported to the west. Western goods received here were re-exported "to the market towns on the east coast, for redistribution to the Ganges, to China, and to Chryse, the land of gold in southeast Asia" (Miller 1969: 209).

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[7] On these ships, see Christie (1957).

These large ships, the Kolandiafonta, sailed between southeast India, including Sri Lanka after about the fourth century, and southeast Asia. Their home bases were somewhere in maritime Southeast Asia.[8]

The Roman-financed Greeks established permanent agents in several south Indian ports, including Poduke, mentioned by Ptolemy and the Periplus, which may have been at modern Arikamedu (Wheeler et al. 1946). The settlements, which Wheeler compared to the later European factories, included temples to Roman deities (e.g. a temple to August at Muziris) (van Leur 1955: 328 note 7; see also below, chapter 2).

Gold was the major commodity exchanged for spices at the Indian emporia (Miller 1969: 176), and silk was literally worth its weight in gold (Miller 1969: 205). Rome exported glass to India, and wine, but most of the Roman imports had to be purchased with gold and silver.

Metallic currency was also exported because of the lack of any suitable means of exchange at some ports. Coinage was sent to the northwest Indian area "to help the local currency" (Miller 1969: 208), as well as to Arabia. At the same time, nomadic incursions north of the Himalayas cut off India from her former source of gold

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[8] Miller believes these ships were Indonesian, though the evidence for this attribution is indirect (Miller 1969: 158).

(Coedes 1968: 20).

Another factor which may have encouraged the drain of gold from the Mediterranean to the Indian Ocean was the generally higher value placed on precious metal in India (Braudel 1972: I, 464). This was still true in later centuries when the Dutch entered the area (de Iongh 1977: 94). The demand extended to copper as well as gold and silver in Indonesia (Braudel 1972: I, 502). Bronze, it will be recalled, was a commodity sought by Pliny's long-distance sailors in Africa.

It is important to note that luxury goods were not the only items transported along the maritime routes. Materials for Roman industry were also purchased in India: silk and cotton yarn for weaving, wools and dyes, and uncut precious stones. "The manufactured goods made from the imported raw materials formed a considerable part of the export trade which paid for the imported luxuries" (Miller 1969: 193).

Rome's utilitarian exports included wine, carried in large amphorae (see discussion of Arikamedu site below, chapter 2), and grain, shipped from Egypt to the Graeco-Roman agents in India. The grain was apparently not for sale, but for the support of the ships' crews during their layover in India while waiting for the monsoon to change, and for the permanent staff of the trading quarters (Miller 1969: 204). The need to import grain from north Africa

may reflect a difficulty in purchasing sufficient provisions in the emporia.

The emporion system of trade can be characterized as one in which long-distance trade in luxury goods took place under the close supervision of local rulers. Foreign traders had little contact with the indigenous population, and their commercial dealings were restricted to officially-designated places and agents. There is little discernible difference between the procedures of long-distance maritime trade in metals, spices, and other luxury goods as observed during the Roman Empire and by the Portuguese over a millennium later.

Chinese Tributary Trade: A Variation on the Emporium

There is evidence that the same system as described above reached beyond Ptolemy's Chryse and Kattigara to mainland China by the mid-first millennium A.D. Before the extension of the maritime route to south China, however, a regular exchange of prestigious goods took place between the Chinese elite and frontier groups of the north and west. During the early Han Dynasty (206 B.C. - A.D. 5) ambassadors from these frontier groups were encouraged to symbolize their submission to the Chinese empire by presenting gifts of exotic and rare commodities.

There were symbolic, political, and economic advantages for both parties in the system. For the Chinese, the

ability of the imperial virtue (te) to attract those whom the Chinese regarded as barbarians from long distances demonstrated the Emperor's ability to preserve universal harmony (ta tung) (Wolters 1970: 24-25). The emperors received exotic objects which they wanted to possess. Also the barbarian leaders stood to gain from the preservation of the Chinese system.

The "barbarian" elite received imperial gifts in return for their tribute, recognition of their political legitimacy in their own territory, and permission to conduct limited private trade with Chinese. This trade benefited both the people of the steppes and oases, who gained access to products such as silk and later tea and porcelain which were unavailable in their territories, and the Chinese, who received in return such commodities as good horses, gold and jade (Lattimore 1962: 174-175).

In addition to the luxury goods obtained as tribute from ambassadors, Chinese missions were occasionally sent abroad in search of "the precious and rare objects" (Wolters 1967: 40) which the Chinese rulers desired. Such a duty was sometimes undertaken by eunuchs (Wang 1958: 19-20) or other individuals of high status from motives of public service as a specialized occupation (Wheatley 1971: 283).

Van Leur, who did not have access to the recent studies on the subject, suspected that the formal nature

of Chinese foreign trade observed by medieval travellers as Marco Polo and Ibn Battuta had been instituted when the process of Sinicization began in southern China (van Leur 1955: 82-84). Wang suggests that one motive for Han expansion to the Canton area was to gain access to the centers where such articles as ivory, pearls, and kingfisher feathers were collected (Wang 1958: 8).

Imperial supervision of the luxury trade of south China's coast was instituted before 100 B.C. and revenue obtained by the imperial treasury (Wang 1958: 90 note 1). Official envoys were sent abroad to procure luxury goods by the Wu and Wei courts after the fall of the Latter Han Dynasty in A.D. 220, and by the Prince of Chin after the conquest of Wu. Perhaps as the result of the Chinese missions, envoys from maritime Southeast Asia began to visit China after changes of dynasties or emperors, possibly to ensure the continued recognition of their trading rights in China (Wang 1958: 31-52).

Indonesians began trading with China sometime between A.D. 250 - A.D. 400. After the Han fell, the southern dynasties of a fragmented China were cut off from the traditional sources of tribute trade in central Asia and began to look more frequently to the maritime groups of the Nan-hai (South Seas) for sources of exotica. An account of a Chinese Buddhist monk, Fa Hsien, of A.D. 414 demonstrates that ships were voyaging directly from some

point in western Indonesia to China by this date (Wolters 1967: 158).

The first commodities traded may have been luxury goods such as pearls and tortoise shell destined for the emperor's own use. By the early fifth century, however, the increased popularity of Mahayana Buddhism in China resulted in a general demand for incense and rare perfumes for use in religious ceremonies (Wang 1958: 113), and this provided an opportunity for Indonesians to introduce products of their forests to China, perhaps originally as disguised substitutes for Arabian frankincense (Wolters 1967: 87-127).

Contact between foreign envoys and Chinese citizens was restricted to the ports of Canton and Tonkin. Until the seventh century commerce formed the main activity in these settlements, the foreign merchant communities here living under the supervision of Chinese commercial officials (Wang 1958: 47). All foreign goods were purchased by officials, and some classes of foreign produce, such as incense, were state monopolies (Hirth 1917: 70), though in later times less valuable aromatics were sold to the public under official supervision at Nanking (Wolters 1970: 61).

Occasionally the conduct of corrupt officials was a source of friction between the envoys and the Chinese. A mission from the Indonesian ruler of Ho-lo-tan in A.D. 430 was concerned partly with acquainting the Emperor with the

difficulties which his merchants sometimes experienced with corrupt port officials (Wolters 1967: 165). In A.D. 684 the governor of Canton was killed in a manner which suggests the murderer was an Indonesian distressed by officials' misdeeds (Miller 1969: 186).[9] Some such incident may have been responsible for the fact that, as Tome Pires explained in the sixteenth century, foreigners were not allowed to go to Canton, but had port facilities "thirty leagues" away. "They say that the Chinese made this law about not being able to go to Canton for fear of the Javanese and Malays" (Cortesao 1944: I, 122).

A Chinese account of the trading procedures in the early ninth century indicates that not all goods imported by foreign merchants were bought by the state. When the ships arrived the Emperor would be notified and announcements made in major cities. An official would search the ships for prohibited commodities, take all the goods to official storehouses, and purchase the "precious and rare goods" which were imperial monopolies. Arabic and Chinese sources of the ninth century note that the merchants would be kept under the guard of the Superintendent of Trade while in port.[10] The goods of all merchants would be kept

[9] Foreign trade at Canton may have decreased during the late T'ang because of official corruption (Kuwabara 1928: 17 note 15).

[10] On the duties of this official (who was occasionally a foreigner) during the Sung Dynasty see Kuwabara (1928: 8 note 2).

in the warehouses until the last ship of the season arrived, and then after thirty percent of the non-monopolized goods had been taken by the government as duty, the rest would be given back to the envoys to dispose of themselves (Wang 1958: 101-102; Hirth and Rockhill 1911: 15).

By the ninth century another treaty port had been opened to foreigners at Ch'uan-chou (also called Zaitun) (Hirth and Rockhill 1911: 17). In the 870s, however, the tribute trade system received a blow when imperial troops revolted and sacked the trading settlements. The foreign merchants then fled China en masse and established a rendezvous at a place known to the Arabs as Kalah (mentioned in Sinbad's fourth voyage in the Arabian Nights), where Indian Ocean and South China Sea merchants met and exchanged wares (Hirth and Rockhill 1911: 18; Kuwabara 1928: 13 note 9). This place was probably on the west coast of the Malay Peninsula (Wheatley 1961: 218ff.) in the area of Phuket Island where numerous artifacts indicate a period of intensive long-distance trading activity (see below, chapter 3).

In A.D. 960 the Sung Dynasty reunified China after a period of civil war, and commerce in the designated ports was quick to recover, stimulated in part by a Chinese mission sent abroad between A.D. 984 and 988 (Hirth 1917: 70). In A.D. 971 the Department of Foreign Trade at Canton had already been reorganized because of a great

increase in commerce. Foreign trade was declared a government monopoly, and in A.D. 999 three new treaty ports were opened (Wheatley 1961: 61), in addition to the three already existing. Private trade was made a criminal offense, and all foreign aromatics and other luxury goods were collected and stored in government warehouses (Hirth and Rockhill 1911: 20).

In A.D. 1126 the Sung rulers suffered defeat at the hands of the Khitan, and lost control of the northern part of the empire. The Chinese court again became dependent on maritime trade for luxury items. Official trade was greatly expanded, partly in order to secure additional revenue (Kuwabara 1928: 3).

An important alteration in the structure of the tribute trade now occurred; Chinese began to go abroad in appreciable numbers to trade. Thus the tribute system which had regulated the contacts between Southeast Asians and Chinese declined in importance. Status as an official tribute-bearing country was no longer a prerequisite for commercial relations. The Chinese merchants in the South Seas broke down barriers which had sheltered special arrangements among Indonesian ports for over five hundred years. The decline of the tribute system may have caused the breakdown of an effective commercial monopoly conducted by the Sumatran realm known as Srivijaya in the Straits of Malacca (Wolters 1970: 3-4).

The beginning of Chinese settlement in Southeast Asia is conventionally dated to the Yuan Dynasty (Wheatley 1961: 82; Mills 1974: 57), though Hirth mentions an account of a ship-wreck on the Chinese coast in A.D. 1150. A Chinese and some "dark natives" were cast ashore; the Chinese had an Indonesian wife and had been living in Indonesia for a long time (Hirth 1917: 76). Another source mentions Chinese merchants going abroad with cargoes of pottery during the Sung Dynasty (Hirth and Rockhill 1911: 31). A Chinese gazetteer of 1225 describes trading ports in Indonesia and the Indian Ocean in great detail (Hirth and Rockhill 1911). Possibly the first Chinese settlement overseas should be assigned to the Sung period instead.

Limitations continued to be placed on foreign merchants in China even after Chinese began to trade abroad. In the early twelfth century a foreign quarter existed in Canton where "all the people from beyond the seas" resided. A foreigner was appointed headman of the quarter (Hirth and Rockhill 1911: 17). Ibn Battuta in the fourteenth century gave a similar account of Ch'uan-chou, where there were several foreign settlements "facing the harbour, or as near as possible to the anchorage." One quarter was specifically reserved for Muslims (Hirth 1917: 75).[11]

[11] The cities of Mamluk Egypt from which some merchants came were also divided into quarters. Divisions were based on relition, ethnicity and occupation (Lapidus 1967: 85-95). Other Chinese cities at this period also had Arab quarters (Kuwabara 1928: 33, 38 note 4).

The procedure which Pires observed in the early sixteenth century was little different.

> The city of Canton is where the whole kingdom of China unloads all its merchandise. Thirty leagues on this side of Canton, towards Malacca, there are some islands near the mainland . . . where are the ports already allotted to each nation. . . . As soon as the lord of Nan-t'ou sees the junks he immediately sends word to Canton that junks have gone in among the islands; the valuers from Canton go out to value the merchandise, they receive their dues; they bring just the amount of merchandise that is required: the country is pretty well accustomed to estimate it, so well do they know of you the goods you want, and they bring them. (Cortesao 1944: I, 120-124)

There is no mention of private commerce here, nor of bargaining. Money was not exchanged. Goods were taken into custody by the government, some to be resold by the state, some retained for the Emperor. The rest could be exchanged with local merchants, but apparently for other commodities at fixed equivalencies.

Though the institutions of foreign trade remained the same, some major disruptions had taken place in Chinese society and commerce between the thirteenth and sixteenth centuries. The Yuan (Mongol) Dynasty completed the conquest of the Sung in 1279, and at first continued to encourage foreign tributary trade. In 1329 however the court considered the trade to be "a canker devouring the riches of the state," involving useless luxuries which had to be exchanged for Chinese goods at fixed rates (Wheatley 1961: 77).

In 1368 the Ming Dynasty assumed control over China.

This dynasty represented the restoration of a Chinese ruling elite, and great emphasis was placed on traditional Chinese mores and customs as opposed to the odious foreign practices of the Mongols. One result of this renewed emphasis on Chinese tradition was the restoration of tribute trade, which had been in decline or abeyance since the late Sung Dynasty.

The form of tribute trade to be revived was not the relatively free type which had existed during the late T'ang and early Sung Dynasties, when the profitable nature of the trade was not merely acknowledged but also appreciated by the Chinese rulers. Instead the court now chose to emphasize the Confucian rationale for the acceptance of tributary missions and trade for profit was considered immoral and inappropriate for Imperial officials to take part in (Wolters 1970: Appendix C, 187-190).

A further complication affecting the tributary relationship between China and prospective Indonesian commercial partners was that much of south Sumatra was now ruled by chiefs who were under tributary obligations to Java and thus ineligible to deal directly with China. The revival of the tribute trade might have offered opportunities for south Sumatrans to regain their former status as independent political foci, but the Javanese nipped at least one attempt by a Sumatran ruler to obtain official Chinese recognition in the bud (Wolters 1970: 49-66).

The Ming first designated three ports for tributary missions; customs superintendents were appointed, and Southeast Asian envoys were allowed to trade for three to five days in the Embassy Hostel where they were housed. In 1374, however, these three ports were closed; smuggling then became common (Chan 1967; Wolters 1970: 67). In 1394 and frequently thereafter heavy punishments were proclaimed for Chinese who indulged in prohibited foreign trade (Wang 1964: 90; Wolters 1970: 67).

In the early fifteenth century another swing in Chinese relations with foreign "vassals" occurred. A Bureau of Maritime Trade was established, and was expanded to three ports in 1405 (Wang 1964: 95). Also in 1405 the first of seven major maritime expeditions was sent out by the Chinese court. These expeditions called at ports from Southeast Asia to east Africa, and the fleet was commanded by an imperial Eunuch, Cheng Ho.[12]

The last of these voyages terminated in 1433. Such a major enterprise as Cheng Ho's did not however result in a long-term Chinese investment in maritime activity. In the sixteenth century ships such as Cheng Ho's could no longer be built by the Nanking shipyards (Mills 1970:27).

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[12] The ships of the fleet were called "treasure ships" (Mills 1970: 27) and the fleet was commanded by a high-ranking eunuch, both facts reminiscent of the Han expedient of dispatching eunuchs on foreign missions to collect rare and precious objects.

In the early 1500s the Portuguese and other Europeans found the system of tribute trade partially restored, but the only treaty port then open was Canton (Cortasao 1944: I, 118). The later history of European relations with China through the tributary trade system, and European attempts to "open" China to "free trade" is well known.

In summary, it is clear that the Chinese system of tributary trade was conducted through institutions very similar to those which regulated maritime commerce in the Indian Ocean. When China became involved in maritime trade, the methods which had proven useful in Chinese relations with groups along the northern and western borders were implemented in the ports on the southern coast.

Van Leur noted one difference between the Chinese and Indian situations: the Chinese treaty ports were extensions of the hinterland power, in contrast to Indian ports, which were frequently separate from the political groups controlling the hinterland (van Leur 1955: 81). The institutional forms in each case are however much the same. The similarities include the designation of emporia, or specific places where import-export activity took place, and the claiming of monopolies on specific products, normally exotic luxuries, by ruling groups. The trading ports were in each case subdivided into quarters on the basis of the traders' origins. There is no evidence that the Chinese "borrowed" this set of institutions when they

joined the maritime trade network. Rather it is apparent that China had independently developed the same procedures several centuries previous to the establishment of emporia in south China.

Indonesian Trading Systems and the Uses of Wealth

Ptolemy in his Geography mentioned several emporia east of India and also "five Barousai islands" which may be a reference to north Sumatra (Wolters 1967: 181-184). Whether these emporia employed trading practices similar to those current in India cannot be ascertained. The Baroussai islands were places to avoid, not to visit for trade.

Exactly where the emporia were located is also difficult to determine. Chinese sources from the fifth century onward mention tributary ports in insular Southeast Asia (Wolters 1967: 160), but "If there is any activity which exposes one to the danger of being banished to the lunatic fringe of early Indonesian studies, it is the attempt to draw a detailed map of Indonesia on the basis of the information in the Chinese imperial histories" (Wolters 1967: 170). When, in the second half of the first millennium A.D. descriptions of Indonesian trading centers do become available, they indicate that commercial arrangements did not differ from those of the other emporia.

Wolters (1967: 148-148) has suggested that the voyage

from Indonesia to China was pioneered by Indonesians during the third and fourth centuries A.D., when Indonesian ships carried "Persian" incense to south China. The reports of Chinese pilgrims such as Fa Hsien who travelled to and from India by sea did not mention travelling in Chinese ships. The sailors on the ships seem to have been based in western Indonesia, and sometimes the ships are noted as belonging to Indonesian rulers (Wolters 1967: 207-208). Thus by the fifth century A.D. Indonesians seem to have been major shippers on the routes between India and south China.

The reception by the Chinese court of a mission from the Indonesian ruler of Ho-lo-tan in A.D. 430 has already been mentioned. The ruler evinced both political and commercial concerns: in addition to a favorable reception and security for his tradersin China, he also sought diplomatic recognition of his status as legitimate ruler. Apparently the independence of Ho-lo-tan was threatened by aggressive neighbors (Wolters 1967: 163-167).

In the early seventh century A.D. a number of rulers in north and south Sumatra, Java, the Malay Peninsula and Borneo sent missions to China. In the mid-to late seventh century the number of countries sending tribute from western Indonesia greatly decreased. Information which may explain such a reduction is contained in the statements of I-Ching, the Chinese Buddhist pilgrim who voyaged to India in A.D. 672, and returned permanently to China in

695, after studying and copying Buddhist manuscripts in both India and the center of Srivijaya in Sumatra.

In A.D. 672 I-Ching stopped at Kedah, on the northwest coast of the Malay Peninsula, on his way to India aboard a ship belonging to the Srivijayan ruler. Though there is no indication that Kedah at this time was anything but an independent port, by 695 Kedah was subordinate to Srivijaya, as were other areas in central and north Sumatra such as Malayu-Jambi (Wolters 1967: 263 note 2 of chapter 1). I-Ching apparently saw the Straits of Malacca just before and just after an episode in which Srivijaya attained some sort of dominance over the entire Straits (Wolters 1967: 15-16).

It is a logical deduction that Srivijaya had succeeded in preventing the formerly independent rulers of Sumatra and the west coast of the Malay Peninsula from maintaining the tributary relationships with the Chinese emperor which were a prerequisite for trading in the Chinese emporia. In the twelfth and thirteenth centuries, with the decline of the tribute trading system, a policy of commercial monopoly based on the system could no longer succeed. The vassals regained their independence and again began to communicate directly with China.

Five inscriptions probably erected around A.D. 682-686 constitute almost the entire surviving corpus of indigenous Srivijayan literature. These inscriptions deal

mainly with religious topics and loyalty oaths, and include references to warfare and bloodshed during the conquest of rebellious vassals.

According to Wolters, "The battles of early Srivijaya were fought not to stake a claim to become the chief center of trade in the region but to remain so by destroying its new rivals" who had arisen in the wake of expanding Chinese trade in the early T'ang period (Wolters 1967: 246). When Chinese began to reside in Southeast Asian emporia, including those nearer the sources of exportable commodities, the monopoly system was apparently replaced by the use of force to compel shipping to call at designated Srivijayan emporia (Wolters 1967: 249).

Two examples of such policies as reflected in Chinese sources may be noted. Both come from Chao Ju-kua's gazetteer. In the first instance, he noted that a north Sumatran trading center, Kampe, had once been a Srivijayan dependency but had recently revolted and was now conducting foreign trade independently (Hirth and Rockhill 1911: 71, 89). Kampe had sent a mission to China in A.D. 662 (Wolters 1970: 57), and is not mentioned in Chinese sources again for centuries. At the same time, Chao noted that "If a merchant ship passes by without entering [the port of San-fo-ts'i], their boats go forth to make a combined attack, and all are ready to die (in the attempt). This is the reason why this country is a great shipping center"

(Hirth and Rockhill 1911: 62). By this time the center of the polity which the Chinese continued to call San-fo-ts'i had probably shifted from Palembang to Jambi, during and after the 1079-1082 period (Wolters 1966).

An attempt can be made to reconstruct the institutions of early Sumatran trade through an examination of the Srivijayan inscriptions. The largest, from the Telaga Batu area of Palembang, "by far the most extensive text of the empire of Srivijaya" (de Casparis 1956: 17) is undated but believed to be more or less contemporary with others of the period A.D. 682-686. This inscription, "precisely the kind one would expect to find in the capital of the empire" (Wolters 1967: 209), is a long oath threatening traitors to the ruler with dire penalties. The oath contains a long list of titles: governors, vassal princes, and twenty-five terms for various functionaries, including clerks, architects, shippers,[13] merchants, commanders, and slaves. The subjects of the ruler are divided into two classes, lords and commoners.

The inscription also mentions supervisors of trade and crafts, and the inscription has been interpreted as demonstrating "that trade was conducted under royal control, taking place in specific places under the supervision of royal officials" (K.R. Hall 1976: 77). This hypothesis,

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[13] "One of the few Indonesian terms in this list" which contains many Sanskrit terms (de Casparis 1956: 20).

if correct, would indicate that the practices of Srivijaya and other emporia engaged in Indian-Ocean-South China Sea trade during the same period were broadly similar.

Like Malacca and Aceh, south Sumatra had little local produce to attract foreign merchants. Instead, the main attractions of Palembang and Jambi consisted of their function as links in the chain of ports which connected Arabia with the South China Sea. As late as 1178 San-fo-ts'i (Malayu-Jambi) was rated as the third richest foreign country by Chou Ch'u-fei, after Arabia and Java. He also noted that all maritime traffic both westbound from Java and eastbound from the Indian Ocean passed through its port (Hirth and Rockhill 1911: 23). In 1225 Chao Ju-kua stated that "Owing to this country being an important thoroughfare for the traffic of all foreign nations, the produce of all other countries is intercepted and kept in store there for the trade of foreign ships" (Hirth and Rockhill 1911: 193; compare a similar passage on page 198).

Beyond the fact that Sumatran rulers owned ships which voyaged to China and India, such as the one I-Ching sailed on in A.D. 672, and that Srivijaya attempted to enforce a monopoly over trade in the Straits of Malacca by subduing rival ports, we know little of the interaction of foreign trade with Sumatran society and politics in the first millennium A.D. K.R. Hall finds evidence of

institutions in the undated Telaga Batu inscription which resemble those common throughout the Indian Ocean at the same period, but there is no source which describes how these institutions actually functioned.[14]

One useful type of data which becomes available in the Sung Dynasty, and which indicates the degree to which tribute was a veiled form of royal trade, is supplied by the comparison of amounts of various commodities imported by China as tribute and as merchandise. It is important to remember that trade was particularly encouraged by China during the Sung Dynasty, though in earlier periods trade was much less important than tribute.

In 1135 for example traders in China imported 91,500 katis (one kati = 600 grams) of frankincense from Srivijaya. But a Srivijayan ambassador in 1156 gave the Emperor tribute of 111,615 katis of frankincense and sandalwood, and in 1167 a Cham envoy gave 100,730 katis of frankincense (which is a product of limited areas of

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[14] The situation is more favorable in Java, where a recent study of inscriptions has revealed that trading practices during the period before the fourteenth century did not differ significantly from those outlined for the Indian Ocean emporia and Sumatra; nor had they changed in the sixteenth century, according to early European descriptions (Wisseman 1978: 207). Specialized long-distance merchants (banyaga) are referred to in Javanese inscriptions from the eighth century A.D. Merchant communities are only mentioned in connection with port areas. Commodities for foreign trade were stored in the port area, and prices were set administratively. There is at least one reference to a special temple in the foreign quarter of a Javanese port in A.D. 850 (Wisseman 1977: 205-212).

Arabia and Somalia, and was thus a re-export from Southeast Asia) (Wheatley 1959: 49). Thus the amounts presented as tribute may have significantly exceeded the amounts imported through trade even during the southern Sung.

The items which were presented to Southeast Asian missions are also occasionally mentioned in Chinese sources. In particular, metals seem to have been considered to be suitable presents for envoys who brought incense and spices, just as Romans in India had found gold to be the commodity normally exchanged for spices. In about 1078, for example, Srivijaya received 64,000 strings of copper cash and 15,000 tahils (one tahil = 1/16 of a kati) of silver (Hirth and Rockhill 1911: 81 note 16; Sastri 1949: 86). In 1172 the Srivijayan envoy requested permission from the Emperor to purchase a shipload of copper and Chinese workmen to make the copper into tiles (Sastri 1949: 87). This is consistent with later remarks that during the early 1500s copper as well as silver and gold was in demand in Indonesia.

Although there were no important sources of commodities for international trade in the near vicinity of the south Sumatran emporia, some Indonesian products were involved in the China trade from an early date. The resin of the pine tree Pinus merkusii which grows in the mountains of north Sumatra may have been imported to China

by A.D. 500 as a substitute for frankincense (Wolters 1967: 95-110). China may also have imported benzoin from western Indonesia by that time (Wolters 1967: 111). During the period A.D. 420-589, which Wang calls the second phase in the Nanhai trade, China's main imports were "holy things," such as ivory images, incense, fragrant woods, gold, silver, and tortoise shells (Wang 1958: 46-61).

Wang characterized a third phase, from A.D. 618-960, as marked by a trade in drugs and spices (Wang 1958: 90-112). In addition to benzoin and pine resins, such spices as cardamom, cloves, mace and nutmegs, "the very spices that were later to move the world" (Wang 1958: 111), were now a part of the Southeast Asian exports to China.[15] These products continued to be important in Sung trade (Wheatley 1959).[16]

The increased demand for Indonesian, including north Sumatran, products in China would have given any ruler able to exert hegemony over the ports with productive hinterlands the additional benefit of being able to monopolize foreign trade in these commodities. It is quite likely that there

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[15] Cloves and nutmegs are both indigenous to eastern Indonesia, but Chao Ju-kua in 1225 still had no clear idea of their origin; like frankincense, they were obtained from emporia in western Indonesia (Wheatley 1959: 45, 100; Lapian 1965).

[16] Hirth and Rockhill (1911) and Wheatley (1959) catalogue the numerous commodities involved in China-Southeast Asian trade during the Sung period.

was frequent interregional commerce in maritime Southeast Asia before the China trade, possibly conducted in the same manner as the later tributary trade.

Wolters has previously suggested that metals may have been an important commodity in such commerce (Wolters 1967: 61). "Funan" imported iron and tin, probably from the Philippines and north Borneo (Wolters 1967: 52; R.A. Stein 1947: 120-122). "A flourishing international trade in mineral ores around the shores of the South China Sea" has been postulated by the early first millennium A.D. (Harrisson and O'Connor 1969: II, 307). It has also been demonstrated that metals from north Borneo were present in Kedah in the thirteenth century (Treloar 1968: 193-198; Harrisson and O'Connor 1969: II, Appendix C, 401-402). Further research should reveal more evidence for local Southeast Asian maritime commerce. Metals are particularly suited for tracing inter-island commerce because of their susceptibility to trace element analysis, making it possible to locate their sources.

Archaeological evidence also suggests that earthenware pottery was traded along Southeast Asian maritime routes from an early date. Remains of a boat with a cargo of large jars, probably dating from soon after A.D. 500, have been found on the east coast of the Malay Peninsula (Gibson-Hill 1952; Malleret 1960: II, 121). The pottery may have originated in the Mekong Delta region. The early

history of pottery manufacture in much of Southeast Asia is still poorly understood (but see references in chapter 4).

The third phase of Nanhai trade in Wang's terms coincides with the development and maintenance of Srivijayan supremacy in the Straits of Malacca. Sastri described Srivijaya's role during this period as that of "a halfway house, maritime and intellectual, between China and India" (Sastri 1949: 72).[17]

Detailed information on the use of wealth obtained from long-distance trade by rulers in the Straits of Malacca is found mainly in European sources. To some extent these may be augmented by statements of Chinese observers from the late Sung, Yuan and Ming periods. Through analogy with the period for which European sources are available, archaeological evidence can be used to attempt to discern the role played by wealth in pre-European social organization in Sumatra.

After the fall of Malacca numerous smaller emporia sprang up along the shores of the Straits. Their rulers were often the largest, sometimes the only, merchants (Lewis 1975: 41). Indonesian rulers in many periods possessed ships, some of which were used for trading

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[17] On Srivijaya's position as a center of Buddhist learning, see Coedes (1968: 81-82, 84, 109, 131, 179 and notes).

(van Leur 1955: 352 note 44), and the rulers sometimes reserved the right to issue permits to their subjects to own merchant ships, as in nineteenth-century Brunei (D.E. Brown 1970: 26).

There is no general agreement on the correct position in a comparative political typology which should be assigned to traditional Indonesian forms of government. The term "segmentary state" coined by Southall (1956) would appear to be applicable to some of the larger political entities, such as Majapahit and Srivijaya. Disruption of traditional patterns of trade and alliance in the region, as in the late Sung and European colonial periods, resulted in the gradual (or in some cases rapid) destruction of the centripetal forces which had held the segments together, and the newly independent entities appear to have acted much like the civilized chiefdoms described by Service (1962) and others.[18]

The European view of the various political entities

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[18] The literature on anthropological typologies of political forms is complex. A recent summary is found in Service (1978). The term "segmentary state" was coined to describe certain African societies, and denotes a structure in which a paramount ruler governs territories outside his center of power indirectly. The peripheral territories are organized as separate units which are largely free from outside influence in their internal affairs, in contrast to the modern "unitary" state (Southall 1956: chapter 9; for criticism see Balandier 1970: 142-143). It has been argued that the Sulu Sultanate should be termed a segmentary state (Kiefer 1971). Reasons for considering other Southeast Asian political entities to have been segmentary states are discussed below.

in the area of the Straits of Malacca may be briefly summarized. The similarities among the accounts of different polities are more notable than the differences, yielding an impression of overall uniformity of political institutions.

First, Europeans considered the Malay sultans of western Malaya to be not very powerful. Before the British assumed political power there in the nineteenth century there existed

> a decentralized system of local government by district chiefs. The Sultans exercised little real power. But the Sultanate and the ancient institutional forms of the State Government played their part in systems of symbolism and status." (Gullick 1958: 2-3)

A Sultan normally exercised power in only one district, which was frequently located at the mouth of a river. The inland districts were internally governed by district chiefs, who normally tolerated little interference from the Sultan.[19] The Sultan had however one advantage; he was in a position to acquire revenue through taxation of coastal trade, and through maritime trade of his own.[20]

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[19] D.E. Brown states that in nineteenth-century Brunei, "the authority of a hereditary ruler in his hereditary domain was little different than that of the Sultan, or other official, in his appanage" (D.E. Brown 1970: 82).

[20] Another advantage is noted by Gullick: "it was quite usual for Malay aristocrats on a journey to take goods with them for trade. By courtesy one chief did not tax the goods in transit of another (Gullick 1958: 126-127).

At the same time the Sultan was able to prohibit foreign merchants from going inland to areas where forest products and minerals were found, and therefore force prospective purchasers to buy from him or his agents. The Dutch in Palembang in the early 1700s for example noted that it was difficult to find out about matters inland from Palembang "because of the unusual suspiciousness of the Palembang people (who are jealous if someone goes 1/4 mile above the factory)" (Roo de la Faille 1929: 331 note 30). The reasons for such an attitude on the part of the coastal rulers is discussed further in chapter 3 of this study, where political and economic relations between coastal and hinterland Sumatran groups are examined.

Malay and Indonesian rulers seem never to have had large standing armies. This is true of Aceh during Iskandar Muda's time (Reid 1975: 49-50), Palembang in the nineteenth century (Roo de la Faille 1929: 339 note 51), Johor in the seventeenth century (L.Y. Andana 1975a: 6), nineteenth century Brunei (D.E. Brown 1970: 98), and even the sixteenth-century Javanese kingdom of Mataram (Moertono 1968: 104).

Instead, in each of these cases when an external enemy threatened, each chief mobilized his own manpower for war, which was conducted under the overall command of the Sultan or Raja. In 1225 Chao Ju-kua noted that when war came to San-fo-tsi (Malayu-Jambi), "They (then) appoint

chiefs and leaders, and all provide their own military equipment and the necessary provisions" (Hirth and Rockhill 1911: 60). Thus central rulers probably never had the means to force unwilling district chiefs to carry out their edicts.

Despite the large number of titles found in most Malay countries, as well as in the undated Telaga Batu inscription and the Sejarah Melayu (a history of Malacca written during the sixteenth century) the title-holders do not appear to have constituted a bureaucracy. In Palembang in the 1820s "titles borne by mantris are not necessarily connected with specific functions. . . . Length of service, unusual ability, special merits are rewarded with these titles" (van Sevenhoven 1825: 72-73). Similarly, "attempts to separate functional ranks from honorifics in the Melaka sultanate remain frustrating" (Moy 1975: 68).

A study of the formation of Negeri Sembilan ("Nine States") on the southwestern Malay Peninsula in the eighteenth century indicates that the motivation for the installation of a paramount ruler by a group of chiefs was to provide a unified front when dealing with outside groups, as in war and trade, and to maintain the dominant position of the established elite over new immigrants. The legitimization of their status as district chiefs by a higher authority, the paramount ruler, acted to preserve

and intensify the ranking system which favored older and more established chiefs (Labi 1969: 145-154). In internal affairs, however, the paramount ruler ruled only his own district, like any other chief.

Thus one might expect frequent tensions between the ruler and the district chiefs, and indeed there are frequent indications from the Telaga Batu inscription to the late nineteenth century that such tension often erupted into armed conflict. In what may have been a constant struggle to maintain a superior degree of influence, the advantage of the ruler's control over foreign trade and the revenue derived from it must have been significant.

The role of wealth in Malay political affairs is depicted in numerous sources.

> No text defines more frankly the relationship existing in the Malay maritime world between ruler and followers than the Hikayat Raja-Raja Pasai: "What shall we do about our friend Merah Silau? In my opinion it would be a good thing if we made him Raja. For in fact he is a raja, and he is wealthy". . .The Sejarah Melayu describes the great care taken by the officials of the ex-Malacca ruler, living at Bentan after the Portuguese attack, to transfer the royal treasure from Bentan to Johore, where a new capital was to be established. (Wolters 1970: 16)

The wealth of rulers was one of their basic attributes. This wealth could be used in at least two ways. One was ceremonial gift-giving of valuable objects to subordinates, in return for which they were expected to provide the ruler with loyalty and support. Redistribution of rare and precious objects was a reaffirmation of the statuses

of both the giver and the receiver.[21]

A recent study has emphasized the role of wealth in the policies of Malay rulers in the early nineteenth century (Milner 1977). Malay rulers appear to have feared rich men of their own group.

> Malays conceptualized riches in political terms. Rich Malays became powerful Malays and the Raja therefore sought not only to enhance his own fortune but to prevent the accumulation of wealth on the part of his Malay subjects. (Milner 1977: 76)

Wealth was a means to political ends, and not a goal in itself. Given such preconceptions, the restriction of foreign merchants to specified areas and the appointment of foreigners to supervise foreign trade appear logical means of confining the benefits of foreign trade to the ruler alone among a ruling elite, which also consisted of a number of district chiefs and aristocratic relatives.

The possession of wealth was therefore sometimes used in attempts to secure allegiance. Milner demonstrated how the rulers of nineteenth-century Deli sought to achieve this (Milner 1977).

A second use for wealth was the conspicuous consumption of it, in ceremony and religion. A story told in Arabic sources relates that each day the ruler of Srivijaya would throw a brick of gold into a pool. On

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[21] On the relationship between gift-giving and status in nineteenth-century Malay society, see Milner (1977: 200-202).

his death, the gold would be shared among various groups (Ferrand 1922: 58). Another way the ruler could continuously remind his subjects of his wealth was to support religious organizations. The rulers of Srivijaya supported monasteries and temples in India (Coedes 1968: 92, 141), and China (Tan 1964) as well as in their own capital.[22]

A survey of the historical record of the Deli region in northeast Sumatra, with whose archaeology chapter four of this study is concerned, indicates that Deli's coastal and hinterland groups were firmly integrated into the long-distance trading system previously described. An important name in the early history of this region is Haru, first recorded in 1282, when Kublai Khan ordered a country of this name to submit to him soon after he completed his conquest of China in 1279. In 1295 the brother of Haru's ruler visited China with tribute (Wolters 1970: 44, 209

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[22] Conversion to Islam and consequent iconoclasm may have removed much of the evidence for this activity in Indonesia. Some idea of the importance of royal support for Buddhist monasteries in Thailand can be gained from the fact that, in the eighteenth and nineteenth centuries, donations of land, statues and other valuable property to monasteries may have consumed more of the royal revenue than public works. Such donations were both a means of gaining religious merit and a form of status display with elements of competition between individuals (Brand 1975). Inscriptions in south Thailand indicate that such imported luxuries as incense, silk, and palm leaf paper were considered necessities for equipping monasteries (Stargardt 1973b: 17).

note 51).[23]

The inhabitants of Haru were at least partially Islamicized during the fourteenth century (Milner et al. in press). The Sejarah Melayu's account of the coming of Islam to north Sumatra implies that Haru was Islamic as early as Perlak and Sumudera. Marco Polo in 1292 mentioned that Islam was found in Perlak. The gravestone of Sultan Malik al-Saleh dated 1297 has been found in Pasai (Moquette 1913: 11; Krom 1931: 337).

Several different locations have been suggested for Haru, from the mouth of the Barumun (Groeneveldt 1960: 96) or Panai Rivers (Tiele 1879: 63; Tibbets 1971: 494), to near Deli (Wheatley 1961: figure 21 opposite page 102; Mills 1970: 47, 61; Kroesen 1886: 82 note 1), to the Aru Bay region (M. Said 1961: 314; Schadee 1918: 2; van Alkemade 1889: 60).

Possibly all these hypothesis have some truth. Haru may have controlled a stretch of coastline, with more than one port. The ruler's center may not have been on the coast, but at an inland location which was periodically moved (Sinar 1972). Sinar postulates at least two successive centers of Haru, one at Besitang or Aru Bay,

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[23] Haru was not mentioned by Chao Ju-kua in 1225, but Kampe, perhaps located near Aru Bay, was. He also mentioned another name, Pa-t'a, which may correspond to Batak, a name used for a north Sumatran ethnic group (Hirth and Rockhill 1911: 71-72; Wolters 1970: 43).

the other at Deli Tua (Sinar n.d.: 26). The Chinese of the fifteenth century considered Haru to be the name of a region, not a single city or port.[24]

According to sixteenth-century Arab navigators, there were two main routes through the Straits of Malacca at that time, "one fairly close to the coast calling at the ports of Sumatra, 'Aruh and Rokan, and the other out to sea" (Tibbets 1971: 492). A Chinese text of the same period says junks from Malacca proceeded to Aceh via Pulau Berhala and the coast of A-lu (Rockhill 1915: 145). Several of the Cheng Ho expeditions also called at Haru after leaving Malacca (Rockhill 1915: 141; Mills 1970: 114-115).

Though Haru's precise location and extent are difficult to determine, a few facts can be established. Haru was already in existence by 1282, and was well enough known for the Mongol emperor to request its submission. It was also located on one of the two main shipping routes in the Straits of Malacca.

The name Haru[25] then appears to drop out of view for

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[24] The Mao K'un map, based on information gathered during Cheng Ho's voyages, encloses some names in rectangles, which may indicate they are countries or regions. The character for Haru is enclosed in such a rectangle (Wolters 1975: 34).

[25] The origin of the name has also been a subject of some speculation. Milner et al. (in press) note that there is a tree of this name in Malay, Casuarina equisetifolia Linn. which grows best on sandy beaches (Burkill 1966: I, 498). Obdeijn however suggested that the name might have come from the Karo Batak who inhabit the coastal and inland areas of northeast Sumatra (cited in Callenfels 1920: 75). Initial k sounds in Karo frequently become h in Toba (J.H. Neumann 1926: 19-20, 34).

a time in the fourteenth century. It is not mentioned in a work by Wang Ta-yuan of 1349 or by Ibn Battuta during the 1340s (Milner et al. in press) though it was referred to by a Persian writer of 1310 (Ferrand 1914: II, 361; Wolters 1970: 209 note 43). Perhaps this disappearance is connected with the expansionist policies of the Majapahit ruler Gajah Mada. Haru is mentioned as a conquest of Java in the fourteenth century poem Nagarakrtagama (Krom 1931: 390).

The east Javanese kingdom of Majapahit assumed political hegemony over much of east Sumatra in the fourteenth century, in some cases only after local resistance was overcome. The extent of permanent Javanese occupation of north Sumatra during the fourteenth century is indeterminate. Traditions of attacks from Java during the Majapahit period are found as far north as Aceh, but the Javanese language does not seem to have influenced local speech in north Sumatra, as it has in the south. Any political results from the Javanese expeditions to north Sumatra probably included nothing more than an acknowledgement by the north Sumatran rulers of vague vassal status (Wolters 1970: 45-46).

According to the Sejarah Melayu and Ma Huan, Haru was an important power in the Straits of Malacca in the fifteenth century. Haru was visited five times by Cheng Ho's fleet or detachments from it (Mills 1970: 10-19). The

Sejarah Melayu ranks Haru as the equal of Pasai and Malacca itself as great kingdoms, though there is some doubt regarding the precise period to which this passage refers (C.C. Brown 1960: 85 note 125).

Tome Pires described Haru as

> a large kingdom, bigger than any of those mentioned up to now in Sumatra, and it is not rich through merchandise and trade, for it has none. This [king] has many people, many lancharas [a kind of small boat]. He is the greatest king in all Sumatra, and the most powerful in plundering raids. He is a Moor and lives in the hinterland and has many rivers in his country. The land itself is marshy and cannot be penetrated. (Cortesao 1944: I, 147)

Pires described the land as fertile, with much good rice, and supplies of gold, benzoin, rattan and slaves, and "a few merchants" (Cortesao 1944: I, 148). Haru's products were also exported via Barus on the west coast, Pasai and Pedir, and had a vassal at Arqat (in the Rokan region) (Cortesao 1944: I, 148).

Some Portuguese ships called at Haru's port to take on cargo (Dion 1970: 150). But their main acquaintance with Haru came through their common participation in wars against Pasai and Aceh, beginning in 1521. In 1539 Aceh threatened Haru, and the ruler requested help from the Portuguese, but though a Portuguese captain, Pinto, visited the Haru capital, no assistance was forthcoming (Tiele 1879: 63; Cogan 1969: 26-29). Haru was defeated and its ruler killed (Tiele 1879: 64; Kathirithamby-Wells 1969: 456 note 14, 460; M. Said 1961: 105).

The Haru ruler's widow retreated to Malacca, but she received no aid from the Portuguese and went to Riau. She later married the Sultan of Johor at Kampar. A Johor fleet then drove the Acehnese garrisson from Haru.[26] Intermittent warfare between Johor and Haru on one side and Aceh on the other continued for decades until finally in 1619, during Iskandar Muda's reign, Aceh inflicted a crushing defeat on Haru and removed many of its subjects to Aceh (Schadee 1918: 9). This was said to have been a common tactic of Iskandar Muda, and agrees well with the hypothesis that one of the main reasons for Aceh's persistant warfare with Haru may have been the desire to gain control of Haru's large fleet and army (L.Y. Andaya 1975: 64-65).

The name Haru was not used again. A vassal ruler was appointed by Aceh, and the name for the region was changed to Deli. The new ruler consolidated his power in Deli by marrying the daughters of several local chiefs, all Karo Batak: the suku chiefs of Sunggal, Hamparan Perak, Sinembah and Sukapiring.[27]

[26] A legend still current in north Sumatra tells the story of a princess Puteri Hijau, who was so beautiful that the Aceh ruler conquered Haru to win her. M. Said believes that the legend stems from the events of 1539 (M. Said 1961: 100). The legendary princess is associated with several sites in the Deli River valley; for details see below, chapter 4.

[27] A local text, the Hikajat Ketoeroenan Radja Negeri Deli, gives an account of the foundation of the Deli sultanate which differs from the other historical accounts. For an analysis of this text see Milner (1977: 156-192).

In the early 1800s the Sultan of Deli still exercised a very tenuous influence over these four chiefs. His power was concentrated in one district only, as in other cases previously discussed (Sinar n.d.: 90; Joustra 1903: 162-163).

Haru and its successor, Deli, were not large trading centers, but they were involved in maritime commerce. In the 1400s Haru was known mainly as a pirate coast, but Pires notes that its hinterland contained products which were exported from several other large emporia. In the early nineteenth century Deli was not on the main international sailing route, though there was a shahbandar in its port (Anderson 1971: 276; Milner 1977: 66-67).

It appears reasonable to conclude, on the basis of available historical data, that by the first or second century A.D., a set of integrated political and economic institutions existed all along the maritime trade routes which connected the coasts of western Asia and Africa, India and Southeast Asia. China independently evolved similar procedures and institutions in its dealings with nomadic groups along its northern and western frontiers. When the maritime trade routes of the Indian Ocean were extended to south China by the fifth century A.D., many of the same institutions independently evolved by China were implemented to handle this commerce. This system was still functioning when the Portuguese and other Europeans began

trading in Indonesia in the sixteenth century.

This raises the first of several questions. Why should such a system, involving so much effort and danger, be accepted over such a wide area and continue for such a long period, when the commodities involved were in large part medicines and incense which would seem to be luxuries with little intrinsic value?

Indonesia probably became involved in this network of Indian Ocean trade at a very early period. Indonesian products such as camphor, benzoin, cloves and gold were in demand in India and China. Historical evidence however indicates that the main emporia in western Indonesia were not located near the producing centers, but instead were in southeast Sumatra, one of the least productive regions. How did the coastal emporia in the southeast secure their supplies of commodities for foreign trade from their hinterlands to the north and west?

The potential wealth which control over foreign trade could provide has been shown to have been a major concern of rulers in the Straits of Malacca and elsewhere. How were imported items used by rulers to reinforce their position in local hierarchies of status and power?

These are some of the problems in the history of Malay culture to which a study of the Deli River Valley can make a contribution. In the next chapter some relevant problems in the archaeological study of trade are posed, and the potential of Sumatran research for their resolution is discussed.

CHAPTER II

HISTORICAL ARCHAEOLOGY AND THE STUDY OF TRADING SITES

An article summarizing recent research on the subject of early trade has noted that future archaeological studies of trade will need to use ethnographic and ethnohistoric sources to make substantial progress (Adams 1974: 249). This statement reflects a basic difficulty inherent in the attempt to reconstruct cultural patterns through archaeology: how does one get from the artifact to the cultural institution?

Trade is a convenient activity for archaeologists to study when reconstructing the organization of ancient societies. Trade involves production, transport and distribution of objects and materials. Some of these are preserved in archaeological sites and can be traced stylistically or (even better) through physico-chemical analysis to their places of origin. Remains of trading thus provide a convenient intersection of a number of organized activities, and the factors which led men to expend enormous amounts of energy on long-distance trade can be reconstructed to some extent.

Historians are frequently at a disadvantage where

studies of ancient commerce are concerned. Traders have been keeping records for over four thousand years, as the clay tablets of Assyrian traders in Anatolia attest, but except for lucky accidents of preservation, such as the Geniza documents in Fostot, very few records of early transactions survive. Historians with an interest in commerce are therefore usually left in possession of mainly political documents in which trade may seldom appear except as an aspect of government. This limitation of the data further complicates a tangled problem regarding the role of the state in early long-distance trading systems, thereby making it difficult to compare early trading systems with later ones. It has been noted that, in old Assyrian times, "the dividing line between private and public may be impossible to establish; it is presumably a rather anachronistic idea which attempts to establish a distinction which had no or very little meaning for the ancients . . ." (Larsen 1976: 281). To this might be compared the remark by Adams: "The analytical separation between 'administered' and 'market' trade may, in other words, lack a cognitive or behavioral equivalent" (Adams 1974: 239).

Archaeologists possess, or can hope to obtain, a complementary set of data. The stone, pottery and metal artifacts of trade in archaeological sites can provide some of the data lost when the Chinese and Indian

equivalents of bills of lading burnt, sank, or were discarded. What is missing is the outline of the political systems which regulated the trading. This the historian can frequently supply.

The power of the generalizations about human social evolution which the archaeologist can make is restricted by the amount and nature of the data at his disposal. In this chapter we will survey the analyses which other archaeologists studying trade have created, and compare the data necessary for such analyses with that available for maritime Southeast Asia.

The Archaeology of Emporia

There have been several studies combining historical and archaeological research on sites which appear to have been areas specifically designated for long-distance trade by local rulers. It is worth considering some of these in detail here, several because they furnish important data from emporia on the early Asian maritime trade routes, and one for its theoretical implications regarding the inter-relations of trade and society.

Arikamedu

The Roman-financed Greeks established permanent agents in several south Indian ports, including a place called Poduke by Ptolemy and the Periplus.[1] Roman

[1] For location see map 1.

arretine ware and other artifacts including coins have been found both on the northwestern coast and hinterland of India (Margabandhu 1965) but are more frequently found in southern India, particularly on the Coromandel coast. The most thoroughly excavated site, at the modern town of Arikamedu, has been identified with Poduke (Wheeler et al. 1946; Wheeler 1954: 147). Brick robbers had despoiled much of the site, but two brick structures were uncovered, one identified as a warehouse built around A.D. 50 and the other a complex of walled courtyards and tanks with brick inlets and outlets.

The site was probably occupied shortly before A.D. 1, but the Roman Arretine ware in the site was only made after A.D. 50. In addition to sherds of the red Arretine pottery, Roman lamps, glassware, and many fragments of typical Mediterranean amphorae were also found in all levels of the site, some with resinous encrustations indicating their probable use as wine containers. Early Indian literature refers to the Yavanas (Ionians) bringing wine.

The brick tanks may have been used to process muslin cloth. Muslin is often bleached, starched, and dyed in such tanks, and muslin cloth has "been a notable product of this part of India and is recorded by classical writers as an Indian export" (Wheeler et al. 1946: 17).

There is also evidence for bead manufacture at

Arikamedu. In addition to large numbers of beads, there are lumps of glass slag which could be reworked to make beads (Wheeler et al. 1946: 95).

The great majority of the pottery in the site is local. Numerous Roman coins have been found here and at many other sites in India, both coastal and interior, as well as intaglios and cameos (Miller 1969: 213-214). Archaeological evidence alone could not demonstrate the presence of Romans or Greeks here; only the documentary sources definitively establish that people from the Mediterranean settled in south India during this period.

Roman trade at Arikamedu seems to have continued until about A.D. 200 (Wheeler et al. 1946: 23-24). After this time Roman trade with India declined. Of the approximately six thousand Roman gold and silver coins from India, most are of the first and second centuries A.D., though some fifth century specimens have been found in Sri Lanka (Miller 1969: 218). Indian embassies occasionally visited Rome. At least four separate missions were recorded during Augustus' term, and missions continued to come until the time of Constantine (Wheeler 1954: 133-134). These missions may have brought with them one of the few surviving artifacts of contact with India during the Roman Empire to be found in Italy: an ivory statuette from Pompeii (Wheeler 1954: plate xix). The other commodities such as spices, silks, cloth and so forth which Rome

imported have long turned into dust.[2]

Oc-eo

Oc-eo is the only site in Southeast Asia which contains a large enough concentration of Roman and other artifacts to support the interpre-ation that its inhabitants were in regular communication with the south Indian emporia during the period when Romano-Greeks were living and trading there.[3] Oc-eo, south of the Mekong Delta in Vietnam, is one of several sites linked by artificial waterways. Oc-eo is now twenty-five kilometers inland, and connected by an old canal to the site of Ta Keo, now eleven kilometers inland. Estimates of the progradation of the Mekong Delta since the sixth century A.D. have ranged over forty-nine kilometers (Malleret 1959: I, 5 note 2; 198).

The Bathe hill is 1500 meters north of the site, but

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[2] Or ash; a common use for Indian imports was conspicuous consumption in ceremonies. In the funeral of Poppaea, A.D. 50 for example, a year's supply of imported perfume went up in smoke (Miller 1969: 20).

[3] The recent discovery in northwest Java of three pots said to be "of Romano-Indian inspiration and dating between A.D. 0-200" (Walker and Santoso 1977: 39) among a collection of 350 intact vessels found by villagers suggests that it may be possible in the future to locate other Southeast Asian sites which were in contact with south Indian emporia at that time. Walker and Santoso specifically compare some of the pottery found in Java to Arikamedu types (Walker and Santoso 1977: 40-42), and also speculate that some of the Arikamedu pot lids (Wheeler's type 36A, 39A and 40C) may actually be Javanese (Walker and Santoso 1977: 42).

Oc-eo itself is a marshy plain, now largely rice padi. The water table in the dry season is one to 1.2 meters below ground level. Thus the lower habitation layers are sometimes waterlogged. Silted-up rivers, beach ridges and lagoons typify the landscape. Rice is planted in the low-lying lagoons.

Two ethnic groups occupied the area in 1950, Cambodians on the beach ridges (giong), Vietnamese on the lower levels, on the water channels and at river mouths. "Si une fleche sablonneuse est brusquement interrompue par le pasage d'un ruisseau, un ilot d'habitat vietnamien s'intercale tout a coup entre deux rameaux khmers" (Malleret 1963: IV, 8).

The site itself consists of a rectangle 1.5 kilometers wide and 3 kilometers long, formed by a ditch and bank. A large silted-in canal runs down the center of the site. Remains include ruins of brick and granite structures and a thick stratum of shells, bone, sherds and wooden remains.

The site was probably inhabited between the second and fifth centuries A.D. No radiocarbon samples from the site have been analyzed, but numerous small art objects with datable styles all fall in this time period. Many of these objects were imported, and some are of Roman origin.

The Roman remains from Oc-eo consist of gold and bronze medallions, coins, and nine Roman or Mediterranean intaglia. The number of identifiably Roman objects at

Oc-eo is greater than the number of similarly identifiable Chinese objects, though the site is just beyond the southern borders of the territory controlled by China during that period.

Outside of Oc-eo very few Roman objects have been found in Southeast Asia. A cache of five coins from the second, fourth and fifth centuries came from west of Hanoi, and from Mytho a large bronze of Maximin the Goth (A.D. 235-238) (Malleret 1962: III, 380, 383). Roman lamps have been found in a site at P'ong Tuk, Thailand, and at a twelfth century ruin at Angkor (Malleret 1962: III, 379, 384). In addition, "Roman" style glass beads have been found both at Oc-eo and many sites in Southeast Asia. No Roman coins have ever been reported from China (Bivar 1970).

These objects are very unlikely to have come directly from Rome. They must be indications of the trickle of Roman artifacts which moved beyond India during the period of Roman involvement in the Indian Ocean maritime trade, and probably passed through several hands, along several stages, before arriving in Oc-eo.

In addition to "Roman" objects, there are a number of items with short Sanskrit inscriptions: metal rectangles, seals, rings. Some of the inscriptions contain words such as "attention," "copy, duplicate," and marks of possession such as "proprietor or owner," and may have been shipped with bundles of goods. Given the fact that a majority of

these seals are carnelian, a semi-precious stone, it is impossible to determine whether they were used for commercial purposes or whether they were themselves traded as jewelry. Leemans (1965: 213) has pointed out that in early Mesopotamia seals were sometimes traded as jewelry, and are not necessarily indicative of the presence of particular groups of merchants.

Several industries were carried on at Oc-eo, including iron and gold working. Crucibles with copper carbonate adhesions indicate that bronze was also worked, though bronze objects are less common than gold and tine in the site (Malleret 1960: II, 133-135, 193).

Deposits of iron and tin ore are found in Vietnam, but gold is not, and must have been imported from elsewhere, possibly as gold wire (Malleret 1960: II, 193). There is no indication that mercury or borax were used in the gold working here, nor was gold amalgamated with silver, as in Indian and later Southeast Asian practice (Malleret 1962: III, 8-10). The iron and tin may have been imported (see above, chapter I), at least in part.

Pottery production at Oc-eo is also demonstrated by the discovery of kiln supports, remains of a potter's wheel, and even what may have been a pottery paddle. The wooden paddle was preserved in the waterlogged soil along with wooden remains which Malleret interpreted as house-posts (Malleret 1960: II, 101, 127-131; 1959: I, 228).

Numerous deposits of damar or tree resins were identified at Oc-eo. Resins were mixed through the habitation layer in all areas of the site, and were very common near the central canal. Malleret hypothesized that resin may have been used for boat caulking among other things (Malleret 1960: II, 85-87).

In summary, Oc-eo was a large site, densely populated for what may have been a period of several centuries, and it had long-distance trading links with the Indian Ocean and the Mediterranean. Local manufacture was also an important activity at the site, with some raw materials imported. Marine life appears to have been an important source of subsistence for the Oc-eo residents, when one notes the numerous mollusc shells in the habitation deposits. Bones were also present, but unfortunately were not analyzed, so no conclusions can be drawn regarding the extent to which Oc-eo residents utilized terrestrial fauna. The presence of tree resins gives some indication that the inhabitants frequently exchanged products with people in the hinterland.

Oc-eo represents a Southeast Asian site which in many respects corresponds to such Indian emporia as Poduke/Arikamedu. Both sites have certain common features: numerous imported artifacts, some from as far away as Italy; evidence of several manufacturing activities carried on in the site; and evidence of the importation of goods

besides luxury items.

Emporia in the Malay Peninsula

Archaeologists have discovered several sites in the Malay Peninsula which provide evidence of trading contacts with the Indian Ocean and South China Sea after the decline of Oc-eo. A brief summary of the reports from these sites can furnish both a rudimentary archaeological framework for the study of early commerce in the Straits of Malacca and a premonition of the future discoveries which may await archaeologists in coastal Sumatra.

A Chinese mission visited "Funan" in the first half of the third century A.D., probably "to investigate, from a convenient observation post within South East Asia, the way in which the western Asian trade trickling through the region was being handled" (Wolters 1967: 43). Fragments of the mission's report indicate that the maritime trade route between India and the South China Sea area in the third century involved a portage across the Malay Peninsula, with several countries in the isthmian region such as Tun-sun and Chu-li being focal points of the overland stage (Wolters 1967: 37-48).

In A.D. 775 an inscription was erected at Ligor, on the Kra Isthmus, to commemorate the founding of a Mahayana Buddhist temple here by the Srivijayan ruler. Most historians have presumed that the inscription indicates Srivijayan dominance over this region, about two hundred

miles north of Kedah, which I-ching had noted was under Srivijayan control in A.D. 695 (D.G.E. Hall 1968: 44).

Another inscription was erected near Takuapa around A.D. 815-850. This inscription, written in Tamil, commemorates the excavation of an artificial lake by a south Indian merchant guild (Coedes 1968: 107).[4] Nearby a sanctuary and three religious statues have been found, which are described as strongly south Indian in style (O'Connor and T. Harrisson 1964; Lamb 1964a).

Surface survey of the Takuapa area has yielded evidence of long-distance trading activity during the seventh through the tenth centuries, roughly coincident with the reign of the T'ang Dynasty in China. The assemblage from Takuapa includes Chinese and Arabic pottery, Middle Eastern glass, and beads (Lamb 1964a: 82).

The inscriptions, statuary, and trade goods are consistent with expectations raised by Chinese and Arabic historical sources. During the late T'ang, when conditions in China were disturbed, traders from east and west met at Kalah, a toponym several authors have identified with this coast (Hirth and Rockhill 1911: 18; Sastri 1949: 71;

[4] Indian merchant guilds erected many inscriptions outside India during the Chola period (A.D. 850-1279), mostly referring to grants made to religious institutions. In Sri Lanka thirteen such inscriptions have been found. Similar inscriptions have been found in Burma and western Sumatra (Indrapala 1971: 110-111).

Wheatley 1961: 218-219; Mills 1974: 57). The link between Kalah and the Persian Gulf port of Siraf is well documented. The Arab geographer Masudi in A.D. 943 wrote that ships from Siraf and Oman frequently called at Kalah (Wheatley 1961: 218). Numerous sherds of Chinese pottery have been found at Siraf (Whitehouse 1971), and sherds of Islamic pottery found at Takuapa are identical to sherds from Siraf (Lamb 1964b: 17).

Srivijaya may have lost control of the isthmian region by A.D. 971 (Wolters 1958: 591). Kedah however remained under Sumatran domination in the eleventh century, according to south Indian inscriptions.

Numerous temple foundations have been found in south Kedah: along the banks of the Bujang River, on the summit of 1,300-meter high Kedah Peak, and on the south side of the Merbok estuary (Wales 1940). Temple excavations by Wales and Lamb yielded indications of both Mahayana Buddhism and Sivaitic Hinduism of a Tantric nature (Treloar and Fabris 1975). Several different types of temple construction appear to have been practiced in Kedah. One reconstructed foundation, Candi Bukit Batu Pahat, has been compared to the Biaro Si Topayan in Padang Lawas (B.A.V. Peacock 1970: 23). A second temple at Matang Pasir, Kedah, has been compared to a foundation at Kota Cina, northeast Sumatra (McKinnon 1974: 69).

Lamb excavated a deposit of ceramics near Wales'

site 18, and reported that at least ten to twelve other such deposits exist in the immediate area (Lamb 1961, 1966). The ceramic material includes much imported Chinese porcelain and stoneware, though the largest category was earthenware, probably of local origin (Lamb 1961: 23-26). In one excavation 14 by 10 feet nearly three tons of material were recovered from a deposit three feet thick. This assemblage also included five thousand glass beads. All Chinese porcelain sherds were attributed to the late Sung and early Yuan periods, with no blue and white ware (Lamb 1966: 77).

The assemblage of imported ceramics derives from the period almost immediately after activity seems to have ceased at Takuapa, i.e. around the mid-eleventh century. The beginning of commercial activity at Kedah, which during the period between about A.D. 695 and 1080 may have been chiefly a religious center which Srivijaya prevented from engaging directly in foreign trade, may be partially due to the erosion of the Srivijayan commercial monopoly in the Straits in the eleventh century. In A.D. 1068 the south Indian Cola ruler may have put down a revolt in Kedah on behalf of the Srivijayan ruler (D.G.E. Hall 1968: 59-60). Fourteen years later the Srivijayan capital may have shifted from Palembang to Jambi (Wolters 1966), another indication of serious disruptions in the political (and probably economic) situation in the Straits.

Tanjung Raja

In the late 1920s excavations were conducted at Tanjong Raja, coastal Perak, about 100 kilometers south of Kedah. Inhabitants of this site, occupied between about A.D. 850-1100, obtained only a small quantity of foreign objects, perhaps from a larger local center. Most pottery found at the site is earthenwar; Chinese celadon was found only in upper strata, and then was uncommon (Evans 1932: 102). Spouted vessels of earthenware were common (Evans 1932: 99). Other objects indicative of contact with another node or nodes on a long-distance trade network include a gold ring with decoration, perhaps representing Vishnu on Garuda and a seal with Pallava script (Evans 1932: plates 35, 38). Beads of glass and stone were made at Tanjong Raja, but the material was imported. Finished beads are scattered throughout the site (Evans 1932: 81).

Other manufacturing on the site included the working of small quantities of tin, lead, and iron, as slag fragments attest (Evans 1932: 82, 85). There were numerous remains of house posts, and the habitation layer contains a large amount of Arca shell (Evans 1932: 108, 87).

Singapore

Traces of early settlement on Singapore Island were described by the first British officials who arrived on the

island in 1819. Chao Ju-kua in 1225 had mentioned a place called Ling-ya-men, probably referring to the channel between Singapore Harbor and the Straits of Malacca (Mi-ls 1974). Many ships stopped here on their way to San-fo-tsi to pay a toll, perhaps "to escape worse" (Hirth and Rockhill 1911: 60, 63 note 2). In 1349 Wang Ta-yuan said the Singaporeans were mainly pirates (Winstedt 1969: 8).

One mile inland from the harbor a hill called Bukit Larangan ("Forbidden Hill") still bore numerous remains of old brick foundations in 1822. The western and northern sides of the hill are said to have been covered with brick remains, some resting on a forty-foot square terrace near the summit. An early account also mentions some objects which must have been pillar bases. Some of the ruins were said to be graves of former Malay rulers.

Numerous fragments of porcelain and earthenware were strewn about the surface of the hill, though the Malay inhabitants of the coast, fearing the spirits of the graves, refused to go near the place. Chinese copper coins from the tenth and eleventh centuries were also quite common (Braddell 1969: extract from Crawfurd's notes of 1822, Appendix: 22-23).

The British flattened the summit of the hill and on the site they built a fort and later a reservoir ten feet deep and covering seven acres. During the excavations workmen found a number of gold ornaments stylistically

within the range of Majapahit workmanship of the mid-1300s (Winstedt 1969b: 49-52).

Between the hill and the harbor a plain of 1/2 square mile was enclosed on the west by the Singapore River, and on the east by an earthen wall sixteen feet wide at the base and eight to nine feet high (Wheatley 1961: 81, map). The wall probably had been erected for defensive purposes. An earlier settlement named Temasik was attacked by the Thais shortly before 1349, but the attack ceased when a Chinese imperial envoy approached. This Temasik, along with Sumatran countries, is claimed as a conquest of Majapahit in the Nagarakrtagama.

An inscription once stood near the harbor, but was dynamited by British engineers. The few fragments which survive bear indistinct traces of Majapahit-style script of a type older than 1361, but no reading is possible (Gibson-Hill 1956: 24-25).

The Chinese coins cannot be used to infer a date for the early settlement, since such coins long remained in circulation. Gibson-Hill suspects that Temasik was probably established around A.D. 1300, though Chao Ju-kua's Ling-ya-men was probably not far away (Gibson-Hill 1956: 43). Majapahit may have caused the settlement to be renamed; Wang Ta-yuan recorded Chinese inhabitants in Singapura in 1349 (Wheatley 1961: 82, 304).

Takuapa, south Kedah and Singapore all provide

archaeological evidence which supports historical reconstructions of trade routes based on mostly foreign sources. The Takuapa site was subject to Sumatran dominance in some form during its prosperity, but the more southern emporia at Kedah and Singapore date from the early second millennium. Then the Straits were no longer a mare clausum of Srivijaya but the restrictive policies of the early Ming rulers had not yet caused many small center to lose commerce to a few large centers, led by Malacca (Wolters 1970: 188-189). Other famous pre-Malaccan ports, including Srivijaya, Malayu, and Barus, were located in Sumatra, and should have left traces comparable to those found on the Malay Peninsula. That they have not been found is probably due to the fact that until very recently no one had looked for sites in Sumatra which contained many pieces of broken pottery but little permanent architecture or stone sculpture.

The relationship of these emporia to their hinterlands and nearby coasts remains to be clarified. Western and Chinese accounts mention that "Funan," Poduke, and Kalah were trans-shipment points and collection centers where local commodities were brought together, and imported goods stored for re-export with some portion retained as duty or tribute. These foreign sources are not concerned with the local arrangements which governed the collection and redistribution of the local commodities, and there is evidence that rulers in ports such as Palembang were not

anxious for this information to become widely available. It is only through such information however that we can understand the significance of long-distance trade in the policies of local rulers, and begin to account for the development of similar institutions to regulate the trade.

Emporia and their Hinterlands: the Gateway Concept

Geographers have long been interested in identifying repetitive features in the ways people in different parts of the world use space for transportation and settlement. One well-known set of ideas collectively termed central-place theory describes how, under certain ideal conditions of topography, resource distribution and economic organization seldom approached in reality, hierarchies of settlement will develop in which smaller towns, markets or "central places" will be grouped in hexagonal patterns around larger centers of economic activity. Some archaeologists have attempted to draw conclusions regarding the economic and political relationships between the people who inhabited anciently-occupied sites by reference to these geographical observations.

A problem which makes it difficult to use central place theories to reconstruct ancient socio-economic institutions is that one of the conditions the theories assume is an economic organization similar to that of nineteenth and twentieth century Europe. Few societies

which archaeologists study are likely to have been organized in such a way. Patterns in the use of space by people in maritime Southeast Asia were probably very different from those of south Germany in the 1800s.

A.F. Burghardt has recently identified another commonly-observed set of patterns of transport and settlement, associated with what he has called the "gateway city." Such cities develop at the boundaries of two or more areas with different potentials for human use, rather than at the centers of uniform areas where "central places" might be found. Residents of such cities typically channel much energy into activities associated with long-distance trading and transport, and engage in frequent wholesale commerce (Burghardt 1971: 269-273).

These gateway cities are linked to their hinterlands by dendritic rather than symmetrical networks of transport. Thus settlements at similar levels of a hierarchy based on size and distance from the gateway city would have no connection with one another, but only with settlements on higher or lower levels. This is in contrast with central place networks. These settlements may be secondary centers of transport, collection and other economic activity, but do not necessarily have any political connection with one another. Nor does the gateway city model assume any particular political relationship between the city and its hinterland; gateway cities do not necessarily control their

hinterlands. It has been noted that such dendritic networks "are characteristic of many primitive economic systems and frequently are found in areas where the population is dispersed, transportation is difficult of underdeveloped, and where there is a strong external economic orientation" (K.G. Hirth 1978: 37). Gateway cities and dendritic networks are therefore compatible with several types of political organization.

Burghardt's formulation of the gateway city seems applicable in many respects to the Southeast Asian emporia. The criteria for gateway cities: location on the border between areas of differing productivity (here the coast and the hinterland), integration into long-distance trading networks, and relatively slow speed of local transport, are all found in the Sumatran examples. Such gateways are not necessarily located on coasts, but the similarity of the dendritic pattern to a river system is a striking indication of the probability that dendritic patterns of communication and transport will frequently center on river mouths.

Mexican parallels

K.G. Hirth (1978) has drawn attention to the geographic pattern formed by sites containing Olmec artifacts in hinterland areas, and the similarity of this pattern to the dendritic systems associated with "gateway cities."

Numerous sites identified with the culture known as Olmec have been identified in Mexico. The earliest Olmec centers are thought to have been in the coastal lowlands along the Gulf of Mexico; their sites frequently contain items such as jadeite and magnetite, obsidian, and other materials which were imported from distant parts of Mesoamerica (Coe 1965).

Most of these objects were probably used as status symbols by members of the elite class.

At the same time objects of "Olmec" style have been found at sites in the interior of Mesoamerica, near the routes along which these commodities may have been carried. Earlier hypotheses of political control, imperialism or colonization by lowland Olmec in the highlands have been replaced by others which view the transmission of artifacts and art styles as part of the effects of a long-distance trade network.

Coe (1965) argued that a professional group of traders similar to the Aztec pochteca were involved in the maintenance of a "Jade Route" from the highlands to the coast.[5] Several recent discoveries have reinforced the idea that traders dealing mainly in luxury goods and possessing close relationships with ruling elites, travelled

[5] On the pochteca see Chapman (1957). Sanders and Price (1968: 122) have expressed disagreement with Coe's hypothesis.

from the Olmec lowlands to the central Mexican highlands (Henderson 1975: 330-332).

It has been suggested on the basis of the Olmec sites that the exchange of ceremonial and ritual objects over long distances "may not be totally unrelated to subsistence," i.e. perishable items such as food may also have been involved in the exchanges (Flannery 1974: 79). Magnetite and other exotic materials accumulated by the elite may have acted both to establish reciprocal obligations with neighboring groups not controlled politically (who could be drawn on for supplies in case of emergency). Goods obtained through ceremonial exchanges in the Olmec case were frequently buried with individuals of high status, and thus a continual need to maintain the exchanges existed. This ensured that the system would continue to function, even though some of the items were imperishable (fortunately for archaeologists). K.G. Hirth (1978) agrees with the hypothesis that subsistence goods probably moved long the trade routes beside the exotic status symbols.

There are numerous ethnographic examples of such ceremonial exchange institutions and their relationship to subsistence. Ford (1972: 45) has argued that the demand for expendable sacred items among the Comanche, Navajo and Pueblo Indians in the 1800s was maintained because of an occasional need for "access to the produce of other

ecosystems." Closer to Southeast Asia, the examples of the Siassi and Mailu islanders of Malanesi may be cited. Both are specialized maritime trading groups who inhabit areas of low agricultural potential, but are expert canoe builders and sailors. In both cases, pigs were obtained from other islands through ritualized exchange with designated partners, and successful traders become men of high status (Harding 1965: 46-53). Rappoport (1968: 106) argues for a similar mechanism in highland New Guinea. Malinowski (1922) and Sharp (1952) describe similar practices. In all cases ritual exchange of symbolic objects with designated partners was accompanied by a trade in subsistence goods with other individuals.

In the case of the Olmec, exchange of subsistence goods may have been carried on as a direct concomitant of ritual exchanges of status-reinforcing objects. Such exchange is not necessarily carried out within groups, but may occur between groups which are politically separate. Flannery (1974) proposed that such a system could account for the spread of Olmec symbolism from the coastal plain to the Mexican highland areas where the sources of desirable raw materials lay.

It appears on the basis of the Olmec example that gateway cities and dendritic transport patterns would be likely to develop under the conditions which existed in early maritime Southeast Asia. Men transported goods by

boat whenever possible, and rivers are always dendritic in form. The emporia of ancient Southeast Asia were sites where local products from various hinterland zones were collected and shipped over long distances, a function Burghardt says is basic to gateway cities.

Historical sources are mainly written by or for elite groups. Therefore such sources tend to stress the exchange of exotic articles over long distances while giving little attention to the concomitant exchange of common subsistence articles which may always have accompanied such ritualized exchanges. We know much more about the relationships between far-flung emporia than we do about the relationships between the emporia and their neighboring areas. This study is intended as a first step toward clarifying the nature of the second relationship in northeast Sumatra in the early second millennium A.D.

Potential Contributions of Archaeological Study of Sumatran Emporia

Historical reconstructions largely based on non-indigenous sources indicate that Sumatran emporia such as Srivijaya were linked to a system of long-distance trade in luxury items which was established by the early first millennium A.D. Accounts of Indonesian trading centers from the sixteenth to the nineteenth century also emphasize the importance of maritime trade in the political organization of what are here termed the segmentary states which

the Europeans found in the Straits of Malacca, Java, Borneo and the Philippines. Based on these sources, it appears extremely likely that sites containing the remains of emporia with numerous traces of long-distance trade should be discovered in Sumatra.

In addition to coastal emporia, to which the bulk of information pertains, sites should also exist in the hinterlands where sources of marketable commodities are found. However, because the concern of local rulers with political control over the wealth obtainable from long-distance trade resulted in the confinement of most foreign observers to the coastal areas, there is little information regarding the routes by which the commodities were brought to the emporia, and the arrangements between producers and coastal peoples which governed the transactions.

Based on ethnographic studies of ceremonial exchange in other regions, we might expect to find evidence that subsistence goods were also involved in the Indonesian maritime commerce which carried spices and other exotica to India and China. Indications of such exchange are however unlikely to appear in the archaeological record.

Archaeological research in Sumatra can hope to shed some light on the relationships between coasts and hinterlands. Some materials, such as resins, may be preserved in coastal sites. Such research can also test

the applicability of the dendritic model for the elucidation of spatial patterning of sites involved in the trade at different stages.

Thus at least two major concerns should be present in Sumatran historical archaeology. The first is the examination of coastal emporia: they ought to exist, and can be compared with Oc-eo and other similar sites to determine the degree of consistency in their patterning of activities and assemblage of local and imported artifacts. The second concern is the attempt to trace the relationships between coastal emporia and their hinterlands, both in terms of exchange activities and cultural relationships. The latter are admittedly more difficult to define and analyze, but as in the Olmec example stylistic traits can be useful in testing hypotheses regarding frequency and type of communication between different zones.

Before proceeding to the subject of this study, an application of these expectations to a case study of an area of Sumatran coast and hinterland, it will be useful to summarize the geography and distribution of resources in Sumatra, and compare these with the archaeological sites which have been previously located. These distributions can then be juxtaposed with some available data regarding historical relationships of Sumatran coastal trading centers to their hinterlands, and the subject of local trade in subsistence commodities.

CHAPTER III

SUMATRA: RESOURCES AND SITE DISTRIBUTION

In this chapter I sketch the Sumatran environment, and compare the distribution of resources, population, and archaeological sites. Again it will become apparent that much more data must be collected before the pattern of early Sumatran commerce becomes clear.

Geography of Sumatra

Sumatra is the sixth largest island in the world. Two thousand kilometers from tip to tip, bisected by the equator, it is inhabited by about twenty million people of several linguistic groups. The Barisan mountain range runs along the western coast of the island, with peaks of up to 4000 meters. The watershed between east and west-flowing rivers is seldom more than fifty kilometers inland from the shore of the Indian Ocean. In the eighteenth century the distance from the navigable part of the Bengkulu River on the west of the divide to the navigable part of the Musi on the east could be walked in eight hours (Marsden 1966: 364).

In general, the eastern coastal plains are the least densely populated zones, with fewer than forty-eight people per square mile. The densest concentrations of rural

population are found between elevations of 500 and 1500 meters, principally on the fertile volcanic plateaus of west Sumatra and north Sumatra provinces (Withington 1961).[3]

The eastern coastal plains occupy one half of the area of the entire island, or about 120,000 square kilometers, and are still increasing their area due to accretion of sediments carried by rivers and long-shore currents and deposited on the shallow Sunda Shelf. This process of sedimentation has been continuing for at least two thousand years. Seaports on the east tend to be far inland, where rivers are tidal for great distances upstream. In Lampung Province the port of Gunung Sugih on the Wai Putih River is 100 kilometers inland; Palembang, on the Musi, is 90 kilometers upstream;[1] Jambi, 100 kilometers up the Batang Hari; Rengat, 130 kilometers up the Inderagiri (Lekkerkerker 1916: 9).

The present configuration of the east coast is thus a temporary apparition in an area where the relationship of land and water is never stable. Projecting back present rates of change is not a precise indicator of the past condition of the Sumatran coast (Miksic 1977), but several reconstructions of earlier east Sumatran coastal outlines have been attempted (Obdeijn 1941; Soekmono 1963). The basic outline of the east Sumatran

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[1] In 1920 ships up to 20 feet draught could sail up the Musi to Palembang (Nederlandsche Indische Havens, 1920).

landscape two thousand years ago was probably a series of large bays or estuaries rather than the present relatively straight line (Chambers and Sobur 1975).

The estuarine landform is by its nature unstable.

> Estuaries are formed in the narrow boundary zone between the sea and the land and their life is generally short. . . . At present, following the Pleistocene ice age. . .estuaries are both well-developed and numerous. In geological terms this situation may not last long.
>
> Though they are a particularly ephemeral feature of the earth's surface, estuaries have probably been extremely important in the world's development . . . . Because of their fertile waters, sheltered anchorages and the navigational access they provide to a broad hinterland, estuaries have been the main centres of man's development. (Dyer 1973)

Legends of coastal change have been recorded in Sumatra since the eighteenth century (Marsden 1966: 359; Obdeijn 1941: 190, 214; Anderson 1971: 32, 197). In the twentieth century some scientific measurements have been compiled, and the process is still under study (summarized in Miksic 1977: 162-168). In the interpretation of Sumatran environments of the past, these geographic alterations must be taken into account, although there is no consensus among geologists regarding the relative importance of the specific processes involved, nor is there anything more than impressionistic data for most of the east Sumatran plain. Bearing in mind the injunction that "Each problem [relating archaeology and palaeogeography] must be solved, if it is to be solved, locally with local evidence" (Kraft et al. 1975: 1194), it must be admitted that the problem

of the enormous east Sumatra plain is not likely to be solved in the near future.

Much of the east Sumatran coastal plain is underlain by beds of peat, which in many places reach the surface. The peat supports most crops only with heavy liming, though pineapples and some other plants can be cultivated on it (Harrisson 1975: 117 and map facing 116). Lowland alluvial soil suitable for rice growing occurs mainly near river courses, past and present. Mohr describes the valleys of the ten largest rivers of east Sumatra, from the Barumun in the north to the Sekampong in the south, and notes their differences in fertility in the different valleys based on their parent material and age (Mohr 1944).

The most intensively cultivated areas of Sumatra are shown in map 3. Of these, the valley of the Batang Hari in Jambi, the upper valleys of the Musi and its tributaries, and the coastal strip of north Aceh are composed of fluviatile sediments. A second type of soil formation, highland plateaus formed more or less in situ by the weathering of volcanic eruption products, is exemplified by the Pasemah highlands in the south, the Padang highlands in the west central region, and the Karo Plateau southeast of Medan.

Mohr says that the soils of the Batak regions south of Medan form "a single whole" (Mohr 1944: 446). Most of the soils of the area of northeast Sumatra originate from

the weathering of lava flows of the so-called "Batak tumor" centered around Lake Toba, itself an enormous crater lake. Derivatives of two forms of volcanic tuff, liparitic and dacitic, cover the surface of most of the east coast of north Sumatra (Druif 1938).

Resource Distribution

We may next consider those resources that were important in long-distance trade. Concentrations of useful mineral and vegetable products exist in numerous places in Sumatra. Chief among the mineral resources was gold, which was mined in Sumatra before the arrival of Europeans in the region (see appendix). In addition to gold, other minerals including silver, lead, copper, zinc, iron, and mercury were mined in Sumatra before the sixteenth century (van Bemmelen 1944: II, 103, 105, 164, 210; Marsden 1966: 166, 172-173). The greatest evidence of pre-colonial mining comes from the mountains near the west coast, but other old workings are common from Aceh to Lampong.

Vegetable products of Sumatra included a large variety of tree resins, as well as aromatic woods, canes, etc. (Wheatley 1959, Wang 1958, Wolters 1967). The most prized products, certain tree resins, came from the mountains of north Sumatra.

Thus the important export commodities in Sumatra came from the northern and western mountains. Historical data lead to the conclusion that the major emporia were in

the south and east. Archaeological data may now be introduced which give some indication of the nature of connections between these regions.

Sumatra: Site Reports[2]

Between the end of the colonial period and 1977, only Bronson and McKinnon published reports of archaeological excavation in Sumatra. Dutch research tended to concentrate on architectural remains, decipherment of inscriptions and recovery of statuary. There was little excavation, performed by men largely untrained in what are now regarded as basic archaeological techniques. Most archaeological information therefore consists of descriptions of objects found on the surface, or chance finds obtained by local residents during agricultural operations. When excavations were performed, the reports of the investigators lack details such as stratigraphy and precise locations of artifacts unearthed. The information in this section therefore consists mainly of descriptions of ceremonial centers, with little data on pottery or other artifacts which might establish the existence of habitation sites or trading ports. There has never been even a brief summary of the archaeological data from Sumatran historical sites; thus another reason for presenting one here.

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[2] For sites mentioned in this section, see map 2.

Palembang

Most historians, influenced by local inscriptions and foreign references, have considered Palembang as the site of the capital of Srivijaya, a famous trading center, from at least A.D. 682 to 1079 (Wolters 1966, 1967). The Srivijayan ruler was reputed to have been fabulously wealthy, as befits a Malay Raja. If modern Palembang rests on the site of the former Srivijayan capital, it is reasonable to expect the remains of emporion activity to be numerous and widespread.

The undated Telaga Batu inscription has already been discussed. Its presence is suggestive of a royal center as Wolters (1967: 209) noted. Other Palembang area inscriptions include two, from Kedukan Bukit (A.D. 682) and Talang Tuwo (A.D. 684) which deal with religious activities of the Srivijayan ruler.

Several other south Sumatran inscriptions refer to Srivijaya. One at Karang Berahi, on a tributary of the Batang Hari, is undated but its contents parallel those of the Telaga Batu text, as do those of another from Kota Kapur on the island of Bangka, just off the mouth of the Musi, dated A.D. 686. Recently another inscription with a similar text has been reported from Palas Pasemah (Bronson et al. n.d.: 5).

The script used in the inscriptions is derived from south Indian alphabets but differs considerably from

contemporary Javanese scripts (Sastri 1940: 245). The language, except for the first few lines on the oath stones is Old Malay.

The first few lines have not been translated. Obdeijn thought these lines might be in the Old Minangkabau language (Obdeijn 1943: 721-723). Damais found parallels in the lines to Malagasy, Javanese and Cham, and believes they are, "sans aucun doute . . . d'une langue dont les particularities se retrouvent dans d'autres regions du domaine linguistique nousantarien" (Damais 1968). Van Naerssen proposes that the language was an Orang Laut dialect, or a lingua franca used between Malays and Orang Laut (van Naerssen 1977: 34). Several authors have stressed the importance of Orang Laut ("Sea Nomads") in the Srivijayan thalassocracy (van Naerssen 1977; Andaya 1975a; Wolters 1967).

Van Naerssen suspects that the Bangka, Jambi and Palas Pasemah stones may have been boundary markers of Srivijaya (van Naerssen 1977: 31-32). However, there is no mention of borders in the inscriptions, but only of frontier regions, or literally frontier roads (samaryyadapatha) (de Casparis 1956: 41), an interesting phrase in that it appears to stress the position of the stones on communication networks.

Oath-taking is a feature of Malay culture which numerous authors have mentioned. In the early 1700s

Pasemah chiefs subject to Palembang swore oaths of loyalty at a tomb on the summit of Bukit Seguntang (Roo de la Faille 1929: 330). Marsden says that oaths in Sumatra were most solemn when sworn at graves (Marsden 1966: 242), and Schnitger records that in the nineteenth century there were still four "heaps of brick" on the hill where oaths were taken (Schnitger 1964: 9). The Sejarah Melayu describes the oath of loyalty taken by the ancestors of the Malays to their first ruler; those who broke the oath would be struck by a curse (C.C. Brown 1970: 16).

The interpretation indicated by ethnohistoric information is that the oaths were probably administered not to governors of integrated provinces at border markers, but to highland chiefs. The chiefs guaranteed to guard the downstream areas from attack and maintain communication routes with the hinterlands (see below).

Palembang has yielded very few other indications of emporion-like activity. After a survey of the area Bosch was moved to write that

> The Palembang lowlands district belongs to the areas poorest in antiquities from Sumatra . . . . Because of our personal experience that the center of the town contained almost no remains that could commemmorate the existence of the glorious kingdom of Srivijaya, the question must be raised with emphasis, whether anything is known that would establish the capital of that kingdom in the location of present-day Palembang. (Bosch 1930: 155)

Bronson in 1974 conducted further research, including excavation, in Palembang and raised the same doubts

regarding the accuracy of historical interpretations of Srivijaya as a glorious trading center based at Palembang (Bronson 1975, in press).

Bosch did not however believe that historical sources mentioning Srivijaya had necessarily been misinterpreted. He sought evidence that Srivijaya might have been elsewhere in the Palembang region, perhaps across the Musi River, south of the modern city. This location was suggested by the discovery in the Komering River, about one kilometer from its confluence with the Musi, of three bronze images in an unmistakably central Javanese style. These were the first objects found in the Palembang area which displayed the artistic connections historians had expected to find in Srivijaya, based on information regarding the history of the Sailendra lineage (Bosch 1930: 155-156).

Westenenk supposed that the view of the Srivijayan capital as a city was perhaps in error. He suggested that the old capital might have contained several separate foci, and that these should be sought further upstream, perhaps where he discovered bricks and other debris (Westenenk 1923: 224, 226). Wolters has suggested that perhaps Bosch's hypothesis concerning the location of Srivijaya may be correct, and that centers of ceremonial and religious activity in Srivijaya may have been separate from other areas such as trading quarters (Wolters 1975: 1, 54).

A number of possibly ancient brick structures once

existed in Palembang, but archaeologists were able to examine very few of them. Bosch described "a very low hill on top of which some deep pits indicated where bricks were dug up by Public Works;" here he found two large rocks which bore marks similar to the vulva symbols found on both Buddhist and Hindu religious objects (Bosch 1930: 152). A ringwall which once encircled this hill had also been removed for road surfacing material. Bukit Seguntang was said to have served as a quarry for years (Bosch 1930: 154). Westenenk (1923: 213, 220) and Perquin (1928: 123) as well as Bronson et al. (n.d.: 7) also mention the quarrying of old brick structures on Bukit Seguntang.

One meager citation in the Oudheidkundige Verslag ("Archaeological report") of 1921 demonstrates that early habitation remains may exist in the Palembang region. At Tanjung Raja (literally "King's Point") south of Palembang the following discovery was laconically reported. "While digging a dike for rice fields, several finds were made: a copper pan, gold finger rings, both with symbolic figures, and also old pitchers, vases and broken plates" (O.V. 1921: 5). This debris might not attract the eye of an iconographer but should be investigated by a ceramic expert.

Muara Jambi

The major Sumatran emporion after the mid-eleventh century has been located at Jambi by several historians

(Rockhill 1915: 134; Sastri 1949: 68, 90-91; Wheatley 1959: 11; Wolters 1966). A number of brick structures once existed here, but some of these were quarried by the Sultan of Jambi who is said to have built his palace largely of bricks from the ruins (Schnitger 1936: 5). Only one dated object has been reported from the area, and this not from Muara Jambi itself but from the nearby village of Solok: a sculpture with a date of 1064 (Bronson and Wisseman 1974: 93). In addition three Buddha statues have been found on the site, plus a nandi (associated with Siva) and makaras (representations of mythological beasts common in Sumatran and Javanese pre-Islamic art), one of which closely resembles a makara found in Malacca (Schnitger 1936: 5).

No research aimed at discovering habitation remains has ever been undertaken in this region. If the historical suppositions are correct, there should be a very large deposit of Sung porcelain to indicate the great emporion of the Sung Dynasty, as many suppose Jambi to have been. The amount of ignorance regarding Muara Jambi exemplifies the amount of work which awaits archaeologists in Sumatra.

North Sumatra: Barus

A statement in a Chinese source describing a situation already extant before A.D. 742 notes that "Srivijaya is a double kingdom and the two parts have separate administrations" (Wolters 1967: 17). The first segment

lay in south Sumatra, and the second in a region called Lang-p'o-lu-ssu, identified with northern Sumatra (Wolters 1967: 191).

Archaeological research indicates that from at least the early second millennium A.D. north and south Sumatra underwent different courses of development. Javanese influence in south Sumatran art, language and writing style seems to have intensified gradually after about A.D. 900, but from Padang Lawas northward no such influences were experienced (Bronson et al. n.d.: 59).

Two inscriptions from south Sumatra indicate strong Javanese influence. One, at Hujung Langit, is written in Old Malay but uses Kawi (Old Javanese) script, and the date of the stone, A.D. 997, is given according to the Old Javanese system. The second, from Ulu Belu, is also in Old Malay but uses Javanese script, and is undated. Javanese linguistic influence in the text, an invocation to Batara Guru, is said to be strong (Damais 1962).

Even in central Sumatra the coastal language is Malay with additions of Javanese and Minangkobau. Further inland Javanese influence lessens and Minang strengthens (Tideman 1938: 97).

Near the modern town of Barus is a place usually called Fansur by Arabic sources. This name probably derived from the village of Pansur or Patsur, which corresponds to Malay pancur = spring. There is such a

village upstream from Barus (van Vuuren 1908: 1391; see also map in Tideman 1936). The name Fansur appears in A.D. 851 in an Arabic literary source, the 'Akhbar as'Sin wa'l-Hind (Wheatley 1961: 244; Ferrand 1913: 35-46, 82-88). In the nineteenth century it referred to the entire area near the river at Barus, and particularly the riverbank opposite the town of Barus (N.B.G. 1872: 81-82).

Pires may have visited Barus in the sixteenth century; he gives a full description of it. "This kingdom is at the head of the trade in these things in all the island of Sumatra, because this is the port of call through which the gold goes, and the silk, benzoin, camphor, in quantities, apothecary's lignaloes, wax, honey, and other things in which this kingdom is more plentiful than any of the others described up to now" (Cortesao 1944: I, 161).

The most prized product of Barus in Pires' day was camphor which came from a very limited area on a tributary of the Singkel River, but in the sixteenth century was exported via Barus. The collectors from the left bank of the Singkel took their produce overland to Barus, but those on the right bank took theirs down the Singkel River to Singkel, then to Barus to sell, "lest this camphor be thought something other than the famous kapur Barus" (van Nuuren 1908: 1395). The approaches to the port of Barus however were not as good as those to Singkel or Sibolga (van Nuuren 1908: 1390).

In 1872 the Dutch Resident at Barus reported finding four inscribed stones in the village of Lubuk Tua (lubuk = "deep pool" and refers to a nearby pool beneath a waterfall) in the Pansur region (van Vuuren 1908: 1393). One set of three stones could be reassembled to form a hexagonal column (similar to the inscriptions of Kota Kapur and Karang Berahi) with writing on three sides. Another stone, inscribed on two sides, was found nearby (N.B.G. 1872: 81-82; 1873: 80-81).

The hexagonal stone had apparently been smashed in 1757 by the last Raja of Barus (Tideman 1936: 32). It was inscribed in Tamil, and contained the information that a Tamil merchant guild erected it in 1088 (Sastri 1932). The other fragment was inscribed in Old Javanese, but nothing else has been published on it (O.V. 1914: Appendix T, 113).

A number of chance finds have been reported from the Barus area; unfortunately, in many cases the exact find spot was not reported. These include such articles as fragments of earthenware and glazed pottery (Deutz 1875: 159; Tideman 1936: 32), some glass and carnelian beads (N.B.G. 1872: 81-82), some small stones and gold rings incised with script, and several small golden bullet-shaped objects with stamped characters.

Of the rings, one had an inscription in pure Sanskrit. The small stones were also inscribed with Sanskrit, but

very poorly done, and could not be dated. The effect was said to be "like children playing" and it was suggested that the stones were in fact cabalistic objects of some sort (Friederich 1858). Another gold ring set with a stone had two lines of script which may be Arabic (Groeneveldt 1887: 292, number 1376 and note 1). There were in all 17 gold rings found in the Barus area with Sanskrit script (O.V. 1914: 113).

The small "bullet-shaped objects" are about one centimeter in diameter, and are stamped with the Javanese character ma (O.V. 1914: 114; Netscher 1856: 485; N.B.G. 1879: 109, 144; Millies 1871: 65-68; Krom 1931: 52). Similar objects have been found in the Rejang area of south Sumatra near old gold mines (N.B.G. 1911: 91), throughout Java (see e.g. N.B.G. 1891: 45; 1892: 56), on Bali at Gianyar (O.V. 1929: 18), on several islands in the Philippines (N.B.G. 1888: 122-123; Legarda 1976: 192-198) and in south Thailand (Legarda 1976: 192). These objects were frequently of gold, otherwise of silver.

Krom believed these objects were in fact money, and that they were of Indian origin (Krom 1931: 52). Millies however believed that some might have been made at Barus (Millies 1871: 66). It is puzzling that none have been reported from southeast Sumatra.

The Barus area was visited by an LPPN team in 1973. At Lubuk Tua much pottery of the eleventh and twelfth

centuries was reported. The PPPPN has planned further research at Barus which should be well rewarded.

Padang Lawas

One of the easiest transinsular routes in Sumatra runs from Sibolga east to Padang Sidempuan, then across the low pass in the Barisan mountains to Gunung Tua and Portibi in the Padang Lawas region (more correctly called Padang Bolak; J.B. Neumann 1856: 17). The Padang Lawas region contains approximately 1500 square kilometers. The plain also contains the source of the Panai River. On the plain and around its fringes are at least 26 ruins of brick temple complexes and numerous assorted statue fragments.

The name Pannai occurs in a list of places raided by the Cholas of south India during an attack on Srivijaya in 1025 and again in the Nagarakrtagama of the fourteenth century (Wolters 1967: 193). The Padang Lawas ruins appear not to have been the center of dense habitation, however. The region lies at the junction of several transport routes, both riverine and overland, but has several disadvantages for settlement. The main disadvantage results from the nearby mountain pass which permits dry winds from the west coast to sweep the plain, which create a fohn (Mohr 1944: 538; Verstappen 1973: 11). The wind blows almost constantly for several months a year, creating

an unusual treeless landscape.

Willer in 1849 provided a graphic description of the plain.

> We have ascended Gunung Tua and cast our eye downwards from the summit Sipolpal. There we see unrolled a plain without horizon and without variety; an unbounded carpet on which the more or less luxuriant growth of the lalang [a coarse, easily flammable grass] makes the only diversity, and on which not a single living creature appears to move; where a tree is literally a rarity and has an appearance of stunted dwarfishness, where at a distance of miles, we descry like an oasis in the desert an insignificant thicket, or a small strip of brushwood along the banks of a marsh or stream; where a fell scorching wind blows for months together and from the numerous conflagrations of lalang generally spreads a dull glow, through which the sunlight scarcely forces itself wavering and heavy - in a word where all nature appears to have gone to an eternal sleep. Such is the appearance of Padang Lawas . . . (Willer 1849: 367)

Such an environment appears unlikely ever to have supported a large sedentary population. The numerous temples which dot the plain may have been partly funerary and partly reserved for secret rituals to which only initiates would have been permitted to come. The religion depicted by the sculptures and inscriptions in most of the temple complexes was a kind of Tantric Buddhism which involved human sacrifice (Bosch 1930: 140-145).

A number of short inscriptions and dated sculptures come from Padang Lawas sanctuaries. The earliest date is found on a bronze statue of the Boddhisattva Lokanatha from Gunung Tua, 1024. The style of this image is central Javanese but the inscription contains a Malay

word and Bosch (1930: 144) concluded that the image was made locally. An inscription from Si Joreng Belangah gives a date of 1179 (Schnitger 1936b: 13). A gold plate from Sangkilon is inscribed in a script used in the twelfth century (Schnitger 1964: 90). An inscription from Porlak Dolok in a south Indian script is dated 1245 (Bosch 1930: 146). Finally, a small column from Sorik Merapi bears, in Old Javanese script, a date of 1372 (Bosch 1930: 146).

In addition to the inscription in south Indian script from Porlak Dolok, a statue from Tandihet indicates foreign origin. This is a headless image of Maitreya, which Schnitger (1937: 22) attributes to Fukien or Ch'e-kiang provinces of south China and the late Sung Dynasty.

Quite possibly the site of an emporion exists near the mouth of the Panai or Barumun Rivers. A survey of the major temple areas in Padang Lawas in 1976 produced only two identifiable Sung sherds, although more recently the digging of a drainage ditch near Bahal I exposed some coarse pottery (McKinnon: P.C.). Until contrary evidence appears, it is safe to conclude that the Padang Lawas temples constituted a ceremonial zone, distinct from major population centers.

Muara Takus

Another complex of brick structures exists at Muara Takus, on the upper Kampar River about 100 kilometers south

of Padang Lawas. An inscribed gold plate from one of the ruins has been assigned on paleographic grounds to the twelfth century (Bosch 1930: 149).[3] Again there is no indication of a large habitation site nearby (Bronson and Wisseman 1974: 93). The site may have been used for only a short time (Bronson et al. n.d.: 45). The structures are of an idiosyncratic style not paralleled in Indonesia or India (Bronson et al. n.d.: 16), but a stupa from Sri Lanka is said to be similar (Groeneveldt, in van Beest Holle 1879 219).

Tanjung Medan

Seventy-five kilometers west of Muara Takus several completely ruined brick structures existed in 1930. A gold plate inscribed with a Buddhist formula was found in the ruins; the script is said to be no older than the twelfth century (Bosch 1930: 133; Schnitger 1936: 14). These sites at Muara Takus and Tanjung Medan, together with the earlier ruins from Padang Lawas have been termed the Sumatran "Middle Classic" (Bronson et al. n.d.: 59), assumed to cover the years 1050-1300.

Remains Associated with Adityawarman

According to an inscription found on the Batang Hari River, a statue of Amoghapasha was brought here from Java

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[3] The best description of the ruins is found in Ijzerman (1893).

in 1286. It has been concluded that this statue was brought as a mark of Javanese political supremacy in south Sumatra (Sastri 1949: 96).

In 1343 a statue at Candi Jago in Java was inscribed with Sumatran-style writing, in Sanskrit, which stated that the statue had been donated by a prince named Adityawarman, who claimed descent from an earlier Javanese ruler Krtarajasa (Sastri 1949: 100).[4] It has been speculated that Adityawarman may have been descended from one of two Sumatran princesses supposedly captured by the Javanese in 1292 (Sastri 1949: 100).

Adityawarman later erected numerous inscriptions in south central Sumatra, with dates between 1347 and 1371 (Schnitger 1937: 8). Several are written in what is said to be very bad Sanskrit. The inscriptions refer to such activities as the repair of a temple and the initiation of Adityawarman as a Bhairawa, a terrible Tantric deity (Schnitger 1936: 9; 1964: 31). One inscription is associated with an artificial aqueduct at Suruaso in the Padang Highlands; the same aqueduct also is inscribed with a south Indian alphabet (O.V., 1912: 46).

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[4] After A.D. 856 only one other known inscription in Java had used Sanskrit; one other had used Sanskrit and old Javanese. Thus out of 189 inscriptions post-856, only the Sumatran stone and one other used Sanskrit (Damais 1952: 76-66).

Ceremonial Centers and Emporia

As would be expected from the antiquarian orientation of the colonial period investigators, small and unattractive finds such as potsherds were almost never noted. Thus most information regarding early Sumatran civilization deals with religious architecture and statuary, and inscriptions which tend to reflect the concerns of the rulers and these are usually expressed in symbolic terms.

When a search was made in Palembang for debris of commercial activity, none was found which dated earlier than the fourteenth century (Bronson and Wisseman, in press). Except for the site of Kota Cina (to be discussed below), no emporia of the Sung or earlier periods have been identified in Sumatra.

Pre-Sung trading sites in Sumatra may be difficult to discover because the export of pottery from China as a large-scale activity probably began only in the late T'ang Dynasty (Wang 1958: 112). Hirth and Rockhill noted that Chinese merchants in the early twelfth century took much pottery with them when they went abroad (Hirth and Rockhill 1911: 31). Pottery export was officially encouraged in 1216 (Wheatley 1959: 39). Without large quantities of pottery, early emporia may be difficult to discover.

There is reason to believe that ceremonial centers and emporia in Sumatra, while not completely unrelated,

are not likely to be found in the same place. The ceremonial sites such as Muara Takus and Padang Lawas are frequently located at the border of the mountains and the coastal plain; this may reflect some function in regulating intercourse between highland and lowland groups (Bronson et al. n.d.: 59).

A second possibility is that, as royal burial grounds, they were separated from habitation areas for religious reasons. In Java funerary temples appear always to have been located away from the palaces of rulers. The Nagarakrtagama specifies ritual principles for siting funeral temples; these are different from the principles governing the siting of kratons. Historical records from east Java also confirm that rulers' burial places were located outside their capitals, sometimes very far away (Stutterheim 1932: 278-282). In central Java there are numerous monumental structures in the south, but the palaces of the central Javanese rulers may have been on the north coast; the south central zone might have corresponded to a "realm of the dead" (Soekmono 1967: 3). If this is true, then the coastal emporia may be even more difficult to locate, since up until very recent times even the residences of rulers in Indonesia and Malaysia were built of perishable materials.

Ceremonial centers and inscriptions may both be indicators of communication and transportation routes

between coastal plains and highlands. This hypothesis can make use of the available archaeological data summarized above, and through the use of the locational theories we have discussed, generate a number of testable propositions. Ethnohistorical information provides some idea of the political relationships which may have existed between lowland rulers and highland groups, what commodities may have travelled these routes, and what routes may have been important in early Sumatran intra-island exchange.

The applicability of Hirth's (1978) dendritic model to an analysis of Sumatran transport routes is demonstrated by the fact that Bronson (1977) independently developed a similar "Abstract model for exchange between a drainage basin center and an overseas power" (Bronson 1977: figure 1), to account for the pattern he discerned in early Indonesian commerce. In Bronson's model the transport of goods found in a hinterland area was assumed to be confined to a route following a single river course to the coast, and from the river mouth the commodities were assumed to go directly to an overseas power. Market systems, Bronson postulates, should extend some distance upstream, but not as far as the producing areas in the remote parts of the watershed. The model further assumes that archaeological sites along the lower reaches of the watershed should have relatively similar artifact assemblages, except for evidence of foreign traders, which

would be concentrated near the river mouth. Bronson's model thus approximates very closely the basic features of the gateway city.[5]

Ethnohistoric data tends to confirm Bronson's model, but certain complications can also be cited. People in Sumatran hinterland producing areas have not always exported their commodities via a single watershed, but have alternated between several different routes. Overland trade between watersheds has been common, both in highlands and lowlands.

Dunn noted that highland groups in the Malay Peninsula trade among themselves by overland routes (Dunn 1975: 95). Wheatley described numerous routes across the Malay Peninsula in use during the pre-colonial period (Wheatley 1961: xxi, xxvii, 10-11, 197-198). Such trade was also conducted in interior Borneo; unlike lowland trade, the coastal rulers exercised no control over it (D.E. Brown 1970: 63, 65).

In the Malay Peninsula state of Johor, even after the imposition of British protection, the penghulu or village headman would interpose himself between traders from downstream and local forest collectors. Up to today market mechanisms do not regulate collector-trader exchanges;

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[5] A very similar diagram was sketched for the modern Malayan case of trade in forest products between hill forests and coast (Dunn 1975: figure 7.1).

"price is rarely a factor in the calculations of the collector-primary trader" (Dunn 1975: 101,116).

South Sumatra's highlands produced two major commodities: gold and pepper. The major producing areas for these commodities are not in the Musi drainage, but further northwest in the Minangkabau region. In the fourteenth century many of the Minangkabau exports which had moved down the Musi and Batang Hari were shifted to west coast ports such as Barus, Tiku, and Pariaman (Kathirithamby-Wells 1969: 454). This may be explained by the increasing Javanese influence in the southeast coastal areas during that century. When Malacca was established at the beginning of the fifteenth century, gold from Minangkabau began to move down the Siak and Kampar Rivers on the east coast (Kathirithamby-Wells 1969: 454).

Transinsular routes also existed in the Padang Lawas region. From the east coast travellers could reach Sibolga or Barus on the west coast. Frey-Wisseling (1933: 71) speculated that this route may have been in use by the thirteenth century. Overland trails also met near this pass, connecting regions north and south. Many of the old trails ran along the mountain summits, as well as between the upper reaches of rivers such as the Panai and Bila (Neumann 1856: 69-70).

Overland trade also took place in the Deli region.

Pires in the sixteenth century observed that some of Haru's produce was exported from Barus, Pasai and Pedir (Cortesao 1944: I, 148). John Anderson in 1823 met groups of Alas people from the Singkel area who had come to the Deli region to trade gold, benjamin and camphor for salt and cloth, and he described this as "very extensive commerce" (Anderson 1971: 83, 250). He also noted that traders from Alas, Gayo, and Singkel came to Bulu Cina (near Belawan) to trade, and that this internal trade was "very considerable" (Anderson 1961: 263). The Bulu Cina River was used instead of the Deli River because of fighting between the Sultan of Deli and a hinterland Raja (at Pulau Berayan), who was trying to impose his own tolls on river traffic (Anderson 1971: 25).

Crooke, a surveyor who accompanied Anderson in 1823, also recorded overland routes in the Palembang area. From Jambi travellers could go upriver for ten days to the Tembesi River, a branch of the Batang Hari, then one day overland to the Banyuasin, then two days upriver to Palembang. An alternate route ran from Jambi through several Kubu villages to the Lalang River, then into the Banyuasin and so to Palembang. These routes were described as the main means of travel between Jambi and Palembang (Anderson 1971: Appendix 3, page 400).

Since numerous routes existed independently of river drainages and were frequently used by highland

groups, simple geographic determinism therefore cannot explain or predict Sumatran trading patterns. Historical, social and political factors must also be taken into account and evidence of changes in transport routes should be found in the archaeological record.

Ritualized links between coastal emporia and highland groups may have been a more important factor in determining choices of coastal emporia visited by highlanders. Such links are indicated by a small number of copper and silver plates engraved with inscriptions. These piagems ("decisions") date from the eighteenth century and show that certain commodities obtainable in the highlands were monopolies of the Palembang rulers and were to be supplied under specified administrative arrangements. The commodities included such articles as pepper, ivory, rhinoceros horn, rattan, coffee, gold and benzoin (N.B.G. 1888: 118-121).

The piagems also deal with the aturan sindang merdeka ("Free Frontier Guards"), who were Pasemah chiefs who protected Palembang from attack by hinterland groups. The piagems also include methods for settling personal debts between people in Pasemah and Palembang; according to Netscher, the piagems indicate that there was probably considerable commerce between Pasemah and Palembang, and that the Pasemah chiefs were in some sort of tributary relationship to the Palembang rulers (Netscher 1855: 186,

194; see also Roo de la Faille 1929: 330).

In 1821, when the Palembang ruler was fighting against the Dutch, he was assisted by people from the highlands who built a fort for him and supplied their own food, serving without any payment (van Sevenhoven 1825: 92). This probably indicates the continuation of the same relationship between the ruler and highland groups tributary to him; they might have been "free" in the sense of untaxed, but who had to supply corvee labor under certain circumstances.

A limited number of commodities also moved inland from the coast. Under the custom of adat perdagangan serah the Palembang ruler purchased three basic necessities for his subjects in the hinterland: iron, coarse cloth and salt (Roo de la Faille 1929: 348). In the early nineteenth century iron tools, gold jewelery, and clothing were manufactured in Palembang, much of them destined for the highlands (Jaspan 1975: 8). Numerous fragments of iron slag were found at a site slightly upstream from Palembang along with brick rubble, indicating that ironworking may be an old occupation in the Palembang area (Westenenk 1923: 224).

The task of obtaining salt was a prime concern of highland Sumatran groups. Perhaps the pattern of the Simelungun group in northeast Sumatra was once typical. The chiefs of village groups had the particular duty to

obtain salt for their people. They did this by sending groups of men to the coastal center of Batu Bara (Purba n.d.: 11). These expeditions were sometimes difficult and dangerous.[6]

In addition to the exchange carried on between the coastal ruler and the hinterland peoples as a group, there also appear to have been markets on many upper river courses. Bandar (which Purbatjaraka defined as emporion) is a common component in place-names both in coastal Sumatra and also near the border of the mountains and the eastern lowland plain. In the Asahan region bandar has been defined as "the place where henceforth the people from the lowlands would come to do business with the people from the highlands" (Kroesen 1886: 90). Such markets also frequently correspond to the place where river navigability becomes impossible (Bartlett 1973: 322).

In addition to providing highland groups with basic necessities such as salt and iron, lowland rulers in Sumatra might also have invested highland chiefs with titles, and accompanied these with tokens. This might explain the presence of heirloom pieces of Sung-period porcelains in highland villages until recently (Bartlett

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[6] The main commodities sought by highland Malaysian groups in exchange for forest products were salt, metal and cloth (Dunn 1975: 113).

1973: 147 note 22).[7]

It seems that both status-reinforcing items and basic necessities may have been exchanged between lowland and highland Sumatran groups through non-market mechanisms. This supposition conforms to expectations based on the Melanesian examples discussed previously.

There is also evidence that staple items travelled between producing areas and emporia by sea. The Sumatran highlands did not provide Palembang with food; only forest products and other inedible commodities came from the hills. In the nineteenth century food came to Palembang from the downstream region (van Alkemade 1883: 66).

Some types of comestibles were available locally in the Palembang area in 1825 (van Sevenhoven 1825: 96), but San-fo-ts'i and other Indonesian entrepots seem to have shared another feature with Indian Ocean emporia: a scarcity of rice. Chau Ju-kua noted that rice was imported to south Sumatra from Java in 1225; Javanese were still exporting rice to Palembang in the 1630s (Schrieke 1966: 57), in the 1700s (Roo de la Faille 1929), and in 1920 (Nederlandsche-Indische Havens 1920: 117). Malacca imported rice from Burma and Java in the sixteenth century

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[7] It has been proposed that the ability of lowland groups in the Philippines to control the flow of desirable luxury items to the highlands may have been the basis of relative differences in status between various ethnic groups (Spoehr 1973: 274-275).

(Cortesao 1944: I, 98; de Iongh 1977: 92). Aceh Besar bought rice from Pidie, the Malay Peninsula and southern India through most of the seventeenth century (Reid 1974: 54). North Sumatra in the 1800s also imported salt from Java (M. Said 1961: 260).[8]

The fact that staples were imported explains the arrangement under which the Palembang shahbandar in the 1780s was "required to furnish the king's household with provisions and other necessaries" (Marsden 1966: 361) as well as "to manage the trade for the king" (Marsden 1966: 351). Rice must have travelled in the same ships with cloves and cinnamon, and thus these commodities were classed together under the jurisdiction of the shahbandar.

Such examples imply that, without the trade in luxury items, coastal ports might have had difficulty in obtaining sufficient provisions. Luxury trade in Sumatra was thus closely linked with subsistence for both the highland and lowland groups.

Kota Cina: the First Sumatran Emporion

Antiquities were first reported to exist at Kota Cina, in northeast Sumatra, by John Anderson, who visited east Sumatra in 1823. Although he seems not to have visited the site, he records that "at Kota Cina is a stone of a

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[8] The Muslim ports of Aden, Ormuz and east Africa had to import almost all food in the fourteenth century (Lewis 1973: 256).

very large size, with an inscription upon it, in characters not understood by any of the natives" (Anderson 1971: 294).

In 1883 a search was made for this stone, but it seems to have disappeared (if it in fact existed) (N.B.G. 1883: 48-49). However, a large uninscribed stone was found and taken to Labuan Deli.[9] The stone, locally called lumpang batu (stone mortar), was indented by a rectangle five mm. deep, 45 x 53 cm. length and width. No other characteristics of Kota Cina were recorded, except that no Chinese were living there. The anonymous observer of 1883 thought this a curious circumstance, since "Kota Cina" means "fortified Chinese settlement."

The site was revisited in 1972 by McKinnon, who had been informed that numerous fragments of Chinese pottery were to be found scattered over the village ground. McKinnon had been compiling information about the locations of discoveries of Chinese ceramics in north Sumatra, and he was quick to perceive that significance of the site. He carried out excavations at several locations in the village over the next four years and published several reports of his work (McKinnon 1973, 1976, 1977; McKinnon and Sinar 1974; Milner, McKinnon and Sinar, in press).

To McKinnon must go the credit for discovering and

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[9] The lumpang batu seems to have disappeared as well; a search of Labuan Deli in 1977 could not relocate it.

excavating an early Sumatran trading site, the first reported from Sumatra. As a result of McKinnon's publications, the Deli River valley was selected as a favorable location for research aimed at testing hypotheses drawn from historical and geographic sources. The problem of tracing the movement of imported items from the coastal trading center to the hinterland was chosen as an important focus for research. Bronson (1977) had predicted a specific pattern of evidence of foreign trade should be found. Another vital location for highland-lowland interactions should be the interface of coastal plain and central mountains; if highland-lowland exchange was occurring, evidence should appear at this transitional point.

During a survey of Sumatran sites a team from the Lembaga Penelitian Purbakala Indonesia (Indonesian Department of Archaeology) visited the site of Kota Cina and published a short account (Bronson et al. nld.). Based on this reconnaissance and McKinnon's reports, a team was sent from the reorganized Pusat Penelitian Purbakala dan Peninggalan Nasional ("National Research Centre for Archaeology," hereafter PPPPN) to the Deli River valley to conduct a survey. The next chapter records the results of that survey.

CHAPTER IV

ARCHAEOLOGICAL SURVEY OF THE DELI RIVER VALLEY

Geography and Geomorphology

Mount Sibayak is a semi-active volcanic peak of 2094 meters, located at 3°14' north latitude, 98°30' east longitude, in the Batak Tumor of the Barisan Range, North Sumatra Province, Indonesia. To the south and west of the peak the Karo Plateau spreads its green platform of irrigated fields and clusters of villages. Further west the mountains continue for another 80 kilometers, to the shore of the Indian Ocean. To the east, early in the morning of a clear day before the sun is high, it is possible to look across the plain of east Sumatra to the Straits of Malacca, 70 kilometers away. By noon the sun raises a haze from the rice fields and tobacco plantations, drawing a curtain between mountains and sea.

The Deli River rises from springs near the village of Raja Berneh at the foot of Mount Sibayak, approximately 1300 meters above sea level. The river then flows north-northeast for 35 kilometers until it reaches Deli Tua village, through which the 50 meter elevation contour runs.

The upper portion of the river's course is called

the Lau Patani by the Karo who form the majority of the inhabitants of the region (lau = river). Here the river descends at a fairly steep gradient, in a narrow, in places almost v-shaped valley, through cool highlands. On the ridges near the river Karo villagers cultivate wet rice on terraces, usually in combination with maize and vegetables. Many Karo also keep pigs and chickens.

At Deli Tua the river enters the featureless plain of northeast Sumatra. From here it flows almost due north for another 35 kilometers, until it reaches the Straits of Malacca at the port of Belawan. In its lower course, now called the Deli River, it traverses the Kultuurgebied, a center of intense Dutch plantation activity in the nineteenth and early twentieth centuries. Three kilometers north of Deli Tua the river crosses the city limits of Medan, capital of North Sumatra Province. The next twenty kilometers of the river are thickly lined with houses, businesses and industries. Medan has a population of about one million and is the largest city in Sumatra.

The northern limits of the municipality extend to the port of Belawan, but except for some development near the port itself the last fifteen kilometers of the river traverse a rural landscape, between banks which are diked to alleviate flooding. The river in its lowest reaches is no wider than fifty meters.

None of the tributaries of the Deli River are

navigable, though the Sungei Babura, which flows into the Deli in Medan, is said to have been used by small boats in the past. In the mid-nineteenth century the major port in the region was Labuan Deli, five kilometers upstream from the modern port at Belawan, which was constructed in 1890.

The Deli plain forms the northern extremity of the east Sumatran coastal plain. The lower course of the Deli River appears to have undergone several changes as the plain has prograded through deposition of sediment in the Straits, but the changes have been on a smaller scale than those of the rivers in the wider plain further southeast. No definite information is available for the study of the recent coastal growth in the Deli plain, but the distribution of shell middens between Deli and the Tamiang River mouth, northwest of Medan, does furnish some grounds for reconstruction of a former shoreline.

At least ten to fifteen of these mounds still existed in the late nineteenth century. Since then all but one or possibly two have been destroyed, mined for lime and road-surfacing material for the surrounding tobacco plantations. Fortunately several writers described the mounds, so that some of their general characteristics are known.

The middens are spread over a distance of 130 kilometers, and most are now ten to fifteen kilometers inland. It is probable that they mark a former coastline

(van Heekeren 1957: 71). They are largely composed of Meretrix meretrix shells, with other types represented in smaller quantities.[1]

In addition to shells and animal bones the middens also contained worked pebbles[2] and human skeletal remains, some buried with hematite "in great quantities" (Schurmann 1928: 241); compare McKinnon 1975: photograph and text, page 47). Some of the human long bones from Tamiang had been split, probably to remove the marrow (van Heekeren 1957: 72). Pottery has never been found in any of the mounds.

Only for the Tamiang mounds does any semblance of an excavation report exist. Two-thirds of the middens had already been removed when Schurmann went to the site in 1926. He was nevertheless able to identify burials associated with hematite, and split human bones indicating cannibalistic practices. Among the shells were bones of elephant, deer, bear and rhinoceros.

Schurmann noted that the worked edges of some pebbles

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[1] Species composition of mounds is given by Hengeveld (1920) for Bulu Cina; Schurmann (1928, 1931) for Binjai-Tamiang); van Heekeren (1957, summarizing unpublished excavation of P.V. van Stein Callenfels). See also van der Meer Mohr (1927, 1932); Wolters (1976).

[2] These pebbles are frequently called "Sumatraliths" in the literature, and presumably are related to the Hoabhinian lithic complex from mainland Southeast Asia (Gorman 1969; Glover 1977).

were partly covered by remains of small ostreas and lime algae, indicating that the midden had probably been deposited in sea water, perhaps near the edge of an estuary. The transition from the sterile marine stratum underlying the mound to the shell-bearing layer was not sharp, a further indication that the midden was originally situated in shallow, brackish water.

One final piece of information which the investigator recorded was the discovery of two wooden fragments which he guessed were remains of house posts. As at Oc-eo in southern Vietnam, they had been preserved in the waterlogged soil (Schurmann 1928).

Beyond this report and van Heekeren's summary of van Stein Callenfels' unpublished research, there are few records except for reports of destruction of mounds during commercial exploitation. Heusser and Mjoberg (1920) visited two mounds on the boundary of the Bulu Cina and Tandem Hilir estates, near the Sungai Diski. The larger mound was thirty meters long, twenty meters wide and 3 1/2 meters high when it was visited; the mound had already been partly destroyed. Heusser and Mjoberg were able to see that the mound rested on a layer of blue-green clay (probably estuarine mud), and that the shells appeared to form five separate layers. Hengeveld visited the mounds, and noted that they were 17 kilometers inland, with their base three meters above mean sea level; he cited this as

evidence of a Quaternary marine transgression in the are (Hengeveld 1921: 151). Obdeijn used the distribution of the middens to reinforce his arguments for the significance of east Sumatran coastal change in interpreting early Sumatran history (Obdeijn 1941: 197).

Witkamp also visited the Bulu Cina and Tandem Hilir mounds, and mentions that smaller mounds once existed on the Ludwigsburg estates, and near Perbaungan. These had been completely mined for use in surfacing estate roads (Witkamp 1920).

In 1977 mining of shell middens in Langkat (at Paya Rengas and Sukajadi) was still continuing, though most of the deposits had by then been removed. In January 1977 a lake 100 by 50 meters had formed in the hole where shells had been removed from the Sukajadi midden. Glover has published a photograph by McKinnon taken during an earlier stage of mining, when the pit had been excavated to a depth of five meters during the dry season (Glover 1977: 147, figure 46).

In 1977 a test pit was excavated to a depth of 4 meters beside the midden. At this depth digging was halted by seeping water, but the stratigraphy indicated that a long period of mangrove swamp growth had taken place in the mound's surroundings. Pieces of the mangrove wood were preserved in the mud, and samples were taken for possible C^{14} analysis.

Druif has published a photograph of a midden on the Saentis estate, which according to van Bemmelen (1970: I, 299) was 6 1/2 kilometers inland and 6 1/2 meters thick, and rested on a sandy ridge (probably a beach ridge) three meters above sea level (Druif 1932: plate 22). It is possible that this midden accumulated subaerially, not under water. Also a midden at Gohor Lama, 27 1/2 kilometers inland, apparently was deposited on a beach ridge (van Bemmelen 1970: I, 702).

There is a strong possibility that the Deli plain has experienced recent tectonic movement, judging from shell middens. The base of the Tamiang midden, which was originally laid down slightly below sea level, is now about ten meters above sea level. A similar phenomenon has been noted for the Tanjung Genteng midden. Van Bemmelen concluded that the Tamiang region has recently been uplifted by that amount (van Bemmelen 1970: 1, 299). In the Medan area uplift has perhaps been five meters in the same (post-Pleistocene) period. South of Medan evidence for any uplift disappears.

The data from the shell middens indicate that estuarine conditions extended much further inland in north Deli several thousand years ago. No specific date can yet be assigned to the middens; analysis of shell conchiolin may yield absolute dates, if suitable samples from an undisturbed mound can be obtained.

The absence of pottery suggests a moderately early date for the mounds. In addition, thick peat beds occur in the Saentis, Bulu Cina, Paya Bakong and Paya Gohor areas, indicating a passage of an appreciable period of time since estuarine conditions gave way to a drier environment (Druif 1938: 61).

A thousand years ago this region may have been known for the wealth of shellfish found here. An itinerary of maritime travel between Canton and India compiled about A.D. 800 ontains a toponym Sheng-teng, which has been restored as sinting or senteng, the Malay word for Placuna placenta Linn. and Placuna sella Lam., two species of bivalve molluscs. Wolters believes that this toponym refers to a "stretch of the northeastern coast of Sumatra" (Wolters 1976: 12), but notes that Placuna placenta is relatively scarce in the analysis of relative species composition of the middens according to van der Meer Mohr (Wolters 1976: 14 note 15). In fact Schurmann notes that Placuna placenta Linn. were "very numerous" at the Binjai-Tamiang mound (Schurmann 1928: 421), thus supporting Wolters' contention.

Although sedimentation must have been rapid to fill in the northeastern Sumatra estuaries, no firm data have been compiled for recent sedimentation in the Deli coastal regions. The reports of the Department of Public Works from the colonial period seem to have perished during

World War II. However, a former Public Works official who was a member of the Department from the late 1930s to the late 1960s was able to provide some reminiscences based on his personal experiences under the Dutch, Japanese and Indonesian administrations.

During the colonial period, which in Deli lasted from about 1860 to 1940, the intensive development of plantation agriculture necessitated strict control over drainage in the flat, lowlying coastal plain. Numerous drainage projects and dikes were constructed both by the government and by private companies.

These operations would have had a significant effect on the rate and pattern of coastal sedimentation. The loss of the records from this period is a major impediment to the attempt to reconstruct the specific effects of intensive plantation agriculture on the pre-existing coastal configuration.

During the Japanese occupation drainage work, including periodic dredging of the rivers, was neglected, and sedimentation processes would have resembled natural conditions more closely. In the Deli River bed at Belawan, between two and 2.5 meters of sediment accumulated during the ten-year period 1941-1950. Similar amounts were deposited on the bed of the Ular River, thirty kilometers east of Belawan, and the Batang Serangan forty kilometers to the west.

The town of Tanjung Pura, forty-five kilometers northwest of Medan, and fifteen kilometers inland, up the Batang Serangan River, was accessible to vessels of up to 500-1000 tons before World War II. Sedimentation of the river has considerably reduced the importance of the port, implying that deposition in recent years has been considerable. Anderson says that in 1823 the Batang Serangan was navigable for thirty-ton vessels for one hundred miles upstream (Anderson 1971: 241).

A second source of oral information may be less reliable. An old villager of Kampung Terjun, two kilometers southwest of Kota Cina, recounted a tradition that before the colonial period shipping did not enter the Deli River at Belawan. Instead the Belawan River was used. This river also flows into the Belawan estuary, and its mouth is considerably wider than the Deli's mouth. Boats may have sailed up the Belawan River past a point of land called Kepala Anjing ("Dog's Head") and then turned east and entered the Deli River some distance south of the present port.

Kepala Anjing may be the same place called Kepala Angin ("Windy Head") on an 1877 map (Veth 1877: map 7). Veth uses this name to indicate part or all of an island in the estuary where the Belawan, Terjun and Deli Rivers empty into the Straits of Malacca.

Anderson in his 1823 account mentions a Sungai (River)

Kepala Anjing which forms the area of the estuary connecting the Belawan river mouth with the Deli River mouth southwest of the port of Belawan, but no point of land with this name (Anderson 1971: 13).

Anderson followed the Sungai Belawan (which he calls the Bulu Cina) some distance upstream. The Deli River he called a "small stream" (1961: 13). The Bulu Cina, by contrast, at its mouth was "about 400 yeard wide, with a fine deep channel of 6 and 7 fathoms." Seven miles up the river a channel connected the Bulu Cina to the Deli River, near a place called Pulo Gorab[3] which he located near Kota Jawa and Kota Bangun, two villages which are indeed seven miles (eleven kilometers) upstream from Belawan.

A second waterway also connected the Deli and Belawan or Bulu Cina Rivers. This channel connected the Belouai, a branch of the Bulu Cina, and an unspecified point on the Deli River. This waterway was artificial, and its construction would have been, as Anderson notes, "a proof of more than common industry" (Anderson 1971: 46-47).

These facts tend to confirm the story that shipping in the early nineteenth century would not have entered the Deli plain via the Deli River mouth, but may have entered another channel some distance to the west, and then an

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[3] No one in Deli can now identify a place called Pulau Gorab.

artificial waterway connected to the Deli River. Anderson says this channel was constructed "a few years ago," i.e. before 1823.

The artificial channel cannot now be located. Recent plantation activity, increased erosion and sedimentation resulting from clearing of large forest tracts, and efforts to control drainage and flooding have altered the configuration of the land around the Belawan estuary considerably during the last one hundred years.

The estuarine environment of northeast Sumatra was once exploited by a population who did not make pottery and extracted a portion of their subsistence needs from the shellfish which flourish in such an environment. A second phase of settlement appeared in a later period when the earlier estuary had been covered by accretions of river-borne sediment. The village of Kota Cina contains numerous artifacts from this second phase of settlement.

Kota Cina: Location and Environment

The distribution of shell middens indicates that an estuary once extended inland from the present coast northwest of Medan to a point near the town of Binjai, then curved north along a line drawn to the Tamiang area, indenting the coast up to twenty kilometers. At the southeastern boundary of the former estuary, near the village of Perbaungan there is a series of *permatangs*, beach ridges, which seem to have formed on the southern

tip of the estuary, indicating a different process of land formation.

The beach ridges are parallel to and not far inland from the present coastline, indicating that the coast here has been relatively stable for a long period. These beach ridges thus mark the southern extremity of the now silted-in estuary. The lower reaches of the Deli and Wampu Rivers flow through sediments deposited in this estuary.

Much of the coastal zone between Deli and Tamiang is low swampy ground, covered with mangroves and nipah and intersected by numerous small channels navigable by small boats.[4] Higher areas of ground rise above the swamps in spots, many affording suitable locations for villages of farmers and fishermen. Coconut trees and maize are common crops on these islands. The swamps provide material for thatching, boat building and charcoal making. Shellfish are plentiful in some areas.

The village of Kota Cina is located at 3°43' north latitude, 98°38' east longitude, and seven kilometers inland from the Deli River's mouth. A small drainage ditch, the Sungai Besar, runs through part of the site. From the village boats can follow the creek into the nipah

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[4] Some of these channels are quite deep. According to residents of Kota Cina who frequently visit the swamps, pools up to ten meters deep occur within 500 meters of solid ground. One of these places is called Lubuk Bedena.

swamps, 300 meters north, and there choose among numerous waterways through clumps of vegetation to reach other villages. Kota Cina is two kilometers west of the Deli River and the nineteenth-century port of Labuan Deli.

The settlers of Kota Cina have taken advantage of a tongue of land about 1.5 meters above high tide level to build houses and plant coconuts and bananas, and some of the surrounding lower land is planted with rice. Population is not dense; houses are dotted about under the coconut trees, usually at least fifty meters from the nearest neighbor. The residents speak a dialect of Malay which they call simply Bahasa Kampung (literally "village language"), and are mostly Muslim, except for a few Chinese families in the village who raise pigs and chickens.

The village is one kilometer from a side-road which is connected to the main Belawan-Medan highway. The center of the city is 15 kilometers away, but the residents of Kota Cina are not greatly affected by its proximity.

Pre-1977 Discoveries at Kota Cina

The main outlines of the early occupation of Kota Cina are made clear by McKinnon in his publications. The wealth of ceramic debris in the site was indicated by the variety of glazed porcelain sherds strewn about the surface of the village, and a compact stratum of debris which was visible in the banks of the Sungai Besar. The stratigraphy of the Sungai Besar's bank contained three

levels. The uppermost was a layer of black humus, reaching a depth of 40 cm., and containing scattered sherds and roots. Next came a culture-bearing layer composed of a clayey subsoil extending to a depth varying between 70 and 120 cm. below ground level. Beneath this only sterile yellow clay appeared (McKinnon 1974: 68).

Truncated remains of wooden posts also appeared in the bed of the creek, closely associated with the sherds, which led McKinnon to surmise that the earliest inhabitants of the site had constructed pile dwellings. McKinnon selected several sites for excavation, one near the creek, which he called Site One (point A on map 7). In Site One soil discolorations were present which McKinnon interpreted as probable remains of posts in and below the stratum containing habitation debris.

McKinnon established that in addition to habitation debris the site also included at least three complexes of brick structures (at C, H and K on the site map), near one of which (K) two large seated granite Buddha statues have been found by villagers. One was found some years ago (exact time unknown), the second while McKinnon was engaged in his research on the site.

Isolated discoveries of Chinese ceramics in the surrounding coastal region also came to McKinnon's attention. These suggested to him that

> over a long period of time occupation [between the Deli and Wampu Rivers] diffused laterally rather than built up on one site. Thus as one river channel tended to silt up . . . the occupants moved downstream . . . leaving a succession of earlier harbours on the banks of what are now minor streams. (McKinnon 1974: 66)

Evidence from dated Chinese and Sinhalese coins, varieties of Chinese porcelain whose dates of manufacture are approximately known, stylistic analysis of statuary, and one radiocarbon date all indicate a period of occupation at the site between the twelfth to fourteenth centuries (McKinnon 1974, 1977b). McKinnon discerned little or no stratification in the habitation debris he excavated, and little variation in the types of imported ceramics found in various parts of the site. Occupation of Kota Cina therefore appears to have been short but intensive.

In the discussion to follow the assemblage of artifacts which McKinnon excavated at point A will be taken as representing a single phase of settlement, to be called the Kota Cina phase.[5] Stratigraphic information and interviews with villagers both indicate that the present phase of occupation began in the nineteenth century, and is the only other period in which the site

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[5] The definition of "phase" as used here follows that of Willey and Phillips (1958: 22): "an archaeological unit possessing traits sufficiently characteristic to distinguish it from all other units similarly conceived, whether of the same or other cultures, or civilizations, spatially limited to the order of magnitude of a locality or region and chronologically limited to a relatively brief interval of time."

has been inhabited.

McKinnon's published reports of Kota Cina, and his personal communications to me left no doubt that at Kota Cina he had found the first solid evidence of long-distance trade which predated the sixteenth century in all Sumatra. His discovery also opened up the possibility of studying the relationship of a coastal Sumatran trading site to its hinterland and the environment of the coastal plain. Hinterland relationships could be studied through surface survey of the banks of the Deli River, assuming that the river had been a conduit for transport and communication in the past. Relationships of the site to the local environment, and particularly to the shifting coastline, however, required intensive study of the soil beneath Kota Cina. Furthermore we had hoped that if the method used at Kota Cina proved successful, it might become possible to predict with some accuracy the locations of other east Sumatran emporia relative to past coastal features.

Geomorphology and Stratigraphy of Kota Cina

Three sources of information were available for this segment of the study: (1) soil profiles revealed in wells dug in the village; (2) excavations conducted by the PPPPN team; and (3) soil cores obtained from borings made with a coring tool. Before considering these, however, the evidence from the surface of the ground may be considered.

The Kota Cina phase debris extends over a

parallelogram-shaped area, with the long sides oriented approximately 20° east of north. The heaviest concentration of Kota Cina phase occupation is in the northwestern and northern portion of this area. Beyond the northern, northwestern and eastern fringes of the debris the land surface descends 1 to 1.5 meters into padi fields, which extend 300 meters to tidal nipah swamps. Boats are moored in the drainage ditch just north of point A. The ditch is only two meters wide and two deep, and almost completely dry at low tide, but at high tide boats can use it to reach the swamps.

North of point E a path continues along a narrow ridge between marshy padi fields. Five hundred fifty meters due north of the Sungai Besar the path ends at a point completely surrounded by swamp, where a larger channel dug ten years ago affords a route for flat-bottomed rowboats to reach the same complex of waterways and vegetation. It is possible that when the ancient estuary existed, the area where Kota Cina now stands would have been a spit of slightly elevated ground projecting into the estuary near its southern shore. By the twelfth century A.D. Kota Cina was probably separated from the Straits of Malacca by a fringe of mangrove or nipah, but still accessible from the open sea.

During the Kota Cina phase the course of the Deli River may or may not have been in its present position;

this point has not been determined. Stratigraphic evidence indicates that Kota Cina was once estuarine land itself, later elevated by some type of depositional process, possibly the formation of a river levee. The location then afforded prospective coastal dwellers slightly higher ground amid the marshes. A small stream which has left no trace on the surface of the ground still flowed through the site in the early second millennium A.D., providing an additional inducement to settlement: a source of fresh water.

Soil Profiles of Archaeological Excavations

The PPPPN research team excavated four locations in 1977 (B, C, J and H on map 7). These locations were selected for the information on material culture which they might yield, but the excavations also provided useful soil profiles (see profile sketches).

At B (III/A2 of the PPPPN designation) an excavation 180 cm. square was made. This pit was 27 meters from McKinnon's excavation at A, and according to McKinnon the profiles were similar. The upper 10 cm. had experienced some disturbance due to recent agriculatural work. A few shells had been brought to the surface from the underlying stratum, along with some sherds.

After a 20 cm. layer of deeper disturbance in the center of the pit, a stratum of sandy loam or loamy sand was encountered with some pockets of nearly pure sand and

charcoal lenses. At about 60 cm. began a stratum of tightly compacted habitation debris. The debris included many shells, most of the Meretrix meretrix species, with some other large oyster shells (Malay tiram, Ostrea Linn. spp.). It soon became clear that this stratigraphic sequence is typical of much of the northern part of the site.

Also present in the habitation layer were circular areas of darker soil about 15 cm. in diameter and containing numerous rootlets from surface vegetation. These discolored areas were relatively free of artifacts, whereas in other parts of the pit the artifact layer was so dense as to prevent root penetration. In the eastern profile a vacant space appeared in the soil, of similar size and depth. These features can be interpreted as remnants of wooden posts which had been sunk into the soil when the surface was approximately 60 cm. below the present ground level. Submergence of the wood in the saturated lower stratum slowed aerobic decomposition and accounts for the preservation of these features. Vertical soil accumulation at this point totalled nearly 60 cm. since the thirteenth or fourteenth century.

The stratum containing Kota Cina phase artifacts in this pit varied in thickness between 35 and 50 cm. At its base, 100 to 110 cm. below present ground level there was a sharply-defined transition to a lower stratum of fine yellow clay which contained numerous streaks of iron and

aluminum oxides near the point of transition. These diminished rapidly by 130 cm. Excavation was halted when the water table was reached at this depth.

This sequence is typical of the entire area from B to near F, as examination of profiles cleared in the drainage ditch running between these points revealed. This line also appears to demarcate the approximate northern limit of the Kota Cina phase settlement. North of the drainage ditch the path to the village of Kampung Permatang Siombak runs along a narrow ridge.

McKinnon excavated at point C and discovered remains of three brick structures. The largest was a foundation 12.5 meters square, composed of up to 16 courses of brick (McKinnon 1974: 69). Just south of the structure a trench uncovered "a vast quantity of broken sherd material" and a fragment of a polished granite linggam in a matrix of compacted gravel. This gravel may have formed a sort of pavement at ground level when the building was in use (McKinnon 1974: 70).

Six meters beyond the south wall of the foundation McKinnon uncovered another brick foundation, eight courses high. Two meters from the southwest corner of the major structure was a third brick ruin, originally hollow, enclosing 2.80 x 1.50 x 0.60 meters, but it had been broken into, possibly to remove votive offerings. Some fragments of gold leaf were found between the bricks.

The excavations at C and H (sectors I and II in the PPPPN nomenclature) were dug with the aim of clarifying details of brick structures, and the soil profiles contain some unusual features. In 1977 three pits were dug around the main structure. The first (I/D3) came down on top of the western foundation wall. The profiles of the central and eastern parts of this pit were very complex, including a large sand lens, lenses of mixed sand varying in particle size from very coarse to very fine, and concentrations of finely powdered charcoal. The profiles near the wall were much simpler.

There was no well-defined habitation layer in I/D3, and very few artifacts except those associated with a layer of clay which included a preserved wooden post and some Kota Cina phase sherds. The top of the post was at a depth of 120 cm., deeper than the base of the brick wall at 88 cm.

The piece of wood was 20 cm. in diameter, 80 cm. long, and hollow but still quite firm. Residents of the village identified the wood as kayu dungun (Heritiera littoralis Dryand), a tree that normally grows along river banks but can endure immersion in tidal water. Burkill (1966: I, 1159) quotes a source who describes this wood as "possibly the toughest of Malayan timbers." From it were built, among other things, ships' masts and bullet-proof stockades.

The bottom of the fragment extended 10 cm. below the point where excavation was halted by water seepage. A fragment was sent to the Harwell Laboratory in Britain through the kind assistance of Mr. McKinnon and a provisional date of 870 years B.P. obtained (Laszlo Legeza, personal communication to McKinnon). Standard deviation and laboratory number of the sample are not yet available. This date falls within the range of the C^{14} analysis which McKinnon obtained (McKinnon 1977b) and does not conflict with dating estimates based on the imported sherd material.

The profiles of two other pits in area C were similar, though no other remains of wooden posts were recovered. No significant concentrations of artifacts were found. The surface of the ground in this area is about 50 cm. higher than in area B, but the lowest stratum of the soil profile corresponds exactly to that at B: a fine plastic yellow clay with some dark streaks of metallic oxides, probably deposited by water with a very gentle current, as in a sheltered estuary near a river mouth, and then leached by soil water.

At point H[6] McKinnon noted the existence of a brick foundation and "certain Sivaite remains, including a yoni

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[6] PPPPN sector II, McKinnon site 4; known locally as Keramat Pahlawan, or the Grave of the Warrior; keramat indicates also a shrine, or a place thought to be charged with supernatural power.

altar base" (McKinnon 1974: 72). Excavation by the PPPPN team in 1977 also revealed traces of a ruined brick foundation, on one side of which were several layers of evenly bedded sands and gravels. This appears to be an artificial profile, perhaps related to the gravel surface which McKinnon noted south of the main structure at C, though unlike C few sherds were found in the small portion of the sandy strata excavated here. (See profile III).

Below the gravel layers the familiar fine yellow clay appeared. This was excavated to the water table at 250 cm., where another sample of preserved wood, this time unworked, was obtained. The variety was identified by Kota Cina residents as kayu nyireh (Xylocarpus spp.). According to Burkill this tree is found at the inland fringe of mangrove belts, near tidal rivers. He mentions "its great durability in contact with the ground" (Burkill 1966: I, 457-458). C^{14} analysis of this sample has not been undertaken.

At point J a test pit was dug by the PPPPN team, again in order to investigate Kota Cina phase deposits, but useful stratigraphic information was also obtained. No shells were found in this pit, but animal bones, stones, sherds and coins were obtained. The top 20-30 cm. had been recently disturbed by the owner of the plot, who had planted bananas on it. (See profile IV).

Transition from topsoil to subsoil horizons was not sharply defined. The only clear transition came at 80 cm., where the distinction between sandy loam and the basal

yellow clay appeared. This clay extended to the water table at a depth of 1 meter, where excavation was discontinued.

In summary, the data from test pit profiles is suggestive, but covers only the top 1 to 2 meters of soil, and pertains only to certain points along the western edge of the site. Profiles of wells dug by village residents provide more data from other parts of the site.

Soil Profiles from Wells

Several wells dug along the southeastern edge of the site indicated a pedological history which adds several details to the profiles in the pits. The stratigraphy of the wells indicates that a stream flowed through this part of the site during the Kota Cina phase.

A well was dug in 1976 by a family attempting to start a small business in the village, the manufacture of kerupuk (a type of cracker made from dried shrimp). This well was investigated during the dry season in 1977, when the water table was low. (See profile V, point M.)

The well reached a depth of about three meters. The upper horizons in the profile were similar to those in other parts of the site: a brown topsoil, followed by a layer of silty loam. But at 80 cm. depth a thick layer of fine sand appeared, gradually increasing in particle size with depth until at 110 cm. the deposit more closely resembled gravel. This layer reached a depth of 130 cm.,

at which point it was constituted of a mixture of coarse sand, gravel and pebbles up to 1.5 cm. diameter, tightly cemented together and stained dark red, indicating oxidation of this stratum.

Beneath this layer, from 130 to 210 cm. depth the common yellow clay appeared. The water table was at 210 cm. below ground level; just above the water fragments of wood appeared in the profile. Samples of this wood were too small to be identified, but they were collected for possible C^{14} analysis.

This well contained no Kota Cina phase occupational debris. Kota Cina phase remains were however found a few meters to the west and southwest, in profile inspections described below. The major point of interest in the kerupuk well is obviously the presence of a thick stratum of sorted material, graded from coarse at the base to fine at the top, and indicative of the action of flowing water. The site of the well appears once to have been estuarine, judging from the yellow clay with woody fragments. At some time prior to the deposition of the overlying humus layer, which corresponds to the post-Kota Cina phase of deposition, this spot lay beneath a stream transporting material which must have originated in areas of iron-bearing rock and volcanic tuff, whose sources are no nearer than 35 kilometers from the site.

The transition from yellow clay to coarse sand and

gravel is clear and abrupt, indicating that the stream did not extend its delta gradually over the spot from an earlier mouth nearby, but suddenly invaded the place, probably after a rapid change of course. After a period of deposition by fast-flowing water, the stream's current at this spot diminished in velocity. This may have been due either to the gradual death of the stream through loss of water supply, or to a shift in the main course which left the kerupuk well on the inside of a bend or otherwise marginal to the faster flow. The result was the deposition of only the finer and lighter suspended material here.

Eighty meters south of the kerupuk factory at point L are two other wells dug within the last five years. The first well is five meters east of the second, and is now used as a garbage pit. The profile from the surface of the ground to a depth of 82 cm. is typical of the site.

At 82 to 102 cm. a layer of fine sand, homogeneous in composition overlies a deeper layer of conglomeratic sand which reaches a depth of 119 cm. This conglomeratic sand contains numerous pebbles, lenses of yellower sand, and lenses of very fine black sand. Next appeared a stratum of homogeneous yellow fine sand, to a depth of 133 cm., followed by another, thick bed composed of interstitial lenses of black fine sand, layers of pebbles and layers of yellow course sand. At the lowest level of the pit,

from 175 to 189 cm. a thick, pure layer of fine black sand appears, derived from iron-bearing parent material.

At 170 cm., at the boundary between a lense of coarse gravel and a slightly finer yellow sand several sherds were found in situ during profile cleaning. The sherds were earthenwares and stonewares of types found in Kota Cina phase deposits elsewhere in the site.

In the other well, five meters away, the strata between ground level and 170 cm. were uniform humus and silty loam. At 170 cm. a layer of thickly compacted shells and sherds 5 cm. thick appeared. The well-diggers had begun by digging a square two meters on a side, until they encountered this shell layer. Because of the concrete-like nature of the shell deposit, only a part of the well was excavated through this level, leaving a shelf of cultural debris projecting over the water beneath.

Below the Kota Cina phase deposit a layer of very coarse sand and pebbles had been excavated another 30 cm., including the section beneath the shell deposit. The cohesion of the shelf of shells and sherds was such that a heavy man could jump up and down on it and not succeed in fracturing it.

The data from these two wells indicate that the stream detected at point M had also run through point L. The western well deposit showed that a fast-flowing stream able to transport fairly heavy material had once flowed

on that spot. The stream's course, as indicated by the profile of the rubbish pit 5 meters east had changed with some rapidity, since no layers of fine sand typical of marginal deposits were found there.

The defunct well profile indicates that the stream meandered near this point for some time. The intercalating layers of fine and coarse material indicate relatively frequent changes in the velocity of the current there, and by implication the position of the main channel relative to this point.

The relationship of Kota Cina phase material to the stratigraphy of these profiles is decisive, and indicates that the stream was indeed active during the twelfth-fourteenth century period, and that its western bank was inhabited. No excavations were conducted to determine the precise nature of the cultural deposits at this point, but the sherd material includes earthenwares, stonewares and porcelains found in excavations of early Kota Cina phase remains elsewhere in the site.

One abandoned well midway between M and L was also examined. This profile also displayed a stratum of fine sand similar to the profile at L between 80 and 100 cm. depth.

A final well profile was investigated at point N, where a large pit had been dug, 4 x 2 meters, to procure water for vegetable fields. The profile was ambiguous,

possibly indicating disturbance, but some general conclusions may be drawn from its stratigraphy.

Several pockets of Kota Cina phase artifacts appeared in the well profile, in both shallow and deep strata. In the eastern face a pocket of compact debris at a depth of 55 cm., 27 cm. long and 15 cm. thick contained numerous fragments of pottery, almost all Chinese porcelain, plus a few animal bones and a number of Meretrix shells. Below this level (at 70 cm. depth) sherds of white glazed stoneware appeared when the profile was cleaned.

In the western profile at a depth of one meter, a lump of metal slag, probably iron, was discovered. Just above this a fragment of a brick appeared. Near the water level at 188 cm. featureless earthenware sherds of paste similar to standard Kota Cina phase material were found.

The soil types in the profiles were just as enigmatic as the artifact distribution. All was normal until a depth of 70 cm., where a gradual change to yellow sand including a lens of very fine homogeneous pale-colored sand took place. Below one meter the composition of the soil gradually approached sandy silt, until near the well floor a layer of fine black sand similar to material at point L was encountered.

No interpretation seems to account for all features of this profile. It can only be noted that this location once lay at the edge of the stream which flowed almost due

north from here to point M. Flooding or other natural disturbance may account for the anomalies of widely scattered pockets of cultural material in the upper layers, though one would expect that evidence would be more clearcut. The intermittent nature of the artifact distribution leads to the inference that settlement during the Kota Cina phase was not dense in this section.

Summary

Data from well profiles along the southeastern edge of the site provide evidence of different pedological influences in the Kota Cina period that those simultaneously active at the northeastern boundary. The pre-Kota Cina stratum of yellow estuarine clay underlies both sectors, but the southeastern boundary of the early settlement seems to have been formed by a shallow stream, which may have been one of the features that attracted settlers to the site.

The strata of coarse sand and gravel may be related to the deposits found near the brick foundations in the northwestern sector. The artificial layers of gravel and sand may have been procured from the stream deposits.

A third source of information for the history of local land forms and their connection with the early settlement was derived from soil cores. The results of the cores are summarized below.

Soil Cores and Mangroves

Use of the soil corer was restricted to the northern edge of the site and the surrounding padi fields. The tool used was manufactured especially for the project by an ironmonger in Medan. It served its purpose well, but it could penetrate the thickly compacted dry silty loams of the higher parts of the site only with great expenditure of time and energy.

Fifteen borings were conducted with two goals: to determine the northern limit of the shell and sherd deposits, and to explore the deeper stratigraphy of the site as a whole. The coring tool permitted examination of soil profiles up to 5 meters deep, penetrating far below the water table.

Bores 1 to 3 were carried out north of point A, on the west side of the Sungai Besar. Bores 1 and 2 displayed the same profile: humus and rootlets to a depth of 40 cm., then a 60 cm. thick layer of yellow estuarine clay. No shells or other debris were found in either profile, indicating that these bores were beyond the boundary of the settlement.

The next meter in each bore was below the water table, and yielded a greenish-gray gley,[7] indicating this stratum

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[7] This is a type of soil formed under waterlogged conditions. A gley horizon is gray in color and normally contains reddish-brown streaks of ferrous oxide.

had probably derived from the same parent material as the yellow estuarine clay, but had experienced long submersion in water.

The third bore contained humus to 40 cm., followed by 40 cm. of gray clay mixed with shells, thus marking the north fringe of the habitation deposit. Next a stratum of yellow clay appeared between 80 - 130 cm., and from 130 to 200 cm. a gray gley.

Crossing the Sungai Besar, bores 4-6 corresponded to bores 1-2, with no sherd layer. Only in bore 7, between 40-70 cm., was the shell and sherd layer encountered.

Bores 8 and 9 were made in the padi field just west of the coconut patch where excavations A and B were made. Surface finds of shells and sherds appeared throughout the coconut patch, but none further than about 5 meters into the padi. Both 8 and 9 revealed a similar profile: an upper stratum, 40 cm. thick, of sandy clay, followed by yellow estuarine clay from 40 to 60 cm., and finally a gley horizon with occasional woody remains from 60-500 cm. No positive identification of the woody fragments was made, but they probably represent a mangrove swamp which once existed here, and whose remnants extend to an unknown depth beneath the padi fields. The swamp now is 400 meters northwest of this point, indicating a gradual coastal progradation and retreat of the swamp toward the north.

Bores 10-11 were made along the north central border of the padi fields which extend 300 meters to an area of standing water where marsh grasses and cattails grow. These samples were taken only 40 and 60 meters from bore 5, but indicated a different profile.

In bore 10 estuarine clays continued from the surface through the water table to a depth of 220 cm. From 220 to 240 cm. a layer of fine sand was found. Below this another layer of slightly different sand, containing much mica and feldspar with some admixture of muddy silt appeared. Penetration below this level was impossible because of the compactness of the sand.

This profile must be connected with the stream earlier discerned in the profiles at M and L. The mixture of sand and mud suggests that the stream entered a body of deeper water nearby. It is not clear whether this bore represents the area within or just outside the stream's mouth, but given the type of material and the sorting observed, the mouth was probably not far away.

Bore 11 was located on slightly higher ground 10 meters south of the padi. Clay was not encountered here. Various layers of silt and loam with some sandy particles extended to 240 cm., at which point fine sand with much mica appeared and reached to 350 cm. Here again boring was halted by a compact sand layer. At 345 cm. a fragment of wood, probably dungun, was found in the core.

The same comments made regarding the interpretation of bore 10 apply here. The sand layer at slightly over two meters' depth indicates that the stream at the southeastern edge of the Kota Cina phase settlement entered calm estuarine water in this area.

Bore 12 was made 150 meters east and a little north of bore 11. Penetration of the topsoil here was very difficult. Below the upper humus layer a stratum of sand was encountered, between 20 and at least 60 cm. The sand was too hardpacked to make further effort worthwhile.

In a trench 5 meters long, 60 cm. deep and 8 meters south of bore 12 a scattering of shells and sherds was visible. The trench was of very recent construction, and the sherds included Kota Cina phase material.

The base of the trench, used as a garbage pit, was deepened with a hoe for another 60 cm. At this point the upper humus and yellow clay layers gave way to intercalated layers of fine and coarse sand, which were excavated to 1 meter. The borer was then used. Find sand continued to 140 cm., then changing to very coarse sand in a layer 40 cm. thick. At 180 cm. fine sand again appeared, and continued to a depth of 300 cm., at which point boring was stopped.

As in the well at point L, the shell and sherd debris directly overlay the fluvial deposit. The river probably flowed between bores 11 and 13 during the Kota Cina phase.

This opinion was confirmed by inspection of the profile in the Sungai Besar between A to F (see below). The precise location of the stream mouth was not found, but it was probably in the area east of bore 11.

Bore 14 was made near point F, slightly over 200 meters east of bore 13. Occasional surface finds of Sung celadon and Kota Cina-phase earthenware appeared west of this point, as well as south of it, but none east of it. This bore was 55 meters south of a granite monolith at the eastern edge of the Kota Cina peninsula, beyond which padi fields extended. This monolith will be discussed later.

In bore 14 humus reached 60 cm., followed by a layer of yellow estuarine clay to 100 cm. Below this layer more clayey sand was found; in its lower portion it was transitional to a very compact black sand similar to the fine iron-bearing sands of the wells at L and N, though the transition was poorly defined. Below this level the sand was too compact to penetrate further.

The sandy stratum may be evidence of another stream mouth, either of the same or another period than the sands at point E through N. Another possibility is that this sand was transported by some other agent than river currents, although the density of the sand with its high iron content makes this unlikely. This profile may indicate an episode of stream deposition separate from that noted further west.

Bore 15 was made 1 meter northwest of the northwest corner of McKinnon's Site 1 (at point A). The top strata were identical to those from bore 3 down to 200 cm., where bore 3 was halted. Below 200 cm. bore 15 continued to penetrate through gray gley to a depth of 5 meters. Fragments of wood were encountered at 300, 400 and 450 cm. An excavation of the top 50 cm. of the soil made possible a continuation of the bore to a final depth of 540 cm.

Between 520 and 540 cm. a change in stratigraphy was encountered. Instead of woody gley (old mangrove mud), a compact layer of coarse sand with flecks of mica was obtained. One possibility is that the stream assumed to have flowed east of bore 11 at one time flowed west of it, over this point. The greater depth of the sample obtained here implies that this was an earlier course. Another possible interpretation is that this sample represents a beach exposed to the open sea, before the appearance of mangroves in the area.

Evidence from the Drainage Ditch

The drainage ditch (Sungai Besar, perhaps ironically; the literal meaning is "big river") runs roughly westward from near point F to point A, thus providing a useful cross-section across this portion of the site. A layer of shells and sherds is visible inthe ditch along a stretch of 400 meters at varying depths except for an eight-meter wide section near the bridge near point E.

The habitation layer in this 8-meter wide section is abruptly replaced by a layer of coarse sand and gravel which begins at a depth of 1.5 meters and reaches below the water table. This layer of poorly sorted material provides a further proof of the existence of a stream which flowed from the southern fringe of the site, past points N and L, and entered a shallow estuary near bore 11.

A well was dug by a villager living at point D. This well penetrated to over 2 meters and cut through a stratum of medium coarse sand which began at 1 meter and continued to the lowest level excavated. While I was inspecting the well profile, I recovered at a depth of 2 meters, near the well bottom, a fragment of kayu nyireh from a matrix of black coarse sand. This spot was probably near the bank of the extinct stream. The wood sample was saved for potential C^{14} analysis.

The corner of the ditch, point I, also yielded fluvial sediments. A layer of shell and sherds was observed here, in a stratum between 110 and 130 cm. deep. Directly beneath this layer the soil changed to a sandy loam. The loam reached to a depth of 160 cm., and in it a few earthenware sherds and brick fragments were mixed. Then we encountered a stratum of intercalating fine and coarse sands with lenses of micaceous sand, black ferrous sand, and coarse sand with large quartzite particles.

The stream thus seems not to have flowed directly north, but passed through Point I just prior to the establishment of the first settlement. The earthenware sherds in the uppermost sand layer can be interpreted to indicate that the stream still flowed near this point when the first sherds were deposited, and a fine layer of light particles was laid down before the stream moved further away. The level of shells and sherds above the fluvial strata is correlated with the increase of settlement on the banks beside the stream. The absence of any riverine sediments at the well at point M indicates that the stream did not extend that far east.

Summary of the Stratigraphic Evidence

Stratigraphic study has provided sufficient information to reconstruct several of the important features of the Kota Cina environment during what has been denoted the Kota Cina phse of settlement. Kota Cina is now located on the tip of a peninsula of slightly higher ground, projecting between padi fields. This peninsula narrows and finally disappears into the swamps and waterways separating the village from the Straits of Malacca. This elevated ground lies above a stratum of estuarine mud with wood fragments. A stratum of fluvial deposits forms the southeastern boundary of the site.

Even in the twelfth century Kota Cina was not directly on the coast, but separated from it by a screen

of mangrove and brackish water vegetation of unknown extent, but probably not as broad as at present. The site of Kota Cina was itself a mangrove swamp not long before it was first settled.

Besides the advantages of slightly higher ground amid the swamp, Kota Cina offered two other advantages to prospective settlers. The first was the stream of fresh water. The second may have been the protection afforded by the screen of coastal vegetation and twisting waterways which provided a barrier against raids from the sea. The reputation of northeast Sumatra as a piratical coast and the occurences of Javanese and other attacks on this region imply that such protection would be seen as a favorable feature.

It is not known exactly when these geomorphic conditions appeared and were modified. Fragments of various types of wood were collected from relevant points. When C^{14} analysis can be performed on these fragments, the dates obtained will fix the approximate period when the mangrove swamp became dry land, and when the freshwater stream was flowing.

Kota Cina: Material Culture

McKinnon concentrated much of his analysis of the Kota Cina assemblage on the imported ceramics. He also excavated large numbers of other artifacts, and the foundations of several brick structures. His work on the

brick ruins can be briefly recapitulated here. No brick foundations were found at other Deli sites, but brick fragments were discovered at Tanjung Anom (see below).

Brick Complexes at Kota Cina

Three areas of brick rubble, walls partially intact, and associated statuary were discovered at the site. These three complexes are aligned along the western border, beside rice fields which contain no significant concentrations of habitation refuse. Of the three (at C, H, and K) C has been most intensively excavated.

The complex of three structures at C has already been described. No domestic material was found inside the 12.5 meter square foundation excapt for the few sherds in the lowest layer, associated with a house post which yielded a radiocarbon date from the late eleventh century (McKinnon 1977b). These artifacts probably indicate a dwelling existed at this spot before the brick foundation was built.

McKinnon compares the construction technique used for the major foundation to that of a building probably constructed at approximately the same time, which was excavated by Alastair Lamb at Matang Pasir, Kedah, on the northwest coast of Malaysia (McKinnon 1974: 69, see map 10). In both cases the upper portions of the buildings were of perishable timber. The exact degree of relationship cannot therefore be determined, since this type of

architecture has left no trace except a simple brick wall.

The existence of two other structures at C has also been mentioned. McKinnon interpreted one as a small shrine, the other as a mandapa, or place for public worship with dimensions of 14 x 6.8 meters (McKinnon 1974: 71). The major structure would have been the sanctuary for the cult statue.

No statue has been found near this complex, but McKinnon did discover a fragment of polished granite linggam and other fragments of polished granite which may once have been parts of a statue. Also some pieces of gold leaf, probably deposited as votive offerings to the deity of the sanctuary, were found in the small shrine. One fragment was stamped with a Chinese character, ch'in (gold) (McKinnon 1974: 70).

The deity worshipped in this sanctuary appears to have been the Hindu god Siva, judging from the linggam. Siva was long popular in Indonesia. Other temples probably dedicated to him have been found in the Padang Lawas area, and Sivaite sculpture has also been found in east central Sumatra (at Muara Takus), and in southern Sumatra (at Palembang and at Tanah Abang up the Lematang, a tributary of the Musi).

Approximately 180 meters south of this complex, at H, McKinnon excavated part of a second set of brick ruins. The size and number of structures here have not been

determined. Again McKinnon notes that "Sivaite remains, including a yoni altar base, have been found here" as well as three rough blocks of granite, rectangularly shaped (McKinnon 1974: 72).

The yoni is a rectangular block of stone now lying at the edge of a padi field. This block has been squared and the top surface and upper 5 cm. of the sides smoothed, but below this level the block's exterior is roughly chiseled.

In the top of the block a circular depression 1 cm. deep has been carved, 40 cm. in diameter. At one edge of this dish-like depression a 1-cm. wide notch has been cut, providing an opening from which liquid can run out from the depression. Quite possibly this was a base for a statue or other cult object. During the ceremonial lustration of cult objects the water or other liquid runoff could be collected and used in further ceremonies to take advantage of the fertility or other qualities attributed to the holy water.

McKinnon also excavated from among the brick rubble two small carved stone objects with pointed ends and elaborate decorative motifs for which no exact parallels are known (McKinnon 1974: plate IV), although Lamb describes similar objects from south Kedah (Lamb 1961: plates 67 and 68, text page 28). Their function is unknown. Malleret excavated similar objects at Oc-eo

(Malleret 1960: II, Planches, xciv number 5). He called them "pins," but gives no supporting evidence for attributing this function to them.

In 1977, while observing the cultivation of a field in which tapioca was being planted near D, I found the decorated end of a similar object associated with Kota Cina phase pottery. Unlike the other objects, this one has definite stylistic parallels which allow some conclusions regarding its origin to be drawn.

The design portrays a human head 37 mm. long. It closely resembles statues of stone and wood which are frequently found in and near old villages in north Sumatra. Bartlett has published a photograph of these wooden pagar which are "magical devices made by the datoe [a north Sumatran equivalent of a shaman] to protect persons, houses, whole villages, fields, and the like, from evil spirits and their influences" (Bartlett 1973: 121, plate xxiv and text page 23).

This is the only object so far recovered from the site which shows stylistic links with recent Batak art. The Old Malay script incised on Kota Cina potsherds (see below) was used by coastal dwellers and inland peoples alike in the twelfth century. Lumps of preserved forest resins excavated from the site also demonstrate intercourse between Kota Cina and some part of the hinterland.

The third brick complex is nearly 400 meters southwest of H, at K. In 1977 many of the bricks were removed for

reuse as building material. Judging from the trenches left after the despoilation there had been at least two, possibly three, structures, but their sizes and shapes could not be discerned.

There are strong indications that this was a Buddhist sanctuary. Two large seated granite Budda statues have been discovered nearby. One was found by a local resident in 1942, and is kept in a house (Suleiman et al. 1976: 25). The head of this statue is now lost, reportedly stolen after an argument over ownership of the image.

The headless statue is now 62 cm. tall, including the base on which it rests. The figure sits in the semadhi pose, in the posture termed padmasama. The material is a dark granite which does not occur anywhere in north Sumatra (see Suleiman et al. 1976: photo 37; McKinnon 1973: plate 1).

A second statue was found in 1973, 15 meters south of the ruin, during well-digging operations. The image, of a similar but light-colored granite, is intact. The height of the Buddha, including the head and base, is 86 cm. The treatment of the figure and draperies, and also the pose, are very similar to the first statue found (photographs: Suleiman et al. 1976: 36; McKinnon 1974: 5).

The consensus of experts cited by McKinnon and the PPPPN is that the style of both images falls within southern Indian and Sri Langkan tradition of approximately

the thirteenth century (Suleiman et al. 1976: 25; McKinnon 1974: 75-76). Dra Satyawati Suleiman (personal communication) has recently seen a statue in a museum in Tanjore, south India, which is essentially identical to the two statues found here.

The stone of these two images did not necessarily originate in southern India. Such granite is found on the island of Bintan, Riau Province, and also on Penang Island. Bintan is 800 kilometers southeast of Kota Cina, Penang 400 kilometers northeast. Both material and workmanship are foreign to Sumatra, although their suggested date fits with other dateable artifacts in the site.

Several Buddhist bronzes have also been found in the environs of Kota Cina. In the case of the bronzes whose present whereabouts are known, the precise find spots are not known. Three are Buddhist: one standing Budda 12 cm. high, and two small seated Buddhas, 7 and 5 cm. high. These are roughly cast, and their features made more indistinct by long exposure to ground water. Also a bronze image of Parvati is said to have come from the site. These are all now in the possession of local residents. McKinnon reports that another bronze was found southeast of point H, but it has disappeared and its subject is unknown.

In addition to the Buddhist remains whose find spots are unknown, one other object with Sivaite connotations

has been recovered from Kota Cina, an intact Siva linggam. This may have come from the brick complex at H, according to the villager who had brought the stone to his house, but this is not certainly known.

Summary

The religious statuary indicates the presence of two distinct sects at Kota Cina: Buddhism and Hinduism of the Sivaitic sect. Only the bronze statue of Parvati, consort of Siva, remains of whatever Hindu sculpture may have existed, though the three statue bases (including the one taken to Labuan Deli in the nineteenth century) may have been pedestals for Hindu sculpture. The polished granite fragments from C excavated by McKinnon testify that other statues probably existed at one time. The two linggams, one from near the main structure at C, are also proof of Siva worship. Buddhist sculpture is relatively better preserved. The complexes at A and H were probably Siva sanctuaries, and the complex at K a Buddhist sanctuary.

Basham, commenting on the disappearance of Buddhism from India, notes that, "If for a time Buddhism became to all intents and purposes a separate religion [from Hinduism], denying the Vedas, the ordinary layman might not see it in that light" (Basham 1959: 265-266). In India Buddhism came to be seen as one of the Hindu cults, gradually lost its individuality, and was reabsorbed by the culture which had earlier given birth to it. The

Kota Cina Buddhas, however, do not have any traits which would suggest they were used by one of the syncretic Hindu/Buddhist cults which were widespread in Sumatra and elsewhere in Indonesia until the sixteenth century A.D. when Islam began to establish numerous converts. Various sects practiced mysticism heavily influenced by Tantric beliefs and left many traces in Javanese and Sumatran sculpture, architecture and literature. Padang Lawas, 350 kilometers southeast of Kota Cina, was a major Tantric center during the thirteenth and fourteenth centuries (see chapter III). The lack of Tantric symbolism in the religious statuary from Kota Cina is thus all the more interesting and unexpected.

The distribution of the sacral complexes seems to indicate that the western edge of the site was reserved for religious purposes. The foundations occupy a marginal position in the site, not a central one. It is impossible on the basis of present excavation at Kota Cina to decide whether these were funerary sanctuaries like those in Kedah, Padang Lawas and central and eastern Java. Their marginal location indicates that similar principles may have governed their siting, however.

No other signs of religious activity were detected at Kota Cina. Specifically, no burials were identified.

Kota Cina Phase Pottery

Most of the material discussed in this section originated from a 110-square-meter pit at point A which McKinnon excavated over a period of two years. McKinnon has published several reports on the pottery from this location, paying particular attention to the imported Chinese porcelains. McKinnon very kindly allowed me access to the excavated and unsorted materials, including mainly earthenware potsherds, plus stoneware, porcelain and other artifacts for the purposes of classification, computation of quantitative data, and attempted vessel reconstruction. This assemblage forms the type collection with which surface finds and material from stratigraphic profiles in other parts of this and other sites in the Deli River valley may be compares.

McKinnon's excavation at A penetrated a compacted layer of debris which began at approximately 40 cm. depth and continued to 80-100 cm. No differentiation between the artificial levels was observed. Sherds from the same vessel in at least one case were found several meters apart, suggesting considerable scattering and mixing of artifacts. Thus the material must be treated as a single assemblage.

One C^{14} date was obtained from McKinnon's excavation at A. The date, 750 ± 75 years B.P., was obtained from a sample of wood ash by the British Atomic Energy Research

Station, Harwell (Har 1423) (McKinnon 1977b).

In 1977 McKinnon and I first sorted the ceramics into three preliminary classes, with totals and percentages as below.

TABLE 1

WARE	WEIGHT OF SHERDS IN GRAMS	PERCENTAGE OF TOTAL
Porcelain	94,312	12.78%
Stoneware	166,352	22.55%
Earthenware	477,073	64.67%
TOTAL WEIGHT:	737,737 grams	

No sherd counts were made. However, some samples of known numbers of earthenware types were weighed to obtain an estimate of numbers of some types of earthenware (see below).

Porcelains, stonewares and earthenwares were distinguished on the basis of paste and secondarily by surface treatment. Zaine points out that the distinction between stoneware, porcelaneous stoneware and porcelain is not detectable by any but the most elaborate technical means, and that not all ceramic experts agree on the exact points of division (Zaine with T. Harrisson 1967: 30). The difference lies in firing temperature, which in turn depends on purity of paste, highly-fired porcelain

containing no discernible impurities.

In practice most porcelains can also be distinguished from stonewares by paste and surface treatment. Porcelains during the period before mass-production techniques were developed in the Ming Dynasty, were mainly luxury items, and their glazes were considered extraordinary technical feats, as their fame in medieval Europe shows. Stonewares on the other hand were largely meant for more mundane uses.

No complete quantitative analysis of ceramics from any excavation of this period in Indonesia, west Malaysia or southern Thailand has been published. Thus the Kota Cina assemblage cannot be readily compared with any other from its own period and area. For instance, Lamb, describing a very similar site in Kedah, only noted the presence of a number of types of porcelains and stonewares, while commenting that earthenware made up "by far the largest category in the deposit" (Lamb 1961: 26).

B. Harrisson has published a quantitative analysis of ceramics from Kota Batu, Brunei, an assemblage of Sung-Ming date. The site however contains much blue and white porcelain, which appears to have been inexpensive enough to compete successfully with local earthenware. Of 6,230 sherds from Kota Batu, only 3.5% or 221 were local earthenware; the rest were imports or unclassifiable

(B. Harrisson 1970: 115).[8]

This ratio may be contrasted with that obtained from a T'ang Dynasty cemetery at Tanjong Kubor, Sarawak, where there was a large but unquantified percentage of earthenware of a wide range of types (Solheim 1965). The site of Johor Lama, probably inhabited during the fourteenth to sixteenth century and thus roughly contemporaneous with Kota Batu, contained a collection of many types of both porcelains and earthenwares (Solheim and Green 1960).[9]

In the discussion of Chinese porcelains below, the names of the Chinese dynasties of the Northern Sung (A.D. 960-1126), Southern Sung (A.D. 1127-1279), Yuan (1260-1367) and Ming (1368-1643) will be frequently used, according to convention. Many types of porcelain have been identified with the reigns of one or more of these dynasties, but as Hutterer has noted, recent archaeological discoveries have made it "questionable whether the

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[8] B. Harrisson and P. Shariffuddin (1969) note that blue and white wares were immediately popular in Southeast Asia as soon as they were introduced from China, and native earthenware dropped out of use on the coast of Borneo by the fifteenth century, though it remained common inland.

[9] Bronson and Wisseman (in press) summarize the results of excavations at three sites in Palembang. A total of 2277 sherds of imported porcelain and stoneware are tabulated. Of these, less than 1% were identified as Sung porcelains, while 850 sherds or 37% are brown-glazed stonewares, mainly from storage jars. Earthenwares are not described, but were about three times as numerous as the imported wares.

traditional way of dating Chinese porcelain by dynasties is still useful" (Hutterer 1974: 77).[10] If Hutterer is correct, the use of blue and white wares to divide pre-Ming from Ming and later sites in Southeast Asia may be incorrect, leading to estimates of age at least a century too recent.

Keeping this caveat in mind, it is still convenient to use Chinese reign periods as a shorthand to refer to the approximate production period of particular wares. At the same time, very few reports of kiln excavations in China have been published, and it must be acknowledged that future discoveries will probably necessitate revision of the dates assigned to specific wares and perhaps the development of new terminology.

The variety of types of imported ceramics, including all stonewares and porcelains and some of the earthenwares from Kota Cina, has been called "wider than that described at any single site yet reported in either Indonesia or Malaysia" (Milner et al. in press). The assemblage contains wares attributed to kiln sites or areas in central and southern China, modern Vietnam, Cambodia,

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[10] L. and C. Locsin excavated wares which they describe as early blue and white from a graveyard in Manila. Through the association of this ware with other wares in individual graves, they note that early blue and white may have entered the Philippines as early as the Northern Sung Dynasty; but they also acknowledge that the wares may have been as late as the fourteenth century (Locsin, C. and L. 1967: 98-104).

and possibly western Asia.

One partially reconstructed vessel has been identified by Drs. Abu Ridho, Curator of Ceramics at the Museum Pusat, Jakarta, as a type produced during the T'ang period (Abu Ridho: personal communication). With this exception the earliest imported wares found at Kota Cina were probably produced in China in the period between A.D. 1100 and 1150. There is no blue and white ware in the Kota Cina assemblage.

McKinnon characterizes the majority of imported ceramics at Kota Cina as products of the late twelfth to late fourteenth centuries A.D. (McKinnon 1977b). The quality of some of the specimens is so high that they have been compared to so-called Imperial quality products which were not thought to have been exported from China (Milner et al. in press).

No sherds of early blue and white wares appear at Kota Cina. If blue and white ware was immediately popular in Southeast Asia after its introduction in China, and if it was already being exported to the Philippines in the late Sung, it is curious that none has been found at Kota Cina. Chinese exporters were concerned to cater to local taste, as thirteenth and fourteenth century Chinese accounts of trading conditions in Southeast Asia demonstrate (e.g. Chao Ju-kua's accounts of various goods traded at different locations; Hirth and Rockhill 1911). One

possible explanation for the absence of blue and white porcelain is that the inhabitants of southern Kedah and Kota Cina, unlike other contemporary Southeast Asians, did not like blue and white pottery. However, it is also necessary to retain some skepticism about the hypothesis of early blue and white production during the Sung Dynasty until firmer evidence is obtained, preferably from kiln sites in China.

Porcelains

The porcelains discovered at Kota Cina can be considered under seven headings. These are wares, not in the strict archaeological sense of "A ceramic group in which all attributes of paste and surface finish remain constant" (Shepard 1974: 319), but in the looser sense of "A broad class based on some prominent feature such as color, decorative technique or function" (Shepard 1974: 318). This is in conformity with the standard usage of art historians who have published the major studies of these ceramics.

Celadon

The most common porcelains in the Kota Cina phase assemblage are the green-glazed wares conventionally termed celadons. Celadon in turn is often subdivided into several groups, based on areas of production, specific pastes, and surface treatment. At Kota Cina

two groups of this ware appear, Ch'e-kiang and Lung-ch'uan, named after the kiln areas in south China where they were produced. Celadoms were the commonest Chinese export ware before the introduction of blue and white wares (Sullivan 1961-1962: 67).

Ch'e-kiang celadons found at Kota Cina are mainly bowls and dishes. The glaze varies through various shades of blue-green to gray or brownish green. A fairly common type of bowl has a stamped Chinese character or characters in the center. These "character bowls" have been found in Sarawak, Kedah, and elsewhere in Indonesia (McKinnon 1977b). A second common motif found on Ch'e-kiang wares is a flying goose design; this is also represented at Kota Cina.[11]

The second group, the Lung ch'uan celadons, occurs in forms ranging from very small bottles to large heavy plates. The glazes of this kiln area have inspired great praise from ceramic specialists.[12] Production of this ware was carried on during the Southern Sung, but appears to have continued into the Ming Dynasty.

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[11] For an illustration of a typical bowl with characters meaning "full, gold, jade," a Taoist formula duplicated at Kedah and Kota Cina, see Lamb (1961: plates 40-41). The flying goose design, also common to Kota Cina and Kedah, is illustrated by Lamb (1961: 37-39).

[12] On the glazing and firing of celadon, see R. Brown (1973a).

L. and C. Locsin (1967: 70-82) illustrate numerous examples found in the Santa Ana site, Philippines, which has yielded a C^{14} date of 880 ± 120 B.P. Lamb excavated numerous examples in Kedah (Lamb 1961: 23-26). Specimens have also come from Sarawak and several regions in Indonesia, including Sumatra, Sulawesi, Java and Bali (de Flines 1975). Aga-Oglu (1972: photograph 53, p. 31) illustrates a type of jar with distinctive foliate cover, of which several specimens have been found at Kota Cina. This particular type has been attributed to the Yuan Dynasty.

Ch'ing-pai

After the celadons, the ware variously called ch'ing-pai, ying-ch'ing, and "Marco Polo Ware"[13] made up the largest proportion of Chinese export porcelain during the Sung and Yuan Dynasties (Sullivan 1961-1962: 67). This ware is white glazed, and normally comes in the form of small, thinly potted objects such as covered boxes, jarlets and bowls. The finest quality specimens are so thin as to be translucent.

This ware is one of the commonest in Sung-Yuan sites in Sarawak (B. Harrisson 1962). Lamb has described this ware from Kedah and also the east coast of the Malay

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[13] A small jarlet of white porcelain, supposedly brought back from China by Marco Polo in the late thirteenth century, is in the Vatican Museum in Rome.

Peninsula (Pahang and Pulau Tioman). Most of the Indonesian specimens discussed by de Flines came from Bali and southern Sulawesi; he mentions no pieces originating from Sumatra (de Flines 1975: 28). This ware also occurs in the Philippines (Locsin, C. and L. 1967: 88-97).

McKinnon (1977a: 25) separates "Marco Polo ware," under the name T'e-hua, from ch'ing-pai. Griffing (1961) gives reasons for considering these types under a single name, as does Lamb (1961).

Ting-type wares

These are also white-glazed wares, but of a coarser paste and less refined finish than ch'ing-pai. Spur-marked bowls and small covered boxes are numerous among this ware at Kota Cina. Many covered boxes have molded decoration on the exteriors. Wares of this group are also known from Sulawesi, Borneo and the Philippines (McKinnon 1977b).

Temmoku ware

McKinnon has included in this category "Dark brown glazed vessels of 'Temmoku' type, mainly small bottles, jarlets and bowls made of a dark grey porcellaneous stoneware . . ." found at Kota Cina (McKinnon 1977a: 26). The true temmoku originated from only three kiln sites, 50 kilometers north of Chien-ming in Fukien Province, southeastern China. This ware, mentioned in Chinese literature of the tenth century, was a particular favorite

of the Japanese for use in the tea ceremony, and the Japanese term for the ware has entered English. Here it is termed chien temmoku, to distinguish it from other similar wares.

This ware continued to be produced during the Sung (Northern and Southern) Dynasties. The classic pieces were coated with a thick black glaze with streaks of iron oxide, giving a special effect termed "hare's fur glaze." The wares described by McKinnon are related in both paste and glaze to a different group sometimes called southern Temmoku, and will be considered below under stonewares.

One specimen of chien-type temmoku was, however, discovered at Kota Cina on the last day of exploration there in 1977. Two large fragments together comprising about 60% of a small bowl with the characteristic hare's fur glaze were uncovered by the energetic farmer who worked the land around point D.

The shape and glaze are perfectly typical, but the body is somewhat abnormal, of a slightly different color and texture from most specimens. However, Robert Tichane of the Corning Glass Museum has compared the X-ray diffraction and electron scanning microscope image of the sherds with specimens obtained from a kiln site at Chien-an, and concluded that the Sumatran specimen should be considered a true Chien temmoku (Tichane, Personal Communication).

Numerous specimens of this type of vessel are said to have been found in south Sumatra, Java and Bali (de Flines 1975: 23). Only three small fragments were found in Kedah, however (Lamb 1961: 23). "'Thick-walled temmoku' was discovered in Sarawak, but it does not seem to have been common" (Zaine 1967: 33).[14]

Yellow-gray Ware

McKinnon has identified a number of bowls of this ware with underglaze incised designs which he attributes to the Southern Sung Dynasty. Aside from Kota Cina, only south Sulawesi is known to have specimens of this ware (McKinnon 1977b).

T'zu chou or Chi chou Wares

Only a few sherds tentatively attributed to this ware were found at Kota Cina (McKinnon 1977a: 27). The Museum Pusat in Jakarta displays several specimens, mainly from east Java, though some were obtained in Sulawesi (de Flines 1975: 21-22).

Amber Glazed Ware

Only one sherd of this ware was found in Kota Cina: part of a kendi or spouted vessel (McKinnon 1977a: 27).

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[14] For further description and photos of this ware, see Neave-Hill (1975: 83-86).

Green-Glazed Wares

These are not porcelains, since they do not appear to have been fired at the high temperatures diagnostic of that class. Most are stonewares, though some are glazed earthenwares. Possibly four paste classes are subsumed under this category, two stoneware and two earthenware; they are considered together here because, like porcelain, they were luxury or status-related, non-utilitarian objects. They are nicely glazed, and are nearly all small molded pieces, such as kendis and jarlets. One of the kendis with a molded dragon is similar to vessels found in Sarawak (McKinnon 1977a: 26; B. Harrisson: Personal Communication). Some sherds from Kota Cina resemble a kendi illustrated by Sullivan which is in the Jakarta museum (Sullivan 1961-1962: plate 51-A).

Summary

The group denoted porcelains comprised slightly under 13% of all ceramics obtained from McKinnon's excavation at point A. The sherds in this group represent products of kilns in several different regions of China, and possibly Vietnam as well, though Vietnamese wares are poorly studied (R. Brown 1977; B. Harrisson 1970).

Stonewares

The stonewares of Kota Cina make up nearly one quarter of the point A assemblage. These are mostly storage jars,

large basins and other utilitarian objects. Their plain character and humble uses have attracted much less research than the prestigious and aesthetically pleasing porcelains. Also their forms and decoration seem to have changed much less frequently than porcelains, making dating by individual type difficult.

On the other hand, almost no pieces have been sought by collectors, and their general distribution and uses are much better known as a result. Numerous very old stoneware pieces are still in the possession of highland groups in Borneo and Philippines villagers (Kaboy and Moore 1967).

Moore (1970) developed a descriptive classification for stonewares based primarily on paste, secondarily on glaze and form. She defines a ware as a group of vessels assumed to represent a kiln or group of kilns using the same clay source. The wares are dated by association with other ceramics in Sarawak sites, and divided into four phases. Her phase II, from sites with twelfth and thirteenth century assemblages, corresponds to the material from the Kota Cina phase.

Brittle Ware

These ceramics were perhaps Vietnamese, not Chinese products (B. Harrisson: Personal Communication). This ware makes up the largest single component of the Kota Cina stoneware assemblage, or approximately 50% to 60% of the total weight of stoneware sherds.

The paste is gray with numerous specks of coarse temper. Glazes tend to be thin, and brown to green in color. Several shapes occur: tall storage jars with heavy bases, thin walled jars, some with lids, and kendis, ewers, bowls and saucers.

The tall thin storage jars with heavy bases have a wide distribution. Many fragments of these vessels were found in Kedah (Lamb 1961: 23-26), and three jars have been found in Pahang, eastern peninsular Malaysia, associated with other ceramics "typical of the Pengkalan Pujang [south Kedah] deposits B and C" (Lamb 1962: 68-69; for illustrations see Lamb (1961: plate 106; Moore 1970: plate 1c). This ware has also been found at Angkor and in Burma (Treloar 1974).

F.E. Treloar, who has conducted a study of these jars, suggested that one of their functions may have been to transport mercury. There is no trace of mercury or any other substance in the vessels. Treloar's hypothesis is based on their form, with a massive bottom which gradually widens, no necks and very small openings at the top about 1.5 cm. in diameter. This form would not be necessary for shipping ordinary liquids, but would be useful for mercury, with its high specific gravity. Spills would be less likely with this form (Treloar 1974).

Treloar demonstrates that mercury was a common article of trade in the T'ang and later periods. China

obtained mercury from its provinces of Hunan and Shansi during the T'ang, and as tribute from Persia and Vietnam. Portuguese Malacca was also an exporter.

China itself also exported mercury to Java, Cambodia and Kedah (Treloar 1974). This pattern would seem to indicate that China received mercury from Vietnam as tribute, in brittleware vessels made in Vietnam, and then re-exported something in the same vessels, quite possibly the same mercury.

Early texts record some uses of mercury: as a medicine, as a means of extracting gold from quartz, and as a substance with particular symbolic meaning in Sivaitic rituals. Mercury was used to rub gold Siva linggas during Tantric ceremonies, and metallurgical analyses indicate that such ceremonies were practices in Kedah (Treloar 1972).

The Chinese itinerary which Wolters quoted in connection with the placename "sinting" also mentions the placename Lang-p'o-lu-ssu, which Wolters (1967: 192-193) is inclined to locate in north Sumatra. The itinerary mentions a number of products of this country, one of which is mercury. Van Bemmelen gives two mercury-producing areas in Sumatra, but both are in the southern part of the Barisan range, a thousand kilometers from Kota Cina (van Bemmelen 1944: II, 221).

Thus the hypothesis that these jars were sometimes or even always used to transport mercury does not explain

their presence at Kota Cina. Mercury may have been imported or exported via Kota Cina, or the ware may have been used for an entirely different purpose.

The next largest subgroup of brittle ware at Kota Cina is the large jars with vertical handles (2.F.b. of Moore's system). A number of the handles from Kota Cina have, at the lower end, the molded masks which Moore cites as a common characteristic of Sarawak specimens of this ware (Moore 1970: 21). Sherds from Kota Cina representing two or three vessels have the underglaze design illustrated in that article (Moore 1970: figure 8.e, page 24).

The squat wide-bottomed jarlets called temmoku by McKinnon (1977a: 26) should be included in this ware. Moore notes that "at its best the dark brown glaze comes very close to temmoku glazes and one can frequently see these jarlets classed as temmoku ware, which they, no doubt, try to emulate" (Moore 1970: 12).

McKinnon excavated perhaps twenty or more of these jarlets at point A. In several a chalky substance was found adhering to the interior of the vessels, which upon analysis turned out to be calcium carbonate (McKinnon 1977a: 26). This mineral is still used in Sumatra and peninsular Malaysia as a condiment to be chewed with the narcotic betel nut, rolled up in a leaf. There could have been other possible uses for the mineral as well.

Kwangtung Ware

Next to brittle ware, this forms the largest group of stoneware vessels in the point A assemblage. Vessel forms found include large jars with stamped seals near the neck (Moore 1970: figure 12.c, page 33), and a large number of kendis (Moore 1970: figure 16, page 41). A vessel of this ware was found in Kedah (Lamb 1961: figure 107).

Kwangtung Imitation Ware

There are a number of small jars from Kota Cina identical to the one illustrated by Moore (1970: plate 11A). Since "No sherds of this very puzzling group have been found in any Sarawak excavations" Moore (1970: 54) suspects that this is a recent ware. Its presence at Kota Cina argues otherwise. The origin of this ware is still mysterious.

Cambodian Stoneware

Moore includes another class of ceramics in her category of brittle ware, under category 2.A. (c), "jars with a folded rim." This variety has not been excavated in Sarawak, although the Sarawak Museum possesses some specimens. This ware has also been found in Laguna and Mindoro (Grau-Abaya 1976: 15, 24), and the Santa Ana site (Locsin, C. and L. 1967: plate 92, page 117). These jars may be compared with some which Orsoy de Flines (1975:

57-59) classified as Cambodian. This group includes fine stoneware, coarser stoneware and an earthenware. Some are zoomorphic containers, and some are large jars which have been found in secondary burials in south Sumatra.

R. Brown on the other hand states that "There are no Khmer ceramics in the Jakarta Museum, and only two examples . . . in the Philippines . . . What de Flines describes as Khmer is a hodge-podge of pieces of as yet unidentified origin" (R. Brown 1977: 33-34). This may be true with regard to the glazed zoomorphic pots on which Brown concentrated her attention.

One difficulty with an attribution of ceramics to Cambodia is that only one kiln site in that country has been subjected to a detailed study (R. Brown 1973). However, 143 fragments (2775 grams) found at Kota Cina possess rims and bodies fitting Moore's category 2.A. (c) and conform very closely to Brown's (1977: 36) description of Khmer paste and technique: of low quality, grainy, with much sandstone and, in large storage jars, crushed laterite. "All are coil-made, usually with the coils begun from the perimeter of a clay base disc. . . . Coil ridges are pronounced on the interior of most vessels."

The Chinese (or Vietnamese) brittle wares also used the seven-coil technique, but the resulting vessels have a different appearance. Brown unfortunately illustrates none of the large coarse storage vessels she describes, so

comparison must be restricted to her written description. Four or five jars with similar rims but a homogeneous fine-grained paste were also found at Kota Cina. These specimens cannot now be assigned a definite origin.

A second variety of Khmer ware, illustrated by R. Brown (1977: plate 24, number 85) and described as a wine jar of the late Bayon period, thirteenth to early fourteenth centuries, is found at Kota Cina. These vessels have a partially-eroded olive-black glaze, and incised underglaze decoration on the upper half of the vessel.

Cham Ware

The modern Cham are the survivors of a once-powerful people who are related linguistically to the Malays and Indonesians rather than the Mon-Khmer speakers of Vietnam and Cambodia who surround them. Their kingdom, Champa, existed for over a thousand years until it was finally crushed by the Vietnamese in the late fifteenth century.

R. Brown examined sherds and kiln debris from a village near Qui Nhon, and separated two types of paste in the sherds and wasters. The sherds correspond to a ware which Brown notes has been found in several other regions of Southeast Asia, including the Philippines and Indonesia. Approximately 1000 pieces of Cham ware have been recovered from shipwrecks off the coast of south Thailand (Brown 1975: 364-365, 370).

The clays used include a grayish and an orange-reddish brown, "surprisingly light in weight." Copper glazing is frequent. R. Brown (1977b: plate H) illustrates four forms, of which two are found at Kota Cina. Rims from at least five jars resemble those in her photo 2. Photo 4 on the same plate is a basin, 41 cm. in diameter and 23 cm. high, identical to two examples excavated in Kota Cina.

Green-Glazed Stonewares with Overglaze Black Paint

McKinnon excavated 85 sherds representing two or possibly three kendis, similar to brittle ware in size and shape. The paste is dissimilar: a light buff-colored stoneware with inclusions of lighter yellow particles. The glaze on these sherds has reacted to its immersion in the damp soil by forming an iridescent sheen on its surface. A design in black paint consisting of curves and spirals has been painted over the glaze.

Abu Ridho of the Museum Pusat, Jakarta, has identified these wares as possibly Persian, and Barbara Harrisson has concurred. Western Asian glass also found at Kota Cina reinforces the possibility that ceramics from Persia might have reached Sumatra. However, inspection of Persion wares in museums in the United States has not hielded any similar specimens. Positive identification of this ware is not yet possible. Islamic motifs were imitated by Far Eastern potters, although the glaze itself is, according to Barbara Harrisson, suggestive of a

western Asian origin.

Summary

The stoneware category is large, and poses several unsolved problems of origin of specific wares. The habitation deposit at A contains a range of stoneware as wide as its range of porcelain. Where wares have been assigned a date, there is no conflict with the twelfth-fourteenth century span inferred from the porcelains. The stoneware imports demonstrate that Kota Cina residents drew their utilitarian crockery from several regions and were connected with a commercial network which dealt both in luxuries and more common products.

Earthenwares from Kota Cina

The earthenwares from McKinnon's assemblage make up 65% or nearly two-thirds of the total weight of sherds recovered. These sherds were classified by paste into categories here labelled types. Divisions within types were made by form and decoration into varieties. This analysis is not complete, and only approximate percentages of the various types from the assemblage can be given, based on the partial analysis performed. All sherds were handled at least twice, so that the range of vessels represented can be given, although complete quantitative data are lacking.

Fine Paste Ware

One type of earthenware lay well outside the range of the other types in paste and technique (see drawings 80-85, 115-120). Very similar ware has been found at other Southeast Asian sites, so it is possible that the ware was imported to Sumatra. Sherds of this type comprised 8% of the total earthenware by weight. A sample of 369 sherds of this type weighed an average of 6.85 grams giving an estimated total of 5,200 sherds.

The paste of this ware is extremely fine, untempered and very pale in color. The most common exterior color is between 10YR, 8/2 and 8/3, with specimens as dark as 5YR, 8/4 (yellow to reddish yellow on the Munsell Soil Color Chart). The vessels are wheel-made and very smooth to the touch. The bodies very often contain a gray core (2.5Y, 5/0). Bodies are thin, generally ranging between 3 and 4 mm. thick. On some vessels the surface of the clay has flaked off in places.

Forms are quite elaborate, with many flanges and horizontal ribs. Other decoration is limited. Eighty sherds have linear decorations incised with a sharp pointed tool. About 7% of the sherds have red stripes applied in horizontal and vertical patterns (10R, 5/6 to 10R, 5/8). The stripes are normally 1.5 to 2 cm. wide.

Four sherds have striping of a much different reddish brown (5 YR, 4/4). The neck of one vessel has a black band

set off from a red band by an intermediate flange or ridge.

Vessel types include bowls ± 20 cm. in diameter and 15 cm. high, two or three covers or lids, and at least 59 spouted vessels of kendi type. There are also five small objects with undulating edges, possibly caps for spouts. In addition a number of other forms seem to be present but have not been reconstructed.

Nearly all sherds can be included within one variety. About 2% of this type by weight, or 147 sherds, form a separate "brittle" variety. The paste of this variety is still fine and homogeneous, and the shapes similar, but the bodies of the vessels are burnt orange color and are more brittle. It has not been determined whether this was intentional or not.

Aside from Kota Cina, similar sherds have been recovered from several sites. A T'ang Dynasty period graveyard in the Sarawak River delta yielded 95 sherds from vessels made on a wheel, whose "fine homogeneous paste is cream to peach in colour . . . . Some of the sherds have an extreme exfoliation" (Solheim 1965: 52). Nine sherds were incised with concentric circles or curvilinear designs. There were ten spouts and one complex rim form (Solheim 1965: figure 18c, page 53). The spouts were "applied over a hole in the body of the vessel" in the same manner as the Kota Cina specimens.

However, Solheim's (1965: 54) reconstructions of vessel shapes do not resemble the Kota Cina forms except for the complex rim of one vessel.

Lamb (1964c: plate 17) excavated a very similar ware in some quantity at the site of Pengkalan Bujang in Kedah, and reported that it also occurred as surface finds at Satingphra, south Thailand, a region with which Kedah has long had cultural and trade relations. At least one kendi of this ware is possessed by an Indonesian collector, who calls it "Majapahit ware" after the fourteenth-century Javanese kingdom (McKinnon: Personal Communication).

L. Malleret (1960: II, 99-100) described a ware greatly resembling Fine Paste Ware which he recovered from his excavations at Oc-eo, and called Type V (for illustrations of reconstructed vessels, see Malleret 1960: II, planches, number 10). He notes that this type has been found at all "Funanese" sites of the Transbassac region, and "Il englobe, semble-t-il, une periode assez vaste, puisqu'on le recontre des Samron Sen, qu'on le retrouve a Angkor Borei et a Long-dien, pres de Ba'ria ou il est associe a des tessons grises qui ont pu apparait des l'age preangkorien, mais predominent dans la period angkorienne."

B. Harrisson has inspected the Kota Cina Fine Paste Ware sherds and notes a similarity between the paste and that of Vietnamese parallels to Ch'ing pai/Marco Polo Ware.

She further discerns a correspondence with the Sa-huynh tradition of Southeast Asian pottery design which developed in northern Vietnam, and also a connection with "Hindu" symbolism and aesthetics.[15]

A probable kiln site has been identified at Satingphra, with which are associated wares very similar to Fine Paste Ware (Stargardt 1972, 1973b).[16] Some forms, especially kendis, from Satingphra are very similar to Kota Cina vessels, but other Satingphra forms, e.g. footed bowls, are not found at Kota Cina. It is possible that this ware was produced at Satingphra, as Stargardt argues. However, it is necessary to assume that the high kaolin-content clay used to make the finest specimens was imported, since it is not found nearby (Stargardt 1972: 203). The kiln site was highly disturbed, and several grades of this ware were apparently found, ranging from medium to fine in texture. Therefore there is still room for doubt that the fine paste ware was in fact produced at Satingphra, rather than imported from elsewhere.

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[15] Solheim has defined three pottery traditions in Southeast Asia, based on shared decorative motifs of the Sa-huynh-Kalanay, the Bau-Malay, and the Novaliches. Wares of Sa-huynh-Kalanay tradition are said to have originated in south China and Vietnam, and to have been made later in north Sumatra and Minangkabau. Solheim has also said that different sherds from the same vessel could sometimes fit into different traditions (Solheim 1964a, 1964b).

[16] For illustrations of Satingphra vessels which strongly resemble Kota Cina sherds, see Stargardt (1973a: figures 2a and 2b; 1972: figures 8 and 11), and Lamb (1964c: figure 17).

Other Earthenware of Problematic Origin

Two other earthenware types excavated at Kota Cina cannot be classed with the common wares. One anomalous type is represented by ten sherds with a homogeneous paste of dark reddish gray (10R, 3/1) displaying a core of red (10R, 4/6) in the profile. Only one or possibly two vessels are represented, whose forms are not known.

The second type includes six sherds, all possibly from the same shallow dish. The body is a coarse reddish yellow (5YR, 7/4) with inclusions of pyrite, micaceous flecks and fine black particles which may be temper. The interior of the dish is covered with a thin watery yellow glaze (2.5Y, 7/4) and has a painted linear decoration around the rim (dark reddish gray, 10R, 3/1). Other specimens of this ware have not been located.

Common Earthenware

Two major types of common earthenware make up the bulk of the ceramic assemblage. There is a wide degree of variation within the major types, and it may be possible to link such features as quantity or coarseness of temper to specific design motifs when more research is conducted. These major types are Kota Cina sand-tempered and Kota Cina shell-tempered.

Kota Cina Sand-tempered Pottery (see drawings, nos. 1-49, 51-52, 54-60, 73-79, 86.

This type comprises about two-thirds of the common earthenware sherds. Varieties may be distinguished on the basis of surface treatment and manufacturing technique. The well-levigated paste is composed of a fine clay with numerous flecks of mica and lesser amounts of pyrite. The paste has been tempered with sand which varies from uniformly fine in some vessels to a mixture of fine and coarse particles in others. This may reflect the care of the individual potter in separating the sand used for temper more than the utilization of different sources of sand; further analysis may clarify this point.[17]

Interiors of body sherds often show a dark gray core, with outer gradiations of light yellow or gray. Red cores also occur.

Vessels are mainly large cooking pots. The well-formed rims indicate the use of a slow wheel. Most vessels are carinated with flanges projecting outward two to four cm. from the inner lips. Interior surfaces below the rim show numerous small concavities which indicate the use of a plain wooden paddle and a stone anvil on these areas of

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[17] McKinnon has begun research on this subject, and believes that differences in sources of sand temper may in fact be present, based on preliminary results (McKinnon: Personal Communication).

the pots.[18] Diameters range from 25 to 49 cm., with most specimens clustering around 40 cm. Heights average 8 to 10 cm.

The slip is mainly in the 2.5YR range of color. Many of these pots have black smudges on the inside and outside of the base. In numerous instances the slip has flaked off, indicating the possible exposure to cooking fires. Other decoration of these vessels is limited to concentric rings incised above the carination on the exterior of the body and on the top and outer lips of the rims. The outer edges of about 10% of the rims are scalloped. (See drawings 6, 10, 18, 19, 22).

These vessels are very similar to the most common vessels at Arikamedu.[19] This similarity may be an indication of similarity of form in utilitarian vessels over a long period in the northern and eastern Indian Ocean. Until more utilitarian ware from Southeast Asia is described, the closest parallel to this type of Kota Cina pottery is in south India.

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[18] The paddle method of production is a simple one; the pot is beaten on the exterior with a flat piece of wood, or paddle, which may be wrapped with cord, carved or left plain. On the inside of the vessel, opposite the point which is being beaten, a stone or "anvil" is held to help absorb the shock of the beating.

[19] Compare especially type 24, numbers 24g-24v; type 93, figure 32, numbers 93a, 93f; type 126a and 126b and 127b, figure 35 (Wheeler et al. 1946).

The other red-slipped form is a round or globular storage vessel or jar. Mouth diameters of this form average 12 cm. with no height estimate possible. Rims of undecorated vessels are usually simple and flared, though some are rolled (drawings 12-14, 29).

A striking form of decoration found on 63 sherds of this form consists of Old Malay or Pallava script letters incised just below the flared rim. These sherds represent six vessels. According to Drs. Hassan Ambari of the PPPPN, the letters include sa  , ya  , ka  , and ga . These letters are not arranged in words, but are purely decorative, normally forming strings of yas with other letters interspersed (see drawing 32).

The use of these letters as decoration on pottery is, as far as is known, not duplicated elsewhere in Indonesia. Chester Gorman (Personal Communication) has excavated at least one sherd of pottery from northeast Thailand which is incised with the character ya. (Both Old Malay and Thai scripts were derived from Indian writing systems.)

One pot from Calatagan, Philippines, with a character on it was discovered in a graveyard, in association with vessels dated to 1300-1500. Writing systems based on Indic script may have been introduced to the Philippines between A.D. 1200 and A.D. 1500, and are still used in central Palawan and Mindoro. Both have basic affinities to Sumatran scripts used by the Batak, Rejang and Lampung

groups (Francisco 1973).

The Kota Cina vessels of this type do not seem to have had any special uses. Some have black smudges, possibly resulting from use over cooking fires.

White-slipped Variety (drawings 33,35-40)

These vessels are tempered with fine well-sorted sand. The coarse particles sometimes found in the red-slipped vessels are largely absent. The two forms are wide-mouthed storage vessels of up to 20 cm. mouth diameter and squat pots. Again the rims seem to have been turned on a slow wheel and the bodies paddled. On the squat vessels the rims and sides seem to have been turned and then joined to the rounded bases which have been paddled. Rims are simply flared.

Unslipped variety (drawings 28, 34, 43-48, 56-60, 86)

This variety includes both cooking and storage vessels, and also small pots with a particular type of incised decoration: parallel impressions made with some instrument, perhaps a carved bamboo (see drawing 121). The vessels' rims are sometimes burnished.

The rounded bottoms of these vessels are thinner than other parts of the vessel. Anvil marks are found on some basal sherds. (See drawings 43-46.)

Two sherds of this variety have decoration consisting of raised vertical ridges. In one case the ridges were

extruded from the body, probably by scraping with the edge of a stick (drawing 30), while in the other case the ridges were appliqued and have mostly fallen off (drawing 31). Both vessels with this decoration are completely hand-built, and were small bowls. A vessel similar to drawing 30, from Kota Batu, Brunei is illustrated by B. Harrisson (1970: plate 40).

A few sherds have a painted design in red which is only faintly visible. No vessels or complete designs have been reconstructed.

A large proportion of the vessels of the unslipped variety were globular pots, with diameters at the lip of 15 to 20 cm. The exteriors were beaten with carved wooden paddles, a technique associated by Solheim with the Bau-Malay tradition. (See drawings 56-59). This tradition was first identified in Sarawak (T. Harrisson and Tweedie 1951) and is said to occur in Palawan, where it is dated to A.D. 200-300; the earliest sites are said to have been located in south China. This tradition may have appeared in Mindanao by A.D. 1000, and in Malaya by 1300 (Solheim 1964b).

Numerous carved patterns were used. In general, the Kota Cina patterns are comparable to simpler patterns from several other sites, but the more intricate ones

from various sites do not seem to match one another.[20]

Gibson-Hill has published photographs of Johor Lama earthenware, probably made during the fifteenth and sixteenth centuries. The simple paddled designs closely parallel Kota Cina (Gibson-Hill 1955: plates 8 and 9), but the complex paddled designs, such as stars, flowers and suns, are not found at Kota Cina (Gibson-Hill 1955: plate 10b).

Gibson-Hill (see especially 1955: 10b, d and l) illustrates some (purportedly) Han period sherds from China and Indochina which are interesting because some of the complex designs are more like Kota Cina than anything found in Johor. Again this may be an example of the tenacity of earthenware design in southern and Southeast Asia.

The total weight of paddle-marked sherds was determined, but data on carved vs. cord-wrapped, for the two earthenware types was not compiled. Body sherds with paddle-marks comprised 14.6% by weight of the entire earthenware assemblage, not including the fine paste ware. Plain body sherds, by comparison, comprised 45.3% of the total weight of earthenware. The remaining 40% was made up of rim sherds, and features such as spouts and handles.

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[20] The following designs from Tanjung Kubor, Sarawak, are comparable: patterns I (plate 2), II (plate 3), III (plate 4), IV and plate 6 (Solheim 1965).

This ratio can be compared with figures from two other site reports: Johor Lama (Solheim and Green 1965) and Tanjong Kubor (Solheim 1965). At Johor Lama decorated sherds made up 17% of the total sherd weight, including sherds decorated with raised ribbing (11%) and carved paddle impressions (89%). This figure is similar to the ratio of decorated to undecorated sherds from Kota Cina.[21] At the Tanjong Kubor site, of 33,500 sherds, 26,500 were impressed with carved paddles, and 3 sherds had been decorated by incising. Earthenware from Satingphra also bore "stamped or paddled decoration of the type common in the Johore River sites . . . this kind of ware is known from Pengkalan Bujang" (Lamb 1964d: heading 4).

At Kota Cina there were thirty spouted vessels of the unslipped variety, including both small pots with wide mouths and kendis. One of the small spouted pots had incised decoration beside the spout. B. Harrisson (Personal Communication) considers that the large number of spouted vessels, including kendis, at Kota Cina is much greater than would be expected in a normal Southeast

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[21] Carved paddle- and cord-wrapped paddle-impressed sherds were not distinguished in this analysis. Sherds with cord-wrapped paddle impressions were present, but no estimate of their frequency relative to carved paddle impressions is yet available. Cord-wrapped paddling is said to have been very common in Malaya, rare in Sarawak, with carved paddles having an inverse distribution (Wall 1962). Johor pottery contradicts this statement, however; carved paddle-impressed pottery was common there.

concentration of household debris of this period.

Two other ceramic forms were made from sand-tempered unslipped pottery. There are small cup-shaped objects, roughly circular, and shaped like miniature round-bottomed bowls ranging from 2 to 10 cm. diameter. These small plain objects, twelve of which were found at A, are still used in north Sumatra for several purposes, including lamps and crucibles in gold-smithing, by both Chinese and Karo Batak (see below, section on industrial remains).[22]

A second group of objects of unslipped pottery was not weighed with this group. These were large thick fragments of clay which may have been used as stoves. None could be reconstructed, but they appear to have been similar to various objects reported from other sites. Two earthenware stoves were found in the Johor Lama fort (Solheim and Green 1965: 21). Unfortunately, the illustrations which were to have accompanied the 1965 article were not published, and apparently have been lost (Solheim and Green 1965: iii). Pottery stoves were still made very recently by coastal groups in the southern Philippines, though one author believes they "derive from Chinese

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[22] One similar object was excavated in 1977 just outside the southwest corner of the brick structure at point C. This one, however, had a flat base and vertical sides, and an indentation in the lip. Bronson and Dales excavated an identical object from a site in Thailand, which came from a level dated to A.D. 450-600 and was described as a lamp (Bronson and Dales 1973: 41, figure 13, top center).

sources" (Spoehr 1973: 118, 133; figures 67-70). Four examples from Komering Hilir, south Sumatra, are said to be similar to sherds from Oc-eo (Malleret 1960: II, Planches, lxi).

Damar-glazed variety

Two sherds of typical sand-tempered paste bear traces of black material on their exteriors which may have been produced by the technique of damar glazing. This glaze is produced by coating pots just after firing with resin; the technique is known from prehistoric ("Iron Age") sites on the Malay Peninsula and years ago was still used in Borneo (Evans 1955). One sherd was found at A; the other, representing a small bowl, was a surface find near J.

Shell-tempered vessels (drawings 50, 53-55, 61-72)

This type can be treated as a single group without division into varieties. No slip is used on any of the vessels, and surface decoration is limited to use of carved paddles. The paste is a very pale white, containing much coarse sand temper, mixed with laterite or ground potsherds, and as the platey appearance of the sherd profiles indicates, some ground shell as well (Chester Gorman: Personal Communication). Flecks of mica and pyrite are commonly found.

Rims are wheel-formed, bodies decorated with numerous

carved-paddle-impressed patterns, or possibly stamps, some very complex. Vessel bodies normally do not exceed 4 mm. thickness, surprisingly thin considering the coarseness of the material used. Nearly all vessels appear to have been round-bottomed jars with paddled designs. Carinated bodies are common, occurring in 25% of the vessels of this ware. There are also some knobs which were probably attached to lids.

This ware was also used for two other forms. One may have been a second type of stove, though this is not definite. Whereas the stoves of sand-tempered earthenware seem to have been roughly bucket-shaped, like charcoal stoves still used by street vendors in Southeast Asia, the objects of shell-tempered ware appear to have been relatively flat with sides raised only 5 cm. above the interior bottom. However one fragment includes a projection 17 cm. high and may have formed a support for pots.

One other enigmatic object of this ware was partly reconstructed (drawing 53). It seems to have been used for an incense burner, judging from a coating of resinous soot which encrusted one surface. No such deposits of resinous soot were discovered on any other sherds.

Historic and Ethnographic Data on Sumatran Pottery Manufacture

Unfortunately there can be no comparison of Kota Cina earthenware with published data from other Sumatran

archaeological sites. McKinnon's description of some cord-marked sherds found on the surface of the Wampu River banks, in association with some flake tools, is the only other report of Sumatran earthenware yet to appear (McKinnon 1974). No description of earthenwares excavated in Palembang in 1974 by Bronson is yet available, and Bronson believed the sites he excavated to be no earlier than the fourteenth century (Bronson 1975, Bronson and Wisseman, in press). The discovery and analysis of earthenware from other archaeological contexts in Sumatra is an important goal for future research.

In the absence of archaeological data, it is informative to review the little which is known of recent Sumatran pottery production. No earthenware is now made in the Kota Cina area. However, ceramic roof tiles were once produced 1.5 kilometers away, at a place called Tanah Priok ("Clay-pot soil") which is reached from Kota Cina by rowboat. A survey of that place in 1977 produced a few earthenware sherds, but in association with nineteenth and early twentieth century porcelain. There was no evidence of earlier exploitation of the local clay. The paste of earthenware sherds found here bears a general resemblance to the paste of Kota Cina sherds, but there is no proof that Tanah Priok was in fact a source of clay for ancient potters. On the other hand, if the pottery was not fired here but near the settlement, such

evidence might be difficult to detect.

Flower pots were made in 1977 by a villager west of Medan, in the Sunggal district. The clay was brought 1 kilometer from the Deli River bank by bicycle and tempered with sand dug from a pit in the potter's back yard. Shaping took place on a slow wheel spun by hand. Firing was done in the open air, using bamboo shavings for fuel. The potter, although a Karo, learned his technique from a Javanese immigrant, so these techniques are not necessarily those used by early local potters.

Several other nearby sources of pottery clay are known, mostly on the banks of the Deli River near Medan. These are now exploited mainly by children for occasional school handicraft projects.

Two short nineteenth-century reports describe pottery found in Tapanuli District, near Padang Lawas, north Sumatra (Pleyte 1891; van Hasselt 1893). The shapes of the vessels described do not resemble any of the Kota Cina sherds. Paddle-marked pots were reportedly made in Padang Lawas in the early twentieth century; the potters were women. The pots were made of a light gray clay mixed with ashes of rice stalks in a 2:1 ratio (Loeber 1915: 69). In 1974 some pottery was still made in Padang Lawas (Bronson and Wisseman 1974: 88).

Highland groups in north Sumatra in the early 1900s also imported earthenware pottery from coastal people.

The Batak depended on the Malays of Batu Bara for imported porcelain as well as earthenware ceremonial incense burners (Barlett 1973: 155-157). Solheim has published an illustration of a similar incense burner (Solheim 1967: plate 5, vessel c).

Imported porcelain had several religious functions among the Asahan Batak whom Bartlett observed. Graves of chiefs were covered with Chinese plates, and remains of human sacrifices were placed in large Chinese stoneware jars. Porcelain was also a necessary appurtenance of the datoe in some shamanistic ceremonies (Bartlett 1973: 16-17, 47, 147 note 22, plate XIII).

Bartlett also observed that,

> Some few really very beautiful pieces of Chinese porcelain reached the Batak by trade long prior to the time of their intercourse with Europeans . . . . Through the intermediacy of the Malays the Batak secured porcelain which they prized so highly. . . . In recent years [i.e. before the 1920s] old Chinese porcelain has been rather thoroughly cleaned out of the Batak lands by Atjehnese and Malay peddlers, to supply a lively demand for old china from European residents and tourists. (Bartlett 1973: 147, note 22)

Summary

This concludes the description of the Kota Cina ceramic assemblage which McKinnon excavated at A. This analysis is not completed. The data presented here derive from a preliminary analysis of the wealth of material (nearly three quarters of a ton) obtained from this pit. Very few comparisons with wares from other sites in

Southeast Asia can yet be made. Future excavations will undoubtedly clarify the course of development of local Sumatran pottery as well as the distribution of imported wares, though as Bartlett indicates, the sale to foreigners of anciently imported pottery has been going on for over 50 years, and much data has been irretrievably lost.

Bones and Stones

A valuable study of the subsistence pattern of the Kota Cina phase settlement can be conducted on the basis of the bones and shells found in the excavations at A. Unfortunately, this research has not been initiated. Bones were well preserved in the site, and fish vertebrae, turtle cartilage, and the ubiquitous molluscan remains are mixed with the bones of large and small land animals. Bones from the pit weighed 207 kilograms.

Stones also made up a large proportion of the deposit by weight, 343 kilograms. All were brought to the site by human activity. In no case is there any indication that these stones were shaped to form tools. Most are large amorphous rocks of two or three kilos' weight.

Types of rock present include red sandstone, fossiliferous limestone, tuffaceous sandstone, round smooth gray pebbles of andesite, gray chunks of basalt, pyroxene andesite, chalcedony (which is used by highland villagers to strike sparks for lighting tinder), slate, hornblende, ophyolite, and two other interesting varieties,

quartz and a phosphatic rock which has nearly metamorphosed to kaolin. These soft stones leave red or white streaks when rubbed against a harder surface, and have in fact been used for this purpose, judging from the fact that numerous pieces of this mineral are long, thin and pointed at one end, a convenient form for making marks.

The quartz is interesting because of the possible import of mercury to the site and other evidence of gold working. One of the uses of mercury mentioned by Treloar is in the extraction of gold from quartz. No gold-bearing quartz fragments were noticed, but that does not eliminate the working of gold as a possible motive for transporting the rock from the mountains to the coast.

It is not clear why the other rocks were carried to the site from thirty or more kilometers upriver. Again, expert analysis of the material may resolve this question.

Two granite pillars, roughly one meter tall and pyramidal in shape, are also found on the site, near points F and H. The reason for their presence is unknown. The labor involved in their transport must have been quite arduous.

Glass

Numerous fragments of very thin glass were found in the excavation at A. The bases and neck fragments, probably from small bottles or vials, closely resemble

material excavated in Kedah (Lamb 1961: 56-63), and surface finds in southern Thailand. The fragments vary in color from dark blue to pale green or yellow. The glass from Kedah was probably produced in the Arab countries of the Near East. The Kota Cina glass has been sent to the Corning Glass Works for analysis and comparison with the Kedah material previously analyzed by Corning. Arabic glass, although common in the Kedah and Mergui areas of the Malay Peninsula, is not often found in Bornean sites (T. Harrisson and O'Connor 1964).

Damar

A large number of white lumps of organic resin were found in the Kota Cina phase strata. The lumps usually weigh no more than a gram or two, but the volume of resin from the 110-square-meter excavation totalled 20 liters. These resinous lumps represent a commodity which has figured prominently in a reconstruction of early Indonesian commerce with China (Wolters 1967), so it is worth noting that these resins are preserved in archaeological sites.

These resins can be obtained from trees of the Dipterocarpaceae, with trees of the Burseraceae and Guttiferae yielding a similar product (Burkill 1966: I, 768). Their uses range from boat caulking, to medicinal preparations, to burning for light.

Damar is a collective Malay/Indonesian word for these resins. Malays recognize many different grades and types

of damar. Resins have been found in neolithic sites in the Malay Peninsula (Dunn 1975: 126), south Kedah (Lamb 1961: 36), a fifteenth-century burial in Sarawak (B. Harrisson and Shariffudin 1969), and Oc-eo.

Malleret noted that the resins were found in several areas of Oc-eo and speculated that they might have been used for boat caulking, since damar was found in large concentrations near the central canal. He identified resins of the species Hopea odorata Roxb., found in Cambodia; Shorea thorelli Pierre, common in the Oc-eo area today, and used for lighting; and Shorea obtusa Wall., the wood of which was used for at least one pillar preserved in the site. Malleret also noted the remains of the resinous species Anisoptera cochinchinensis Pierre, Calophyllum inophyllum Linn. (whose oil can be used for lighting and the resin for medicine) and possibly Anisoptera sepulchrum and Dyospyros sylvanica (Malleret 1960: II, 85-87).

This is again a subject for specialist study. The Kota Cina resins may prove to be susceptible to the type of analysis which Malleret conducted, but which has not yet been performed for other Southeast Asian sites.

Evidence for Metal-Working

Several types of remains come under this heading. First, several large and many small pieces of quartz rock, which in Sumatra sometimes contains gold, were excavated

in the assemblage at A. The nearest possible source for the quartz and the small bits of gold found at Kota Cina is fifty kilometers west of Medan, on the Bohorok River.

The Bohorok River area was connected with gold by Anderson, who noted in 1823 that, "The mines, if they may be so called, belong to Wang Pangei Lakkawa, a Malay chief" (Anderson 1971: 248). Anderson also noted that Alas people from the Singkel interior brought gold to trade for cloth in Serdang, just south of Deli.

Gold also occurs in the Sungai Pengkuruan, a tributary of the Bohorok (Hengeveld 1921: 161). This is alluvial gold, however, collected in streams after heavy rain. Schadee (1918: 34) and Husny (n.d.: 11) confirm that the Bohorok River valley yields gold, but they supply no details.

Gold fragments, in the form of beads and gold leaf, are occasionally discovered in various parts of Kota Cina. McKinnon also excavated some gold leaf in the small shrine at C. Trace element analysis which could demonstrate the precise origin of the gold objects from Kota Cina has not yet been performed.

Several of the round clay objects excavated at Kota Cina were shown to a retired Chinese goldsmith in Medan, who confirmed that Chinese goldsmiths still use similar receptacles to melt gold. In the bottom of one receptacle a green stain existed, and the goldsmith, after examining the stain under magnification, identified it as the result

of the use of borax as a flux during the melting of gold, another traditional Chinese practice.

The goldsmith also inspected a black fine-grained stone found at Kota Cina. This stone, he confirmed, could have been a touchstone, traditionally used to test the purity of gold. The metal is rubbed lightly over the black stone, producing a streak whose color can be compared with a sample of known assay. An acid test can also be performed on the streak.

Two small molds for the production of metal objects have been discovered at Kota Cina, one in the excavation at A and one as a surface find. The first was a dark green stone mold for making small rings. The second was used to make a triangular ornament (McKinnon 1974: 81), the shape and decoration of which are very similar to a silver caping (pubic cover) from Riau (Jasper and Pirngadie 1927: 217, number 318).

Finally, the large number of brittle-ware jars at Kota Cina suggest that gold may have been worked industrially here. The jars may have been used to transport mercury, which could have been used to separate gold from quartz. Mercury easily combines with gold. The mercury can be mixed with pulverized gold-bearing quartz, then separated from the rockdust and heated. The mercury will evaporate and leave behind a gold residue.

Together, these pieces of evidence lend strong support

to the hypothesis that gold was worked at Kota Cina. Identification of the gold fragments with source areas would be a vital supplementary test of this hypothesis. Should fragments of worked gold from Kota Cina match the composition of ore from Bohorok or other nearby Sumatran veins, this would be nearly conclusive proof that a gold working artisan or artisans once worked at Kota Cina.

Other Metals

McKinnon discovered iron slag in the pit at A (McKinnon 1974: 80). At least some of the material so described may be lumps of laterite, but some appear to be remains of iron smelting. Iron fragments, probably badly corroded remains of finished objects, have also been excavated at Kota Cina. None of the smelting apparatus which Harrisson and O'Connor found in their excavations of the fourteenth-century iron-working center in the Sarawak River delta have been identified at Kota Cina, however (T. Harrisson and O'Connor 1969).

Some metal fragments, and some pieces of slag, are noticeably heavier than the other objects, and are not red or brown but rather gray in color. One piece of metal found on the surface at Kota Cina has been analyzed as lead: a circular object 4.5 cm. in diameter and 2.5 cm. thick. A solid lead ingot was also found by a farmer (McKinnon 1974: 80).

The ingot was shaped like a truncated pyramid. Similar ingots, made of tin, have been found in Malacca town (B.A.V. Peacock 1958: plate 12; Shaw and Ali 1968: 112, plate 2, number 2) and Perak (Sieveking 1956: 209). A stone mold for making such ingots has come from Negeri Sembilan (B.A.V. Peacock 1958: plate 13).

Numerous fragments of bronze have also come from Kota Cina. The major types of object represented include bronze coins, and fragments of very corroded and fragmentary mirrors which resemble common Chinese types.

The coins are found in very large numbers, both in the excavations and as surface finds. McKinnon has dated 243 examples, with the following distribution.

TABLE 2

Chinese:	Sui (581-618)	4
	T'ang (618-906)	14
	Five Dynasties (951-960) . . .	2
	Northern Sung (960-1126) . . .	203
	Southern Sung (1127-1279). . .	11
	Ch'n Lung	2
	Total:	236
Sinhalese:	Sahasa Malla (1200-1202) . . .	7

This is a 10% sample of all coins recovered from the

excavation. Some of the coins were excavated fused together in sausage-like shapes. They are pierced in the centers and meant to be strung, which probably accounts for this phenomenon. At least one hoard of coins was found by a villager in a metal casket, but the hoard was dispersed before it could be examined. Coins occur as surface finds in all areas of the site in small groups, and may have been used as a medium of exchange in Kota Cina.[23]

This density of bronze coins has not been paralleled at any other Indonesian site yet described. In excavations at Ratu Baka, central Java, for instance, an area with both architectural and habitation remains thought to have been inhabited from A.D. 800 to about 1400 yielded only one fragmentary Chinese coin, undatable (Asmar and Bronson 1973: 47).

The site at Kota Batu, Brunei, is said to have been inhabited for a thousand years, from the seventh to the seventeenth century, and to have been a commercial and political center. However, only 36 Chinese and 45 Islamic coins have been recorded from this site, of which two are T'ang, 27 Sung, and the rest early Ming (B. Harrisson 1970: 115).

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[23] The small number of Yuan coins does not necessarily mean that a change in trading patterns occurred, or that trade slackened at Kota Cina. Very few copper coins were minted in China during the Yuan period (Kuwabara 1928: 25 note 23).

No Chinese coins have been reported from the Pengkalan Bujang, Kedah site, but a large number of beads was discovered. There are indications that beads were manufactured on the site, using imported glass as the raw material (Lamb 1961). Beads were used as a means of exchange in various parts of Southeast Asia until recently. Very few beads were found at Kota Cina, although some appeared at other Deli River valley sites.

Historical sources frequently mention the export of copper coins from China to Southeast Asian countries. In fact, "Copper cash appear to have been in great demand in the Archipelago" (Hirth and Rockhill 1911: 81 note 16). A mission from Srivijaya (Jambi) in 1079 returned from China with 64,000 strings of cash. In 1433 Ma Huan noted that copper cash were used in Palembang, Java, and Lamri (north Sumatra) (Mills 1970: 45-46). In 1411 the Malacca ruler sent a mission to China and returned with 1600 strings of cash and also paper money (Shaw and Ali 1968: 93).[24]

We should therefore expect Chinese copper coins to be common in sites of Sumatran emporia; but this does not appear to be the case. There may be several reasons for

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[24] Caches of Chinese coins have been found in central Java (30 coins), south India, Zanzibar and Somalia (Kuwabara 1928: 25, note 33). Most of the Zanzibar coins (176 total) were of northern Sung date, with a range between early T'ang and late southern Sung (Freeman-Grenville 1957: 164-165).

this descrepancy between expectation and observation. First, Chinese coins retained their value over long periods, so old coins tended to remain in circulation. Also, coins may have been melted for their metallic content. China exported copper to Southeast Asian countries, and 64,000 strings of coins would form a sizeable quantity of copper. Copper ore occurs in a number of places in Sumatra, particularly in the area just east of Lake Singkarak, central Sumatra, but this does not appear to have slackened the demand for copper imports (van Bemmelen 1949: II, 148).

One indication that coins may have been sometimes sought for their metallic content is the fact that Ma Huan, who visited Malacca in 1413, just two years after the Malacca mission to China received 2600 strings of cash, noted that Malacca's currency was locally smelted tin. In Malacca tin coins were used for small denominations and solid tin ingots for large transactions (Shaw and Ali 1968: 94). In Lombok, east of Java, British and Dutch coins were a commodity which as late as 1894 the islanders purchased with traditional means of exchange and used to make metal ornaments and art objects (van der Kraan 1975: 99).

No other site in Sumatra, including those visited in 1977, has yielded large quantities of Chinese coins. The same generalization is true of all archaeological sites in the rest of Indonesia.

Comparison of Point A Excavation and Surface Survey

Surface remains are found on areas of the site where recent residents have dug wells and ditches, worked the soil for agricultural purposes, or otherwise disturbed the lower artifact-bearing layer of the soil. There are no erosional features which can aid the investigator in this respect. Interpretation of surface finds is limited by the lack of proof that any objects found did originate in an early stratum, rather than having been recently deposited at the place of discovery. Also, the distribution of finds is determined by the activities of the present population and is not a reliable indication of site boundaries and relative densities of artifacts below the surface of the ground. Where wells and ditches exist, their profiles can be cleared and these difficulties overcome to some extent.

The area of Kota Cina phase surface remains mapped in 1977 covered approximately 50.4 hectares. A few specific areas of the site were studied in detail. These areas were chosen on the basis of what we judged to be their potential for yielding information regarding extent and distribution of Kota Cina-phase artifacts, and not by an elaborate sampling design.

At J a farmer had recently planted bananas in a previously undisturbed part of the site. The farmer

reported an unusual concentration of beads, and although a superficial inspection revealed no beads, a large number of Kota Cina phase sherds were found, suggesting that a test pit would yield a ceramic assemblage which could be compared to that from the excavation at A. This area was near the complex of brick foundations at K, and had not been previously investigated for habitation remains.

A 2x2 meter pit was excavated, and a list of the artifacts found in the pit is found in Appendix 2. The excavation was 200 meters south of that at A, but no major differences were observed between the ceramics in the two assemblages. The main difference between the two assemblages was that shellfish remains were completely absent from the pit at J, although animal bones were common. The density of other artifacts, including Chinese coins, was comparable to that at A.

In a soil profile exposed at the corner of a disused, partly overgrown drainage ditch, 150 meters east of J, a number of pottery fragments could be seen. We cleared two-meter long sections of the ditch profile at 10-meter intervals in order to plot the nature and distribution of artifacts in this sector of the site (at point I).

At the northernmost corner of the ditch, 110 cm. deep, mollusc shells appeared in association with animal bones and sherds of porcelain, earthenware, stoneware, and fine paste ware. The lens of habitation debris was 15 cm.

thick, and rested on a layer of medium coarse sand.

The profile between nine and eleven meters south of this corner was cleared, and a habitation layer discovered at 110 cm. depth. The range of artifacts here included Earthenware, porcelain, stoneware, and fine paste ware sherds, a lump of metallic slag, and a Chinese bronze coin. This deposit extended to a depth of 120 cm. Below this stratum, in a matrix of gray clay, a stratum of silty sand was encountered, 30 cm. thick; this sand layer contained two earthenware sherds and several small brick fragments. The sand became purer with depth, and contained intercalating lenses of micaceous black sand, pure black ferrous sand, and coarser lenses with large quartzite particles. This is identical to the creekside sequence noted in the wells at L and M.

The habitation layer could be found in the drainage ditch profile for a distance of 120 meters to the south. Coins, sherds of types found in the excavation at A, bones, stones, and damar fragments were found in all profiles cleared. The only class of remains with uneven distribution was that of mollusc shell. Shells occurred only in intermittent pockets. In general, the further south samples were taken, the less frequently were mollusc shells found.

Surface survey further south of this point indicated a continuation of the pattern of sporadic Kota Cina phase

artifacts. The well at N previously described was consistent with this impression. Several nearly homogeneous pockets of Kota Cina phase artifacts appeared in the profile of that well, but there was no evidence of a continuous stratum of habitation debris.

One small section of the well face contained 37 fragments of green and blue celadon, weighing 440 grams and representing a number of different vessels. Few pieces were found to fit together. Another pocket contained 3 fragments (70 grams) of brown porcelain, and the base of a white bowl with underglaze combed design. Stoneware and earthenware were found in another pocket, together with some shells and bones.

Point P was the southernmost point where any Kota Cina phase objects were found. A refuse pit had been dug beside a path, and in the back dirt some shells and sherds were visible. Profile clearing revealed a few Kota Cina phase artifacts, including 26 earthenware sherds, three sherds of porcelain, plus stoneware and fine paste ware. A metallic band, 8 cm. in circumference, which might have been of lead or tin, was also found.

Beyond the southern boundary of the Kota Cina phase surface remains the soil undergoes a change to a more sandy consistency. No sherds were found in or beyond this stretch of sandy soil.

Summary: Kota Cina Phase Settlement

The site of Kota Cina covers 50.4 hectares. The heaviest concentration of habitation debris is at the northern edge of the area, with remains sporadic near the southern edge. Three areas of ruined brick foundations are speced along the northwestern fringe of the site; beyond these the land drops slightly to padi fields and swamp. These brick ruins were religious complexes, and objects found in association with them include both Buddha statues and Hindu cult objects.

All evidence indicates that the site was inhabited for a period of about 200 years or possibly less, during the twelfth to fourteenth centuries. Two radiocarbon dates, dated coins, and stylistic dating of imported pottery and statuary all support this conclusion.

The settlement was near the Straits of Malacca, but a fringe of tidal swamp probably screened it from the open water. Subsistence resources included shellfish and other marine animals, and some land animals were eaten as well. There is no evidence of early agricultural activity near the site. Wet rice cultivation is now conducted on low-lying ground which was probably too marshy for agriculture during the Kota Cina phase. Grain was probably imported from elsewhere.

Attractions of this site were its protected coastal

location, the source of fresh water from a small stream which formed the southeastern boundary of the settlement, and possibly access to the interior via the rivers which emptied into the Belawan estuary. One of these was the Deli River, later the center of the Sultanate of Deli, though the location of the mouth of the Deli in the Kota Cina phase is unknown.

Excavation of the site, first by McKinnon and later by the PPPPN, furnished evidence that certain commodities from Sumatra's hinterland were brought here: tree resins, stone, probably gold and perhaps rice. Manufacturing on the site may have included gold and possibly iron working, and pottery was probably made here or close by.

The inhabitants of Kota Cina acquired a large quantity of Chinese ceramics and Near Eastern glassware. It is logical to assume that some of the tree resins from the hinterlands, along with other commodities from the hinterland whose traces have not survived, were brought here to be exchanged for foreign items. Inhabitants of Kota Cina undoubtedly carried on intercourse with other nodes on a commercial network along which luxury goods, including both east and west China products, were transported over long distances.

Chinese copper coins performed some function in the internal economy of Kota Cina. No copper coins have been found on sites in Deli's hinterland, except for one coin

from Deli Tua. The conclusion which we may derive is that, although some portion of Kota Cina's economy was dependent on exchange with inland groups, this exchange did not entail the use of copper coins as currency; coins may have gone into the highlands only to be melted down and recast into other forms, as ethnographic evidence demonstrates.

Kota Cina was a focus of religious as well as economic activity. The right to exercise political control over this center would have been a major concern of the groups which traded here, for two reasons. First, judging from historical and ethnographic evidence, the coastal groups could use their geographically intermediate position between highland producers and distant emporia to control the circulation of imported items, including both basic necessities such as salt and iron, and others which were used as symbols of elite status, to hinterland groups. Highland and lowland groups may have exchanged the forest products and imported goods through a system of rituals, couched in terms of ceremonial obligations, rather than what is normally termed a market system of exchange.

Some of the elite goods, including ceramics, which were transported inland along the rivers near Kota Cina were probably sent as gifts for leaders of hinterland groups. If this reconstruction is true, we can attempt to recover data on political as well as economic relationships

between geographical areas by studying the distribution of imported ceramics in Sumatran sites. Successful surface survey in the thick vegetation of this region depends to a large extent on activities of the modern population, which expose artifacts discarded by previous settlers. The survey method may be unable to detect sites if the soil of old settlements is not now in use, since the dominant geomorphic porcess in the coastal plain is deposition rather than erosion.

Such a system, if applied to a large enough area, ought to suggest a general pattern. In the next section I describe the distribution of elite imported goods, i.e. Chinese and other ceramics in the Deli River valley. Unfortunately no excavations were performed at the other sites, and future excavation will eventually clarify and probably revise the conclusions formed on the basis of the 1977 survey.

Sites of the Deli Hinterland

Kota Bangun

Ten kilometers up the Deli River from Belawan begins a nearly continuous stretch of villages which extends along the east bank of the river. The bank is more and more densely populated and harbors more businesses and industrial establishments as one approaches the center of Medan. The first of the villages, moving inland, is

Kota Bangun.

When in 1970-71 a drainage ditch was dug about 150 meters west of the river, several groups of intact celadon vessels came to light (Milner et al.: in press). A survey of this area in 1977 produced more fragments of Sung and Yuan porcelain and a number of sherds of earthenware in vegetable fields between the drainage ditch and the river. The sherds were very fragmentary because of the intensive cultivation of the land during the last few years, but the Chinese wares seem to be of about the same period as those at Kota Cina.

Kota Jawa

Two kilometers further upriver is the modern village of Tanjung Mulia. The name Kota Jawa, which several nineteenth-century sources apply to this area, is no longer used by the majority of present inhabitants, who are largely recent immigrants (ironically from Java).

Anderson in 1823 met the Sultan of Deli here during a battle which the Sultan was waging against the Raja of Pulau Berayan. The combatants had set up wooden palisades, but Anderson also saw remains of an older structure, consisting of a bank and ditch which Anderson calls "a regular fortification" presumably to contrast it with the kubu of timber erected by the nineteenth century forces (Anderson 1971: 9, 28). The fort was said to have been erected by "Javanese colonists" several centuries earlier.

The name Kota Jawa means "Javanese fortified settlement."

Anderson (1971: 293-294) gives the circumference of the old fort as 1 to 1 1/4 miles. He does not describe the height of the walls, but an embankment here was still three meters high in 1918 (Schadee 1918: 29 note 1).

The Hikajat Radja-Radja Negeri Deli, discussed in an earlier chapter, mentions a fort "now called Kota Jawa" (Hikajat, page 193) which was built by a ruler of Deli who had left the country and stayed for a long time in Java. While away, he was replaced by a Raja Karau, who was a tyrant. The rightful ruler eventually returned to Deli, built the fort, and drove the Raja Karau to Percut, where the tyrant was captured and executed.

Neither of these traditions can be proven on the basis of historical or archaeological evidence now available. The Javanese element in both stories may be significant or fanciful. Haru was mentioned as a country which the fourteenth-century east Javanese ruler of Majapahit wished to conquer, and it is possible that Javanese soldiers did come to north Sumatra and construct fortifications such as this.

The only features found in 1977 which might be remnants of a fort were an earthen embankment 100 meters long and 1.5 meters high, and a shallow depression on the eastern side of the bank, probably part of the ditch mentioned by Anderson. Village residents say the bank

was once much longer, but in recent years has been levelled to create space for houses and agricultural plots. The remaining section of the wall has been protected from similar effacement only by the numerous Islamic graves on its top and sides.

This solitary segment is now 400 meters east of the Deli River. Whether the fort was originally circular, or open on the side toward the river, is unclear from Anderson's description and its present condition. Villagers' accounts give this impression, however. The village of Tanjung Mulia is situated at a bend of the river, and the steep 5-meter high bank may have afforded sufficient protection on that side.

A second circumstance favoring the choice of this site for the fort's construction may have been the suitability of nearby land for agriculture. There may have been little dry land further north of this spot 600 years ago. Modern settlement further north and away from the river is still sparse; that area is marshy and subject to flooding.

If this was a fortified Javanese center, availability of agricultural land would have been important. Javanese military expeditions were sometimes accompanied by contingents of farmers whose duty it was to grow food for the soldiers. An example of such a procedure is given for Mataram's siege of Banten in the 1660s (Schrieke 1966:

I, 61). No identifiably Javanese artifacts have been reported from Kota Jawa, however, and the Javanese hypothesis remains only a possibility until further research can establish whether such artifacts are in fact present.

The area between the embankment and the river has yielded sherds of Yuan and Ming ceramics, including celadons, blue and white ware and miscellaneous stonewares (Milner et al. in press). Thus the site may have been settled as early as the thirteenth or fourteenth century. The Nagarakrtagama, a Javanese source which mentions Haru, is a fourteenth-century document.

The PPPPN team of which I was a member surveyed the same region in 1977, and noted several specific locations where early sherd material was found. On the site map (map 8A) these places are denoted A, B, and C. At A a well had recently been dug, and a number of sherds appeared in the backdirt. These included blue and white glazed wares of early Ming type, and earthenware. At B workers digging foundations for a warehouse turned up a number of porcelain, stoneware and earthenware sherds. Conditions did not permit inspection of soil profiles at these locations.

At Area C, a schoolyard, we picked up numerous sherds. Interestingly, several sherds were of Sung dynasty wares not found at Kota Cina. One of these is

a fragment of spotted Ch'ing-pai,[25] there is also a group of three fragments of a small green-glazed two-eared vessel commonly found in Sulawesi (McKinnon: Personal Communication) but not yet discovered at Kota Cina.

Further sporadic surface finds were made along the paths of the village, usually near houses where some soil disturbance had occurred. Remains were, however, not as thickly distributed as at Kota Cina.

In addition to Chinese porcelain, four fragments of northern Thai glazed pottery were also found, probably originating from the Sawankhalok kilns. The northern Thai kilns became active in the mid-1300s, and exported great amounts of pottery for about 150 years, competing with the south China porcelain and stoneware kilns. The best Sawankhalok pieces are said to come from Philippines and Indonesia, not Thailand, "which suggests that the Thais selected their best wares for these important markets" (Frasche 1976: 46).

Among the earthenwares, one sherd, similar to the brittle variety of fine paste ware of Kota Cina, was found. The other earthenwares of Kota Jawa fall into two types. The first comprises very thin, friable ware with much sand

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[25] Examples of spotted Ch'ing-pai are described and illustrated in C. and L. Locsin (1967: 94-97). This type is rare in the Santa Ana site, in Manila, where it is associated with early blue and white wares. The Locsins report that two pieces are in an Indonesian private collection, but give no other information regarding their provenience.

temper. The paste has fired orange to tan in color, with numerous flecks of mica and large white inclusions of an undetermined mineral. Only one piece included a paddle-impressed design, of parallel ridges.

The second type was made of a paste with less sand temper, and had thicker body walls (see drawings 112, 113). Most of the sherds of this type are very light in color, and in one specimen reached a nearly white hue. Several specimens bore traces of dark red slip.

Sherds were too small to reconstruct any vessel forms. Rims of bowls or basins seem to be present.

One other piece of earthenware showed definite parallels to the Kota Cina assemblage. This was a large fragment of shell-tempered type from one of the stove-like objects, and includes most of one of the projecting supports for cooking vessels. The only difference between this sherd and many from Kota Cina is the use of less shell temper, leading to a less "platey" appearance. The color, thickness and other aspects of the sherd are identical to those of Kota Cina specimens.

The datable pre-modern sherds from Kota Jawa are largely of the fourteenth and fifteenth centuries, with a few Sung specimens as noted. This is no certain indication of the date at which these sherds were deposited at the site; it is necessary to keep constantly in mind the frequency with which Chinese ceramics were kept for

centuries in Southeast Asia as heirlooms. Similarly there is no proof that these sherds are contemporary with the construction of the embankment, which may have been built at another time by people who did not possess Chinese ceramics. A few Acehnese coins are said to have been found in excavations in the bank, but the dates of the coins are not given (Schadee 1918: 29). In any case the relationship of the coins to the wall is uncertain.

Sites of other, possibly ancient, earthen forts are not uncommon in Sumatra. Similar forts are known from south Sumatra (Pugung Raharjo, 500 meters square; Bawang, approximately the same size; Mambang, same size), west Sumatra (Rao, 150 by 500 meters; Kubu, 300 meters square) and Riau (Muara Takus, 1600 by 800 meters). Of these, two are "post-Islamic" (i.e., fourteenth to fifteenth centuries at the earliest), and three pre-Islamic but with no proof of settlement inside the fort. There is evidence of pre-Islamic occupation only at Pugung Raharjo (Bronson et al. n.d.: 38). Kota Jawa falls into the same category as Pugung Raharjo.

Historians have mentioned several other forts in north Sumatra which archaeologists have not studied. A benteng is said to exist ten kilometers west of Kampung Sisirah, up the Besitang River, where Acehnese attacks took place several times in the sixteenth century. The walls are said to be two meters high (Husny n.d.: 8).

Alkemade reports two old forts in the Aru Bay hinterland, on the Kundur and Serang Jaya rivers (Alkemade 1889: 60).

Further south, on the Batang Kuantan River, remains of two bentengs are located at Kota Tanah and Kota Kayu, near Japura. Local traditions assert that the forts and irrigation ditches in the area were the work of Javanese soldiers (Obdeijn 1941: 215).

The Malay meaning of Kota ("fortified settlement") perhaps led Bronson to believe that a wall might exist at Kota Cina (Bronson and Wisseman 1974: 91). There is in fact a legend related by residents of Kota Cina that a group of Chinese did build a fort there. According to one version, the earliest inhabitants of the area were Indians who did not live at Kota Cina, but at a nearby spot now called Lubuk Bedena (lubuk = deep pool), but which is said to have been formerly called Teluk Belanga (teluk = bay). The Chinese later drove the Indians out, and built a fort at Kota Cina. They had however angered the spirit of a local saint, the Datuk Sungai Pinang (said to be buried at Permatang Siombak), who sent an army of shellfish against the Chinese and drove them away.

There is no sign of a wall at Kota Cina now. The fort, if any once existed, may have been built of wooden palisades rather than earthen embankments of the benteng type.

Deli Tua

The next site detected by the PPPPN team was at Deli Tua, on the west bank of the Deli River and across the river from the modern town of Deli Tua, thirty kilometers south of Belawan. This site is on the fifty-meter elevation contour; here the land rapidly begins to rise above the featureless Deli plain, and thus marks an important point of topographic transition. The soil here also undergoes a change from dark silty alluvium to a red, humus-rich clay (Druif 1938: Afb. 1, map).

The main features of the site are two large earthen fortifications 1.2 kilometers apart (see map 9). Both utilize the near-vertical west bank of the Deli River as part of the defenses.

The local topography is composed of a number of parallel and very narrow ridges, on which houses are located and crops such as maize and tapioca are grown. Between the ridges, in equally narrow valleys, are irrigated rice fields. These ridges and the intervening valleys are each less than a hundred meters wide, but stretch north and south for several kilometers. The tops of the parallel ridges are ten to fifteen meters above the padis.

The easternmost of these ridges drops 25 meters to the Deli River. At the north end of this ridge a path slopes to the river which here is about 15 meters wide, quite shallow and fast-flowing. On top of the ridge,

beside the path, a rectangular bank and ditch fort has been built, with dimensions of 150 x 60 meters. No sherds were found inside this embankment, but just to the south and west, in a corn field on the slope of the ridge, earthenware and porcelain sherds were collected (area A on the site map).

Five hundred meters south along the ridge is a small village, sometimes called Deli Tua Lama. West of the village, on the edge of the ridge and again on top of the next ridge west sherds of pre-modern types (northern Thai celadon and Ming blue and white ware) are again found. South of this village a ditch and bank cut almost completely across the ridge, which is 250 meters wide at this point. There is a five-meter-wide causeway at the approximate center of the ditch.

The bank is on the north side of the ditch, and rises two meters above the level surface of the village. No sherds of early types were found in the village. However, just south of the ditch sherds of blue and white ware and earthenware again appear.

For a distance of 600 meters south from the village the land is not intensively cultivated, and the possibilities of the survey were limited by heavy undergrowth. At point E, however, in a field of papaya trees we collected numerous sherds including earthenware, stoneware and blue and white ware.

Three hundred meters further south, at point F, a small peninsula juts out from the bank. From here one can overlook the river for a long distance upstream. Just west of the peninsula is another ditch and rampart enclosure, much larger and more regularly constructed than the northern benteng. The enclosure west of F is 300 meters square. Sherds are found inside the eastern bank of the fort and on the surface on the peninsula at F.

At G, north and below the peninsula a spring of water flows from the hill. According to legend, the spring was the bathing place of a legendary princess, Puteri Hijau. Anderson in 1823 heard of this fort, and the story of the princess, though he did not visit Deli Tua.

The first European eyewitness account of the fort dates from 1866. The author of the account mentions only one breastwork an hour from Deli Tua, which was a quarter hour's walk in circumference, and thus was probably the southern enclosure. In the fort he found a cannon "of a very old model" and in Deli Tua he bought a small cannon ball said to have been found in the fort (de Raet 1875: 173-174).

The cannon was removed from the fort. On the cannon, in Arabic letters, was inscribed "Sanah 1104 (?) Alamat Balun Haru." The 1104 is an Arabic date which would correspond to A.D. 1691. However, the first two digits of the date are not clear, and could possibly read "1004,"

or A.D. 1591 (Husny n.d.: 31; M. Said 1961: 151).

The sherds found in the fort and at other nearby sites come from many different times and kilns; there are celadons of late Sung and Yuan attribution, Ming celadon, early Ming blue and white, Thai wares from Sukothai and Sawankhalok, and much earthenware. A single Chinese coin of the period A.D. 1111-1118 was found near point E (McKinnon: Personal Communication).

The pastes of the earthenwares from Deli Tua fall into three types. The most common type contains a striking amoung of iron pyrite which causes the surfaces of most of these sherds to glitter with numerous golden flecks. These sherds come mainly from simple thick-walled, wheel-formed bowls (see drawing 114). One variety has traces of a red slip on the exterior, and anvil marks on the interior.

The second type is nearly as common. Little or no pyrite exists in these sherds, but mica is quite common. Vessels were mostly flaring-rimmed cooking pots, some with rim designs similar to Kota Cina vessels, and many sherds bear traces of red slip. Some sherds come from smaller unslipped vessels.

The third type is rare, and the paste includes both pyrite and mica, though the pyrite is not as abundant as in the first type described. These sherds have a much smoother feel, because of the finer grained paste. No shapes can be reconstructed. One sherd has a paddle-

impressed herringbone design.

The surface survey did not indicate that any one area contains unusual concentrations of sherds of any one type or period. It may be assumed for the present that areas near the north and south fortifications were contemporaneously inhabited.

Only historical sources can give any indication of when and why these forts were built; no excavations have ever been carried out at the site. Surface remains imply that this area has been continuously inhabited for a long period, perhaps since the fourteenth century. Its position, overlooking the river at its point of entry into the plain from the highlands, is obviously a strategic one for guarding transport from the highlands down the Deli River. In 1866 Deli Tua was the first large settlement on the Deli River inland from Labuan, and also the nearest Batak village to the Deli coast.

The river at Deli Tua is shallow and there are sections of rocky rapids. Baron de Raet recorded a tradition that Deli Tua had once been much nearer the sea and that ships had come to anchor nearby. It is not impossible that small river craft could have approached sufficiently near this point to make Deli Tua the terminus of waterborne transport. De Raet remarked the high proportion of people in Deli Tua who could speak

Malay, an indication of frequent communication between people of this area and of the coastal fringe (de Raet 1875: 173-174).[26]

The rest of the available historical information regarding Deli Tua is not very extensive. The center of a political entity of some importance named Haru during the period between 1282 and 1612 lay somewhere near Deli Tua. As noted earlier, Haru met its end in 1612 after a long series of Acehnese attacks. Legend associates Puteri Hijau, the Green Princess, with Haru's final defeat, and with the old forts at Deli Tua.

Siberaya

This village is the legendary birthplace of Puteri Hijau. It lies outside the main survey area, on the Karo Plateau, beyond the source of the Deli River. Its legendary and historical associations are of some interest

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[26] A second indication of early familiarity of at least some highland people with maritime culture is the existence of relief carvings on a cliff near the Karo Plateau, on the bank of the Lau Garut. These carvings are associated with a rock-cut chamber similar to others found along the eastern fringe of the Batak highlands (Tichelman 1939: 179-180).

The dates and functions of these chambers are complete mysteries. Some may have been geritan, or places of secondary burial; this custom is now practiced by the Karo Batak after the deaths of important people. At Lau Garut the entrance to a small chamber about 3 m. deep, 2 wide, and 1.2 high, is flanked by relief carvings of boats. One well-preserved carving portrays a sailing ship with traditional Malay rigging and a rudder. Thus sailing and sea-faring played a part in the symbolism of this highland tomb, though further details are unknown. The "ship of the dead" is a common theme of Southeast Asian art and cosmologies.

for this study, as well as the indications found there of what further archaeological research in highland Sumatra may reveal.

Siberaya is the first mountain village in the Batak area, and perhaps all Sumatra, to have yielded sherds of early porcelain in any quantity. No Sung sherds have been found here, but Yuan celadon, Ming celadon and blue and white ware, and Thai porcelain from Sawankhalok and Sukhothai have been discovered on the fringes of the settlement (Milner et al. in press).

The earthenware sherds found at Siberaya are by contrast very plain and homogeneous. In particular, they seem very similar to the least common type at Deli Tua; the paste has a smooth feel, and contains inclusions of pyrite and mica. Some sherds have temper of or ground pottery. No surface decoration is apparent on any sherds. Where sherds permit determination of manufacturing technique, it appears that coiling and hand smoothing were the only operations.

Baron de Raet visited Siberaya in 1866 and 1867, and mentioned several unusual characteristics of the village. Like the other Batak chiefs, the penghulu or village head of Siberaya was tributary to one of the four Batak suku (literally "quarter") chiefs of Deli, who in turn were technically subordinate to the sultan of Deli. But the ruler of Siberaya was said to be much more

independent of his suku head than any of the other penghulus (de Raet 1875: 219).

Another unique attribute of Siberaya was that there was a market nearby, the only one de Raet saw in the highlands, where food, dye, cloth, horses and slaves were bartered. Also the village of Siberaya had a balai or assembly hall, where by ancient custom the Sibayaks and penghulus of Tanah Karo ("Karo Land") held assemblies. This area and another on the banks of the Lau Biang (the upper course of the Wampu and a sacred spot) were neutral territory, exempt from the frequent inter-village warfare described by Anderson and others (de Raet 1875: 212, 214, 219).

Tanjung Amon (Tandem Hilir)

No other coastal sites yet located in Deli give any sign of having once been centers of importation of Chinese porcelain on the scale of Kota Cina. Individual specimens have been discovered, including Sung, Yuan and Ming wares, in the coastal plain, but these finds tend to be sporadic and not associated with large assemblages of habitation debris.

One other site in Deli has yielded habitation debris of approximately the same period as the sites previously discussed; the site covers a group of islands of high ground 16 kilometers west of Kota Cina, which are

surrounded by rice fields that Javanese immigrants have cleared within the last 25 years. An area of low marshy ground on the western edge of these fields was sampled with the soil corer. The cores indicated that the area had been until recently an estuary and is now silted in due to stream deposition and possibly other factors. The size of the stream could not be determined, but it was broad and quite shallow. It may have been linked to the Wampu River. The site is now fifteen kilometers inland from the Wampu River's mouth.

In the vicinity of point C (see site map 8b) an area of higher ground contained many earthenware and porcelain sherds, fragments of glass, and beads. Brick fragments and chunks of iron slag also appeared.

Fourteen hundred meters west, at B, another low ridge rises two to three meters above the rive fields. This island has become the graveyard for the villagers in the neighborhood. Grave digging has turned up many potsherds here.

Finally, at A another low mound had recently been cultivated for the first time, and many sherds had been brought to the surface. Low marshy ground northeast of the mound marks the probable course of another "dead river."

Surface remains in the three sectors included similar earthenware, but the other remains were variable in distribution. Sector C had a much denser concentration

of beads than the other two sectors. Neither bricks nor glass were found elsewhere on the site.

The porcelain from C included both Chinese and Thai wares. The majority of the pottery was Yuan-Ming celadon: gray-green bowls with interior incised decoration, celadon bottles, and bowls with exterior lotus leaf decoration were represented. Sherds of early blue and white wares were also found.

A few stoneware fragments were found at C, mainly from large brown storage jars. There was also one fragment of a monster mask handle, similar to Kota Cina specimens.

Earthenware from this sector includes two types, both of a very pale color. The most common type is a very coarse ware with irregular surfaces, although shapes are symmetrical (drawings 102, 106-110). The ware contains a very large amount of coarse sand temper, to which laterite or ground sherd temper was sometimes added. The paste contains a large amount of mica. Most sherds come from large heavy vessels, with an average body thickness of 8 mm. Common forms include rims of bowls and handles from lids.

The second earthenware type (drawings 103, 104) has a very smooth chalky feel, not unlike the earthenware from Siberaya. Possibly this ware contains kaolin or some other phosphatic mineral. Several fragments of phosphatic rock, similar to fragments found at Kota Cina, were discovered

on the surface of sector C. Some fragments of this ware retain traces of a red slip. The paste contains mica, pyrites and fine black flecks of some other mineral.

Two kendi spouts were also found on the surface at C, of the rough earthenware type (see drawing 101). Two body sherds also indicate that some vessels were carinated. Interestingly there are no sherds from this area which bear smudges, flaking exteriors or other marks of use over a cooking fire.

A few sherds were collected from the backdirt of a new grave at sector B. Residents claim that sherds are always found here when burials take place, but sherds were only discovered near the most recent interment. There were three sherds of a gray-green porcelain, but stoneware was more common, and included sherds of large storage jars and basins, their glaze much corroded and flaking.

Earthenware was the most common category. All sherds in this sector were of the coarse Tanjung Anom type, with a paste which contains much mica, some pyrite, and no decoration. Metallic slag and five phosphatic mineral fragments were also sifted from the backdirt of the grave.

Sector A was the most rewarding area, having been worked by its owner only a few days before the PPPPN team first visited the site. Many porcelain sherds were found, but blue and white sherds were scarce, although several Sawankhalok sherds contemporary with early Ming ware were

found.

Sector A yielded a total of one hundred fifty porcelain sherds from about thirty vessels. Seventy-five percent were from green or grayish green bowls, bottles and dishes, many with underglaze design. A few of the sherds were identical to specimens found at Kota Cina, though most were of wares usually attributed to the late Yuan or early Ming, and thus later than anything at Kota Cina.

Stoneware formed the largest fraction of sector A sherds. There were many fragments from storage jars with brown glazes and simple incised designs, and basins which resembled the light brown or light gray fine-textured ware from Kota Cina. One fragment of brittle ware, in the shape of a "mercury vessel" base, was also found. One green-glazed fragment of stoneware bore a molded monster mask nearly identical to examples from Kota Cina.

Earthenware in sector A was relatively scarce compared to porcelain and stoneware. Of particular interest was a rim from a red-slipped cooking pot, of coarse paste, with a rim profile and incised decoration similar to, though not identical with Kota Cina pieces (drawing 87). Coarse earthenware from this area outnumbered the fine by a 5:1 ratio.

In addition to potsherds, we discovered in this sector another fragment of the same phosphatic mineral as in the other two sectors. Numerous damar fragments were

visible in the newly turned soil.

Tanjung Anom is an enigmatic site. Apparently several small areas of high ground were settled for a short time during the fourteenth century by people who possessed late Yuan-early Ming period ceramics and some Thai ware, as well as two types of earthenware. In one area they left a large number of beads. They probably erected one permanent brick foundation, possibly for a religious sanctuary. Settlement began here soon after Kota Cina had been abandoned.

Summary: Deli River Valley Survey

Kota Cina appears as a unique site in the Deli River Valley. It represents a small but moderately prosperous settlement where products of highland Sumatra were exchanged for imported luxury goods which included porcelain and glass. Carbon-14 dates and ceramic types indicate that the site was occupied during the reigns of the Sung and early Yuan dynasties in China, the twelfth and thirteenth centuries A.D. Kota Cina may be representative of a group of sites still to be found along Sumatra's east coast, in places where rivers provide routes along which both status goods (gold and resins from Sumatra, pottery and glass from abroad) and subsistence goods (rice, salt, iron and cloth) could be transported. Transactions between coastal peoples along the rivers and

hinterland peoples in the highland valleys were probably not conducted through a supply and demand marketing procedure; rather ceremonial and customary relationships such as historical records depict in south Sumatra during the late pre-colonial period probably provided the rules which kept the exchange relationships in force between highland and lowland rulers. The few sources available for the study of yet earlier periods do not contradict the idea that a set of reciprocal obligations involving exchange of goods between highland and lowland groups was already in existence a thousand years or more ago. In other parts of the Indian Ocean and Mesoamerica similar institutions seem to have developed under ecological and socio-political circumstances analogous to those I have argued were involved in the north Sumatran system. A larger comparative stody of ancient commercial systems would no doubt clarify the exact relationships between the cultural and the natural factors responsible for the evolution and wide distribution of this set of institutions.

In the Deli River Valley no concentrations of early Ming ceramics were found. This may be the result of a shift of trade from Deli to another nearby entreport, but it may also indicate the effects of changing trading patterns in maritime Southeast Asia in the early decades of the Ming reign which resulted from new Chinese policies (Wolters 1970: 187-190). In addition to changes in the

institutional format, the volume of Chinese trade with Southeast Asia also decreased.

During the late fourteenth century a number of smaller settlements, including Tanjung Anom, Kota Jawa, and perhaps Kota Bangun, were established in the Deli valley. The highland site of Siberaya was probably occupied at this time. At the point of transition between the lowlands and the mountains, the site at Deli Tua became a focus of military activity, possibly connected with highland-lowland trade and political and economic rivalry with the north coast.

The historical entity called Haru offers some hope of linking more closely the historical and archaeological data. Haru may have exercised control over the Deli region during part of the period when these sites were inhabited.

Kota Cina and South Kedah

Since no other trading sites have been studied in Sumatra, the sites near the Merbok estuary in south Kedah are the closest in time and space to which Kota Cina can be compared. Such a comparison should permit us to form more accurate ideas of how to locate other coastal trading sites and what we should expect to find in them. It should also indicate new questions which can be asked of the data, historical and archaeological.

The west coast of the Malay Peninsula, including north Kedah, has undergone a process of coastal progradation similar to but of lesser magnitude than that of east Sumatra. The Merbok estuary, around which cluster the sites excavated by Quaritch Wales and Lamb (and Lt.-Col. James Low in the nineteenth century), was probably much larger in the past. The Hikayat Marong Mahawangsa (translated as the Kedah Annals by Low) mentions that Kedah Peak, on the north side of the estuary, was once an island (Low 1908; see also Wales 1940: 2-3, 81-85). River course changes may have combined with sedimentation to help transform a broad estuary into the swampy complex of sluggish winding channels among mangrove clumps which now lies between Kedah Peak and the present course of the Muda River.

Wales in 1940 mentioned thrity south Kedah sites with remains of brick structures. Recent research by the Muzium Negara has raised this total to fifty (Adi Taha: Personal Communication). Wales believed that sites 11 and 12 had been secular structures (Wales 1940: 24-28), but further research has shown that these structures cannot be differentiated from the others which were probably candis (religious sanctuaries) (B.A.V. Peacock 1970: 21-22). Like Kota Cina, therefore, all the permanent foundations around the Merbok may have been built for religious reasons.

The Kedah structures can be grouped in two categories

on the basis of their formal layout. Type B, which comprises the majority of the temples, including that at Matang Pasir, has been compared to structures at Padang Lawas and Kota Cina (B.A.V. Peacock 1970: 24; McKinnon 1974: 69) (see map 10).

Examination of the Kedah temples has also led to the conclusion that at least two religions, Mahayana Buddhism and Tantric Hinduism, coexisted in Kedah (Treloar and Fabris 1975). At Kota Cina Buddhims and Hinduism were also present, but there is no evidence yet that the ceremonies practiced at the site were Tantric.

Wales concentrated his research on the temple sites, and thus did not discuss the ceramic deposits which Lamb later discovered. Like the Dutch, he apparently found potsherds less interesting than ruined temples. The similarities in ceramic assemblages between Kedah and Kota Cina have already been discussed. It is particularly interesting that at both these sites, and possibly at the Air Bersih site excavated by Bronson, the proportion of earthenwares to imported ceramics appears to have been quite large; at Kota Cina and Air Bersih it was about three to one. Unfortunately no descriptions of the Kedah earthenwares have ever been published, and no comparison with Kota Cina types can now be undertaken.

Perhaps the most interesting difference between the two sites is that copper coins, so plentiful at Kota Cina,

are not found in Kedah, while beads, very numerous in Lamb's assemblage, are rare at Kota Cina. Even in the seventeenth century cowrey shells rather than metal served as the basis for currency in Kedah (Bowrey 1905).

Kedah and Kota Cina show numerous basic similarities in geographic location, religious architecture, and artifact assemblages which contain Chinese ceramics and Middle Eastern glass. While Kota Cina residents were using Chinese copper coins as currency, Kedah residents may have used beads which they imported either as raw material or as finished objects from India. This difference may be significant, but several explanations are possible. Kedah's trading contacts with the Indian Ocean may have been more intensive than Kota Cina's, but it is more likely that Kota Cina had strong links with both areas. The Kota Cina Buddha statues strongly resemble south Indian examples. Only further excavations at other sites will reveal whether the use of Chinese coins or beads has a differential regional distribution which may help to explain this difference between the two sites.

The similarities between south Kedah and Kota Cina are strong enough so that it may be eventually possible to group the two in a single archaeological horizon (for definition see Willey and Phillips 1958: 33). Other sites representing such a horizon should be found in Sumatra. Characteristics used to define sites of this horizon must

include assemblages of imported ceramics as well as local pottery styles. Pottery made in the Straits area may show little change throughout the area or over many centuries. Sites belonging to this horizon should have similar locations near river mouths, and should contain evidence of metal-working. Such evidence is found at Kota Cina, and while it is not mentioned at Kedah it does appear at Kuala Selinsing (Tanjong Raja). Further research at Kedah aimed at discovering habitation sites may reveal that this activity took place there as well.

This concept of "horizon" diverges from that of Willey and Phillips, who believe local art styles should receive primary emphasis. In the societies along the Straits of Malacca, however, it may not be inaccurate to use evidence of a common set of trading contacts and environmental conditions as primary definitional criteria. Ethnohistorical data support such emphasis on the role of long-distance commerce in early Malay society.

CHAPTER V

INTERPRETATIONS

Kota Cina is the first Sumatran site which has yielded firm evidence of long-distance commercial connections with China and the western Indian Ocean as early as the twelfth century A.D. Historical sources suggest that many other similar sites exist on the island. Preliminary excavation at Kota Cina indicates that, in its general features such as religious architecture and a ceramic assemblage which includes local and imported pottery, Kota Cina is closely related to the sites on the Merbok Estuary in southern Kedah, on the opposite side of the Straits of Malacca. It has not yet been possible to compare the Kedah earthenware pottery with Kota Cina specimens to attempt to determine whether there may be evidence of direct communication between the inhabitants of the two sites. Such evidence might take the form of close similarities in complex surface decoration on pots from the two sites. Of course, alternative explanations could also be adduced to account for design similarities, and further research delving into other possible items such as metals which might have been exchanged across the Straits would also be needed to furnish convincing proof

that Kota Cina and Kedah maintained direct commercial relations with each other.

Rather than try to find additional sites of coastal emporia, I chose to attempt to trace a possible route up the Deli River along which imported items might have moved from the coast to the hinterland. Ethnohistoric information summarized earlier in this dissertation reveals temporal and spatial continuity in highland-lowland trade in Sumatra and confirms that trade was directly related to status and the ability of individuals to gain and hold political power in traditional Malay society. For the period between A.D. 1 and the early sixteenth century, however, we have few written sources to use in studying socio-commercial processes in Sumatra, and these few were written by foreigners who were mainly familiar with coastal regions.

At this point archaeological research which aims to discover the distribution of certain commodities assumed to have been markers of elite status can be used to compensate for this lack of data. The distribution of Chinese ceramics of known dates of manufacture, when used cautiously, can show where elites lived or carried out other activities such as religious ceremonies and burials at different periods. A comparison of quantities of imported pottery at different sites would provide one way to measure the importance at particular times of

various locations on transport networks, and of areas where valuable resources could be found.

In this study I considered only the valley of the Deli River. Producing areas for forest products and minerals were not included; thus the survey covers only a transport route, although the discoveries at Siberaya in the highlands show that an overland route once existed beyond the navigable portion of the Deli River, and probably continued further into the mountains.

The Deli area was of moderate importance between the thirteenth and sixteenth centuries. A country named Haru, mentioned by Chinese, Arab, Javanese, Malaccan, and Portuguese sources, was intermittently prosperous and powerful, although it was not a major trading center. The discovery of a site such as Kota Cina in this region is therefore not what one would expect; Kota Cina excavations and survey have resulted in the collection of much high quality Chinese porcelain, copper coins, statuary with south Indian affinities, and Middle Eastern glass. The site was probably inhabited during the twelfth to early fourteenth centuries.

When other coastal trading sites of the same period are found, Kota Cina may not seem to be an exceptionally rich site. At the moment, however, the site is without a context. Excavations in other coasts of Sumatra may someday provide that context, and reveal Kota Cina's place

in what must have been a hierarchy of coastal emporia.

Geological analysis of the soils of Kota Cina confirmed the expectation that the shoreline there has been steadily extending seaward into the Straits of Malacca. Radiocarbon dating of mangrove samples from the site may soon allow a more exact reckoning of the speed of this process. The discovery of stream-laid sediments in part of the site further strengthens the impression that water courses in coastal Sumatra have often "died" after relatively short life spans and become silted in.

Bronson's (1977) predictions: that evidence of foreign trade should be concentrated near the coast, and that coastal trading centers would probably have been impermanent, are to some degree supported by the results of this research. The zone where the mountains begin their ascent from the coastal plain was also a focal point of trade and communication, and possibly of political power, as the fortress at Deli Tua and the remains associated with it indicate.

The problem of dating Deli Tua's first occupation can only be solved by excavation. If this site coexisted with Kota Cina, we can then assume they were two nodes on a single transport route. But Deli Tua may be a later site than Kota Cina, and thus could represent a shift of settlement away from the coast because of external military threats. Ethnohistoric evidence, and the location of

several ceremonial centers further south along the highland-lowland transition, suggest that such points would always have been strategically important as long as coastal rulers needed tight control over the routes used to export highland products. The evidence for metal working at Kota Cina is not surprising. Palembang rulers provided highland groups with such necessities as finished iron objects, as well as status goods, in the nineteenth century.

The distribution of Chinese ceramics in the Deli valley supports the hypothesis that coastal centers during the period under study controlled the flow of imported commodities inland. Kota Cina contains by far the largest concentration of imported objects. After Kota Cina was abandoned, the site at Kota Jawa became a settlement of some importance. Ceramics of the Kota Jawa period are found at Tanjung Anom, a site which may have had access via a now-silted-up channel to the Wampu River. Ceramics made in China during the thirteenth-sixteenth century period have been found at other scattered locations along the northeast coast, but in small numbers.

Suggestions for Further Research

Survey of the Deli valley has located two points of geographic transition, between coast and lowland plain, and between lowland plain and highland, which were important in early Sumatran exchange systems. Larger river systems

in south Sumatra contain otherpotentially important loci, where navigable tributaries join larger streams. Geomorphological change in the lowlands has been common, particularly in constant reshaping of river courses, and future archaeological surveys in lowland Sumatra must take this into account.

Aerial photography would be an invaluable aid in such research. While aerial photographs were not available for the Deli project, future researchers may be able to use such photography to detect extinct river beds.

A part of Sumatra which remains terra incognita to archaeology is the mountainous highland. Siberaya is the first early habitation site discovered in the highlands. This site is not in the producing areas of resins or gold; instead it lies on one of three traditional routes between the Deli plain and the Karo plateau.[1] Research in the highlands should focus on overland routes linking the uppermost navigable portions of rivers and on the areas where export commodities were collected.

Archaeology can make a particularly usedful contribution to studies of trade by exploring early mining in Sumatra. The sites of many pre-colonial mines are known, and habitation sites as well as industrial sites

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[1] The other two go by way of Gunung Meriah, in the south, and Bohorok, in the north.

ought to be found nearby. An important related task is the collection of ore samples from different source areas. If, as some have suggested, regional trade in metals is a very old pursuit in Southeast Asia, trace element analysis holds the key to one of the most interesting problems in Southeast Asian history and anthropology: how did the increasing involvement of Southeast Asian societies in long-distance commerce affect the organization of those societies?

Recent studies of sites in northeast Thailand have shown that metal-working is a very ancient craft in that region. Quite possibly people in various parts of Southeast Asia carried on a metals trade before the beginning of the process traditionally known as "Indianization." If regional maritime trade in metals followed the same procedures which later characterized trade between Indonesia and India, then the significance of the later adoption of various elements of Indian culture by Southeast Asians will have to be re-evaluated.

It is in this context that the work of K. Hirth, Flannery, Henderson, and others on the mechanics of the transfer of Olmec art styles into the Mexican highlands becomes relevant. The Sumatran case is complicated by the fact that three main spheres of culture are involved: India, the Sumatran coastal fringe, and the interior highlands.

K.G. Hirth's alternative to central place theory for the analysis of locational factors in the development of networks of transport and communication appears to fit the Sumatran data very well, although allowance must be made for the use of alternative routes by highland Sumatrans. In Sumatra, with the advantage provided by the common import of Chinese pottery whose dates of manufacture are approximately known, we should be able to detect changes in the use of specific routes connecting coastal emporia and highland producing zones, and thereby add the element of time to a concept which, partially because of the limitations of the Olmec data, has had a static quality when applied to archaeological data.

Adams and Nissen (1972) utilized four components in a study of early urbanization in Mesopotamia: (1) general descriptive statements which present an overview of the problem, (2) spatial or locational analysis, seeking "to refine or penetrate within the grossly observable, descriptive regularities," (3) study of topography and soil deposition, with the aim of reconstructing the depositional history of a specific region, and (4) use of traditional historiography and archaeology to reconstruct man's changing relationship to a specific landscape (Adams and Nissen 1972: 12). This study has taken a similar approach to the study of northeast Sumatran involvement in long-distance trade and the role of trade in the

general development of Sumatran society. The Deli valley project provides an indication of the amount of information which surface survey and limited excavation can contribute to such a problem.

Northeast Sumatra does not seem to have been one of the more important regions in the overall pattern of trade between Sumatra and other regions. Future research in central and southeast Sumatra, and near Barus on the west coast, should provide much additional data for the solution of the questions outlined here. If this study makes any progress toward solving these, it may be through the identification of specific sources of information which can most usefully be exploited and integrated. Once the information is properly organized, it may illuminate not only an episode in Sumatran history but also the way in which human beings developed a particular pattern of relationship with the local environment and other cultures. Sumatra was for perhaps two thousand years part of a network of commercial and cultural relationships whose breadth has seldom been equalled in history, and we must have information from Sumatra to understand the functioning of the entire network. Once we have elucidated the manner in which the entire system ran, we can then distinguish the relationships between individual subsystems of Sumatran society and the external factors to which they responded. In this way the study of Sumatra can be related to the study of humanity in general.

APPENDIX 1

EARLY GOLD-WORKING IN SUMATRA

Nomadic groups may have caused a shortage of gold in India during the last two centuries B.C. by disrupting transport routes in central Asia. Indian literary sources of the same period indicate an interest in Suvarnadvipa and Suvarnabhumi, mythical "golden lands" to the east where fortunes could be made and gold gotten (Coedes 1968: 20).

Suvarnadvipa is often identified with Sumatra and the areas on the Malay Peninsula which Srivijaya later controlled, principally Kedah and the Isthmus of Kra (Coedes 1968: 92). The accuracy of this name, "Land of Gold," for Sumatra has been questioned. Wheatley called attention to the fact that in Chao Ju-kua's description of the exports of Srivijaya, "there is no mention of gold coming from (or more particularly being mined in) Sumatra [or] the Malay Peninsula" (Wheatley 1959: 113). In fact China exported gold to Srivijaya.

Roman writings mention that great amounts of gold were exported to India during the first two centuries A.D. as payment for spices and silks. This source of supply also declined rapidly after the second century A.D. when

Roman-Indian trade fell off.

There is evidence that in recent times Borneo exported gold to China. But there is no indication that Borneans mined gold until Chinese settlers arrived around 1760. Nevertheless it has been asserted that where Sumatra is concerned, "there is no comparison with the gold resources of Borneo" (T. Harrisson and O'Conner 1970: 70). There are however some data which give strong support to the contention that gold was mined in Sumatra in large quantities before the colonial period, and that it was mined entirely by Sumatrans.

Indian Gold-Mining

In southern India there are several regions where gold mining was once carried out on a large scale. In Raichur, for example, in an area of 200 square miles several hundred abandoned gold mines have been discovered. Shafts reach depths of up to 645 feet, perhaps the deepest yet found which were dug by ancient mining techniques.

Shafts were sometimes excavated by using fire and water to crack the rock. This method necessitated the digging of twin shafts, one to draw out the smoke. This technique leaves carbon traces which can be dated. Thick deposits of potsherds have also been found in the bottoms

of some shafts, and may be the remains of bailing activity.[1] Some of these pottery fragments belong to dateable types.

Artifacts used to process the gold ore have also been found near the mines. Hammerstones and anvil stones were used to crush the ore, which was then washed in wooden pans to separate the heavier gold particles. Crucibles containing traces of gold and mercury have also been found at the mining sites. The Arthasastra, a famous epic poem, discusses the duties of mine superintendents, one of which is the distillation of mercury.

Pottery types, and a stool, found in the shafts have been dated stylistically to the period between the first century B.C. and the third century A.D. Two radiocarbon dates have also been obtained from these mine shafts: 1890 ± 70 B.P. and 1810 ± 70 B.P.

Muslim historiography, which in India dates from the 1300s, does not mention gold mining. No gold mining was ever observed by Europeans in southern India. Archaeologists have noted that settlements in the vicinity of the mines seem to have been large and numerous in the period 200 B.C. - A.D. 200, with a subsequent decline in size and richness of material culture (Allchin 1962: 195-211).

All the data points to the conclusion that there was

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[1] Prof. Stanley J. O'Connor (Personal Communication) believes that ancient mining rituals may have involved the deliberate smashing of pottery. This would provide an alternate explanation for the sherds in the shafts.

a period of intense gold-mining activity in southern India precisely at the time when the central Asian trade routes were severed (Wheatley 1971: 356 note 216). The implication is that, deprived of central Asian gold, Indians began to exploite their own resources, and quickly exhausted them. European gold would have been important for about 200 years, but probably was not significant after about A.D. 250.

Early Mining in Sumatra

Van Bemmelen (1944: II, 105-122) summarizes the evidence for pre-colonial gold mining in Sumatra. Gold-bearing rocks are found through almost the entire Barisan Range. Furthermore, "remains of former native goldmining are numerous and have been found in many places from Atjeh in the north to Benkulen in the south. The extensiveness of the old workings indicates a thorough organization in which thousands and thousands of men must have been employed. It is evident that considerable quantities of gold have been produced" (van Bemmelen 1944: II, 105). During the period 1900-1940 gold production in the Netherlands East Indies totalled 123,281.5 kilograms; Sumatran provided 82% of this, and Benkulen alone 72%.

The Lebong area of south Sumatra is rich in gold-bearing formations, and is very near Benkulen, but the early Dutch settlers did not know that gold existed there. Marsden was similarly unaware of the mineral wealth of

Lebong, though he mentions other mining zones. Lebong, while much further from the east coast, is separated from the west by a part of the Barisan chain, and has been politically connected for much of its history with Palembang, but it is not easily accessible from there either.

Legends in the Lebong area frequently mention early gold mining, including the original discovery of gold veins, and may relate to the fourteenth century. In one verions Majapahit is mentioned briefly (Hovig 1914: 98-112; ter Brake 1944: 51).

When European mining companies began to exploit the Lebong deposits, the first chief engineer reported that "a great deal of work has been done by ancient miners," including a large complex of shafts, stopes, drives and winzes (Wright 1901: 9). Stone mortars and grinding implements were found scattered about the site (Truscott 1912: 356), and one was sent to the Batavia Museum (Notulen 1903: Bijlage xii, page XC, number 389a; see illustration in Hovig 1914, figure 1). A large quantity of mercury was also found, but the discoverer was unwilling to guess whether it had been used by pre-European miners or by the first European explorers. Cinnabar, an ore containing mercury, was mined by Sumatrans in Jambi before European occupation (Tobler 1919: 463-464), though its use is not mentioned.

In addition to mines, early miners also constructed systems of reservoirs and aqueducts, probably to separate the gold from the tailings after grinding. Complexes of such waterworks exist in west Sumatra (Boomgardt 1947) and Aceh (van Bemmelen 1944: II, 120). A mine in Aceh also had a system of tunnels and adits, with rock-reinforced vertical shafts. This system sounds very similar to that used in India in conjunction with the use of fire to crack rock (ter Brake 1944: 51). However, only a Pasai legend indicates that any non-Sumatrans were involved in gold mining before Europeans, and this legend asserts that Sumatrans and an Indian cooperated (Hill 1960: 123).

Gold was not the only mineral which early Sumatrans sought. Besides cinnabar (mercury) lead and zinc were smelted near Muara Sipongi, south Tapanuli. Iron and copper were also mined and worked (van Bemmelen 1944: II, 210). Marsden (1966: 166, 172-173) described Sumatran mining of gold, copper and iron.

None of these early mines has yet been absolutely dated. Sumatran gold was exported to Malacca and Vietnam in the early 1500s; this gold was of high quality and came in large quantities (Cortesao 1944: 113; Tiele 1879: 27). Only small amounts of poor quality gold came from elsewhere; Bornean gold sent to Malacca was "of very low assay value" (Cortesao 1944: 132).

Goldsmithing was a highly developed art in pre-colonial Sumatra. Marsden commented that "there being no manufacture in that part of the world, and perhaps I might be justified in saying, in any part of the world, that has been more admired and celebrated, than the fine gold and silver filagree of Sumatra" (Marsden 1966: 178). The smiths used borax to prepare the solder used in the working of gold for jewellery. During Sung times China obtained borax from the alkaline lakes of Asia Minor. Early Sumatran craftsmen could have obtained borax at the same time as Near Eastern glass was being imported by Sumatrans.

The golden jewellery produced by early craftsmen is not likely to be found frequently in archaeological sites. Metal art objects made before the coming of Islam were nearly all remelted and worked into new shapes as the new religion became dominant (Winstedt 1969b). The Sivalinggas in the gold room of the Museum Pusat in Jakarta are among the few objects which managed to survive such iconoclasm.

Among the Batak, gold and silver working were traditional crafts, with numerous ceremonies attendant on the use of various tools and processes (Jasper and Pirngadie 1927: IV, 24-34). Metal-working and associated ritual has also been proposed as a reason for the construction of megalithic monuments in Borneo (T. Harrisson and O'Connor 1970). Similarly W.J. Perry (1915-1916) sought to connect the distribution of

European megaliths with ancient mines. Further research on the distribution of megaliths in south Sumatra, building on the work of van der Hoop (1933), combined with a test of J.L. Peacock's (1962) hypothesis which correlates the construction of the Pasemah megaliths with a shift from achieved to ascribed status, may permit us to understand some of the changes in Sumatran society which accompanied the development of trading links between Sumatra and India and China in the early centuries A.D.

APPENDIX 2

SUMMARY OF EXCAVATION AT POINT J

A 2x2 meter square was excavated in artificial layers 20 cm. thick. The table below summarizes the data obtained from this pit.

0-20 cm.: Disturbed soil, humus.

Earthenware:	sand-tempered:	"Bau-Malay incised", 1 sherd, 20 grams.
		plain: 52 sherds, 880 grams.
		carved paddle impressed: 3 [sherds], 65 [grams].
	shell-tempered:	1 [sherd] /5 [grams].
	Fine paste ware:	9/50
Porcelain:		16/40
Stoneware:	Brittle ware:	jars, 6/60.
		mercury vessels, 10/95.
	Kwangtung ware:	5/140.
	Imitation Kwangtung ware:	7/12.
	Unidentified:	4/40.

Bone: 65 grams.

Damar: several fragments.

Chinese copper coins: 1.

20-40 cm.: Brown humus, charcoal at 40 cm. depth.

Earthenware: sand-tempered: "Bau-Malay incised", 2/20.
plain: 22/430.
carved paddle impressed: 1/1.
Fine paste ware: 4/65, including spout.
Brittle orange variety, 1/60.

Porcelain: 21/370.

Stoneware: Brittle ware: 3/75.
Imitation Kwangtung: 1/30.
Khmer [?] stoneware: 1/75.

Bone: 170 grams.

Stone: 1 volcanic tuff pebble, 20 grams (6x3x2 cm.).

Chinese copper coins: 2.

40-60 cm.: Gray clay.

Earthenware: sand-tempered: plain, 24/620.
carved paddle impressed: 6/60.
painted: 1/5.
shell tempered: 2/60.
Fine paste ware: 4/45.

Porcelain: 9/140.

Stoneware: Brittle ware: large jars, 4/30.
mercury vessels: 1/20.
"Southern Temmoku": 2/20.
Kwangtung: 4/100.

Bone: 1,100 grams.

Brick fragments: 2/600. Thickness, 3.5 cm.

60-80 cm.: Gray clay with ash lens, 60 cm.

Earthenware: sand-tempered: plain, 61-560.
carved paddle impressed: 28/480.
Fine paste ware: 1/40.

Porcelain: 33/260.

Stoneware: Brittle ware: large jars, 1/5.
"Southern Temmoku": 2/40.
Mercury vessels: 4/60.

Bone: 280 grams.

At a depth of 80 cm. a sterile stratum of yellow clay appeared. This was excavated to a depth of 100 cm., where ground water was reached.

APPENDIX 3

PROFILE DESCRIPTIONS

Figure 123. Profile 1, Point B, Kota Cina.

A=Mixture of humus, undecayed vegetable matter, roots. 10YR, 5/2.

B=Darker, finer humus. 10YR, 3/2.

C=Darker humus with lighter streaks. Some artifacts but no mollusc shells. 10YR, 2/2.

D=Layer composed of compacted shells, sherds, other artifacts. Upper boundary poorly defined, lower boundary sharply defined. 5Y, 2.5/1.

E=Fine clay, devoid of artifacts. Fe, Al streaks. 10YR, 4/4.

F=Like E but less streaking. 10YR, 7/2.

Water table: 130 cm.

Figure 124. Profile 2, Point C, Kota Cina.

A=Fine rootlets, compacted texture. Humus. Some brick fragments. 10YR, 5/2.

B=Finer texture, heavier roots. Large brick fragments. Slightly plastic consistency.

10YR, 3/2.

C=Sandy silt, less plastic. Fine rootlets, brick fragments. 7.5YR, 4/4-5/4.

D=Fine textured sandy silt. 10YR, 4/3.

E=Sandy clay, some brick fragments, mainly at upper boundary. A few charcoal fragments, some large roots. Fe, Al deposits. Some rounded pebbles of volcanic tuff. 10YR, 4/2-4/3.

F=Poorly defined; finer structure, darker color. Some metallic streaks, brick fragments. 10YR, 5/2.

G=Fine sand-clay mixture. Charcoal fragments fairly common, particularly in the center of the profile. 10YR, 5/8 with some Fe, AlO^2 discoloration, 10YR, 6/3.

H=Pale clay, charcoal at base. Streaks of metallic oxides. 10YR, 6/1.

I=Pale heavy clay, evenly bedded. Numerous streaks from metals leached from upper horizons. 10YR, 6/4-6/6.

J=Coarse sand lens, some gravel. 10YR 5/2-4/1.

K=Clay with some charcoal nodules. Fe, AlO^2 deposits. 10YR, 6/3.

L=Sticky fine clay, plentiful carbon remains. 10YR, 4/1.

M=Gravelly clay, some metallic deposits. Plastic, sticky. 10YR, 6/2.

N=Black sand lenses with white silicate admixture.

X=Coarse sand with much gravel/large rounded pebbles of volcanic tuff. Some brick fragments, fine rootlets. 10YR, 5/3-5/2.

Figure 125. Profile 3, Point H, Kota Cina.

A=Loam with gravel fragments, many brick fragments. 7.5YR, 4/4.

B=Sandy silt. Some brick fragments. 7.5YR, 5/2.

C=Mottled silty loam, 5YR, 2.5/2, with yellow clay streaks 7.5YR, 7/4.

D=Coarse sand, 7.5YR, 6/2.

E=Clayey sand, some brick fragments at base. 10YR, 6/1.

F=Gravelly sand.

G=Fine black sand with admixture of white silicates.

H=Fine sand, paler color.

I=Yellow clay, 2.5Y, 6/2.

J=Coarser clay, 10YR, 5/2.

Figure 126. Profile 5, Point M, Kota Cina.

A=Humus, leaves, roots.

B=Sandy loam.

C=Yellow clay.

D=Alluvial sand, tuff pebbles/red lateritic layer at base. Graded from fine sand at top to gravel at base. Sharply defined.

E=Yellow clay.

Water table at 210 cm.

Figure 127. Profile 4, Point J, Kota Cina.

A=Dark brown disturbed topsoil. Many rootlets.

B=Lighter color, fewer roots. Transitional to C, poorly defined. Many potsherds in western half.

C=Clayey loam. Numerous charcoal nodules in upper 10 cm.

D=Gray-brown clay with Kota Cina phase artifacts. Poorly defined at top and bottom.

E=Sterile yellow clay with iron streaks.

Water table at 100 cm.

Figure 128. Profile 6, Point I, Kota Cina.

A=Surface layer of humus, decaying vegetable

matter, roots, etc.

A'=Humus in ditch bottom; some 20th century artifacts mixed with Kota Cina phase artifacts.

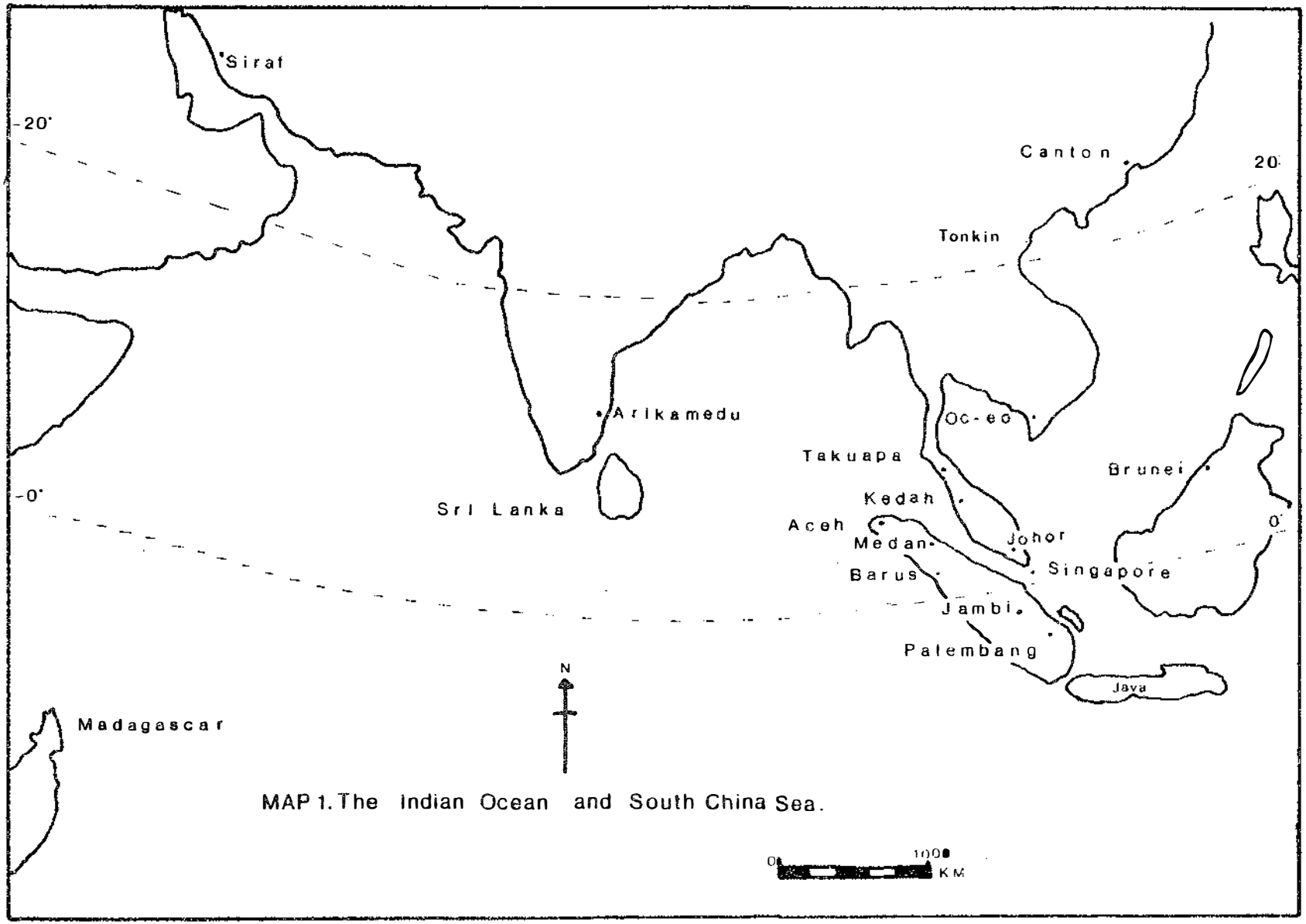
B=Clayey humus, sterile.

C=Sandy loam, a few artifacts.

D=Sandy stratum; intercalating lenses of micaceous sand, ferrous black sand, coarse layers of sand with large quartzite particles.

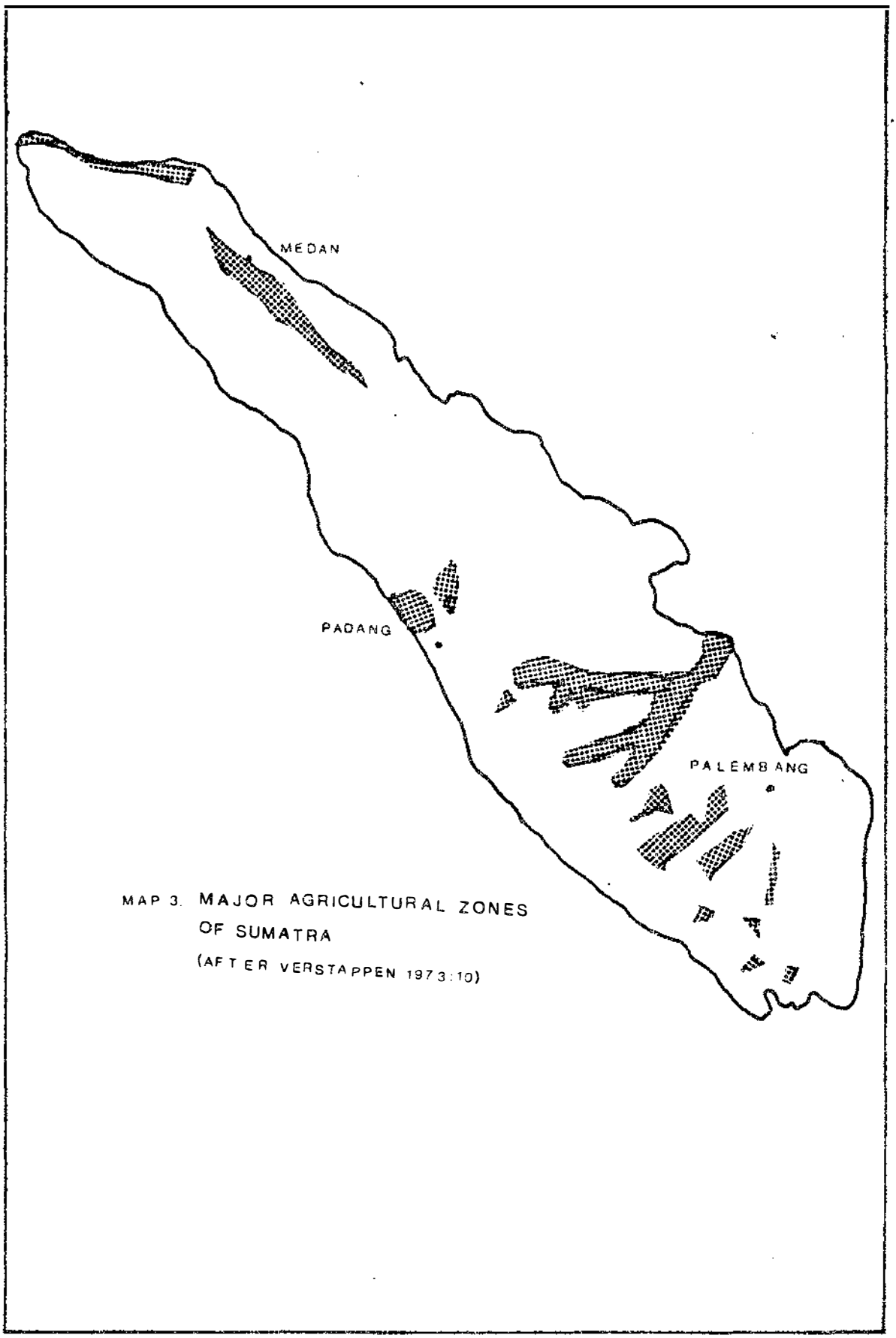
E=Yellow clay, modules of oxidized metals.

MAPS

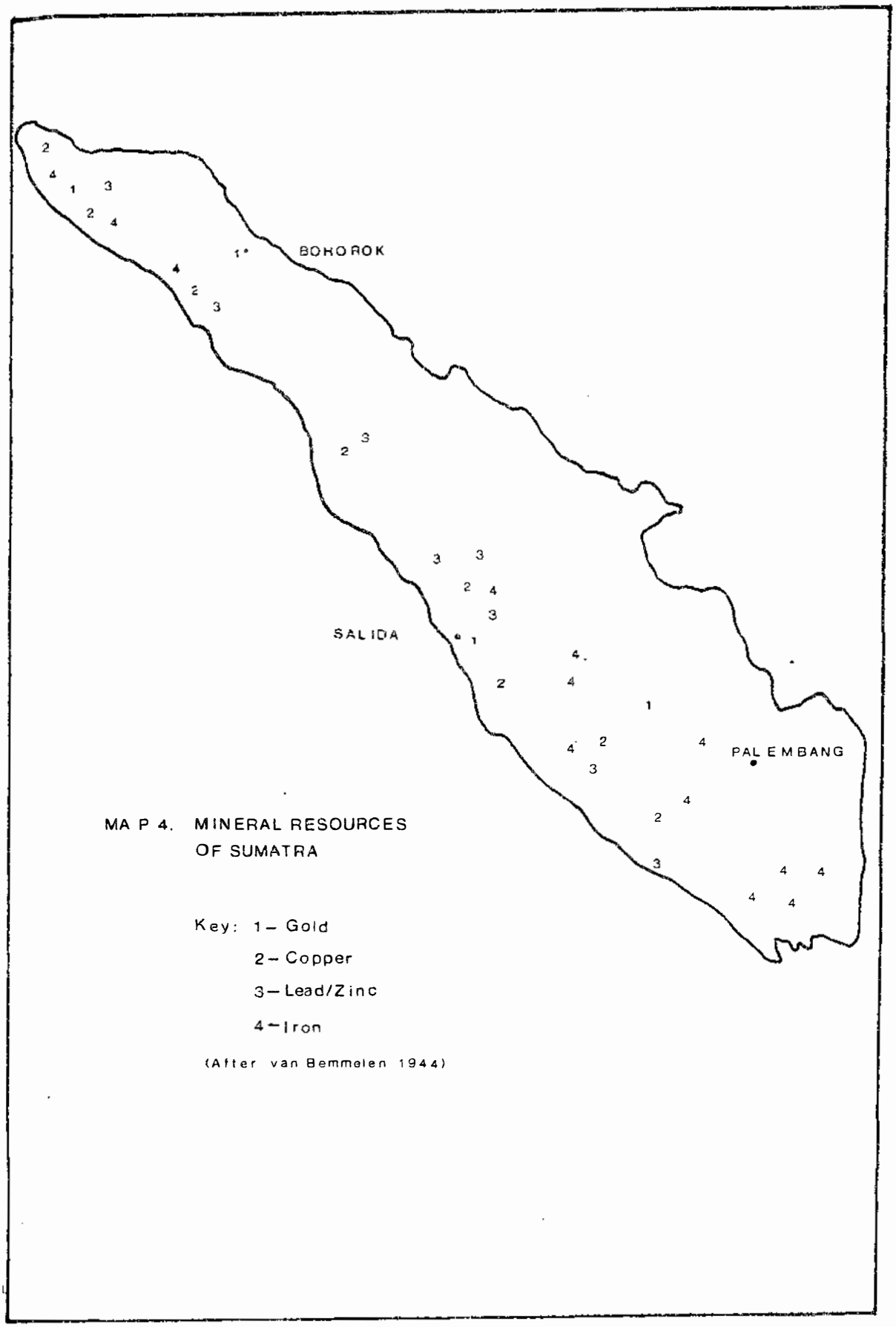


MAP 1. The Indian Ocean and South China Sea.


Pengkalan
Bujang
(Kedah)
Banda Aceh
Belawan
Medan
Batu
Bara
Malacca
Singkel
Johor
Lama
Barus
Gunung Tua
Sibolga
ROKAN R.
Singapore
Karimun
Island
Tanjung
Medan
Siak
Riau-
Lingga
Archipelago
Muara
Takus
KAMPAR R.
KUANTAN R.
Padang
BATANG HARI R.
Kota
Kapur
Karang Berahi
Jambi
Pagarruyung
Sungai
Langsat
Palembang
MUSI R.
LEMATANG R.
OGAN R.
N
Bengkulu
Bawang
Palas
Pasemah
Ulu
Belu
MAP 2. SUMATRA
0
100
200
KM



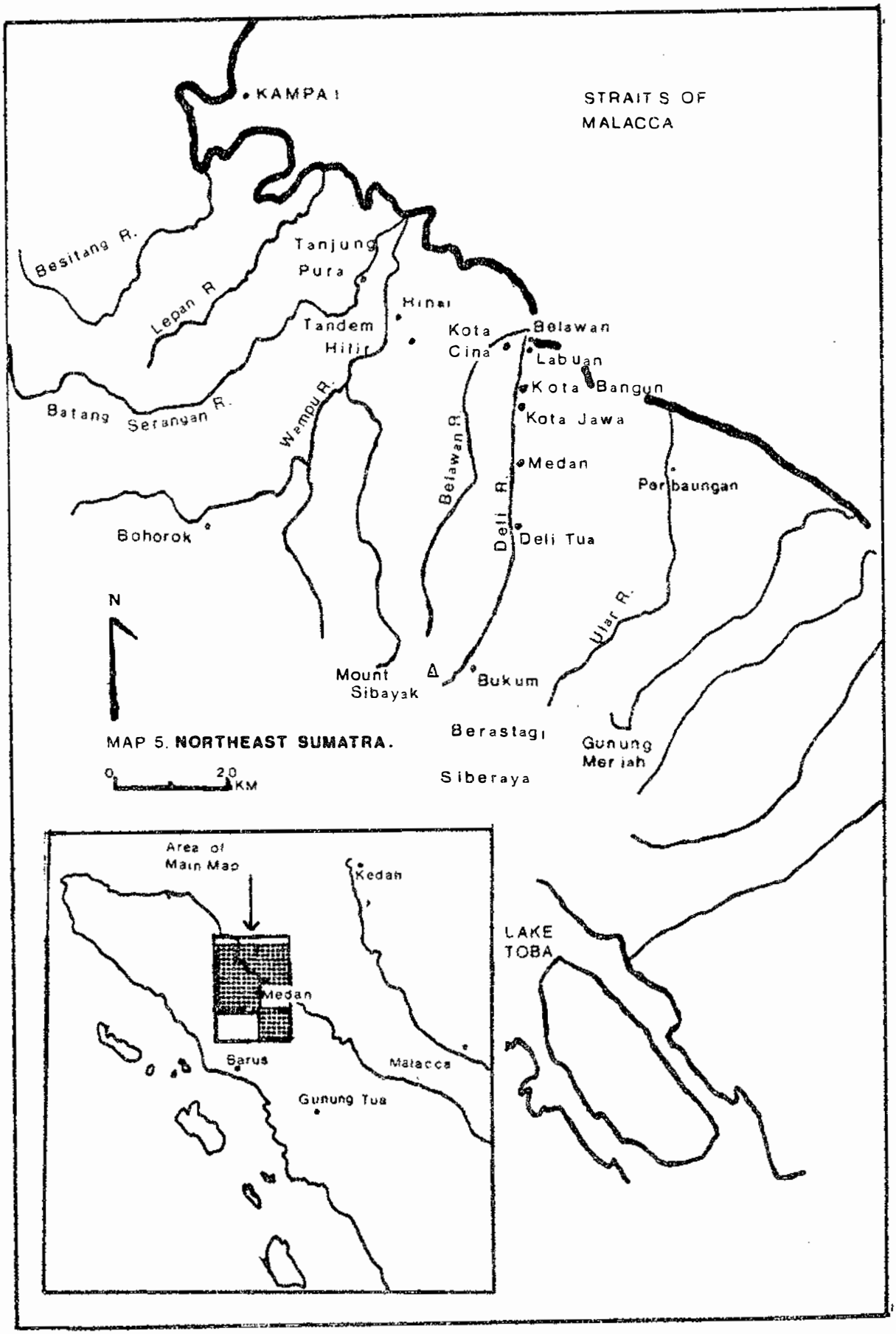
MAP 3. MAJOR AGRICULTURAL ZONES OF SUMATRA
(AFTER VERSTAPPEN 1973:10)



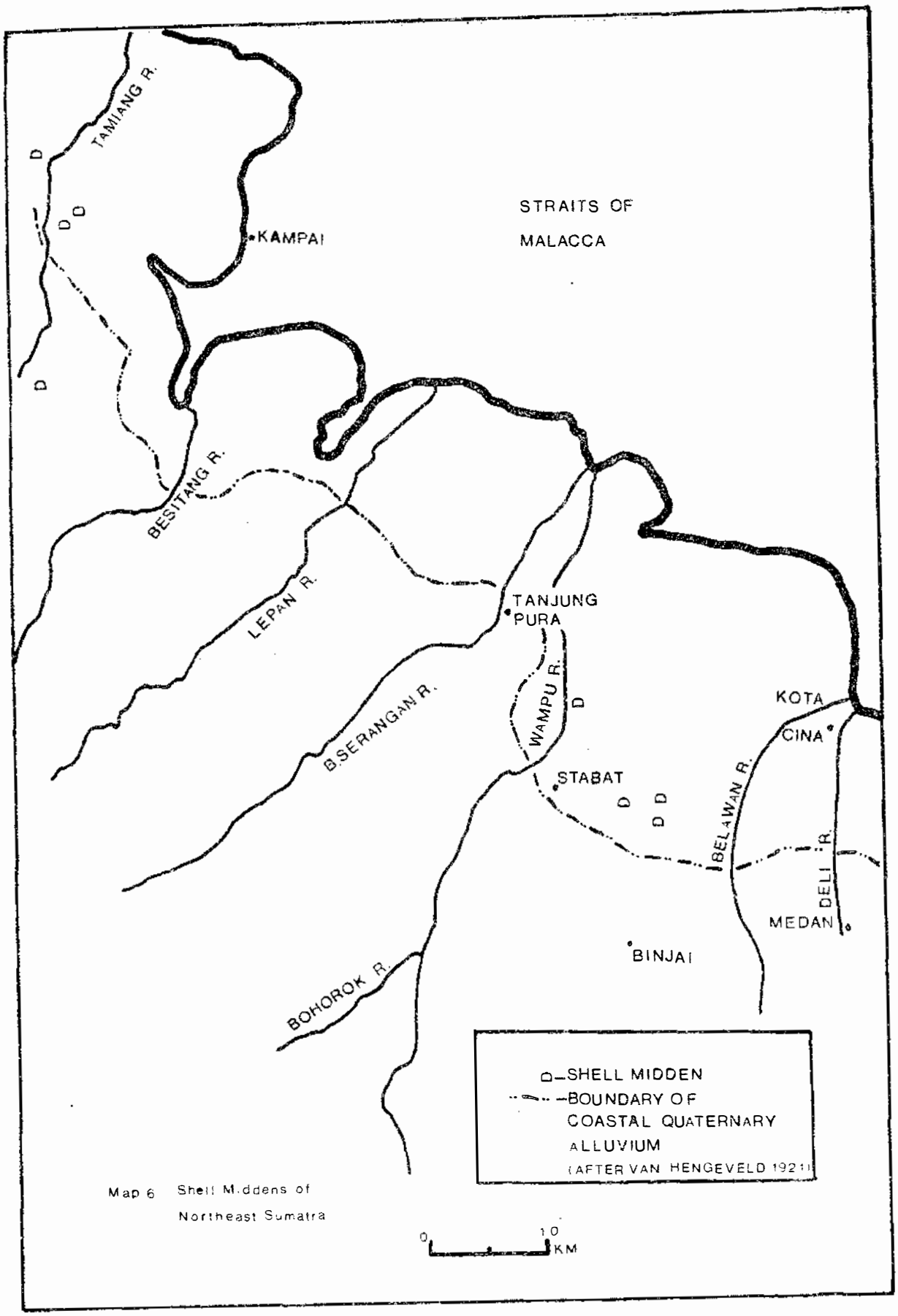
MAP 4. MINERAL RESOURCES OF SUMATRA

Key: 1 – Gold
2 – Copper
3 – Lead/Zinc
4 – Iron

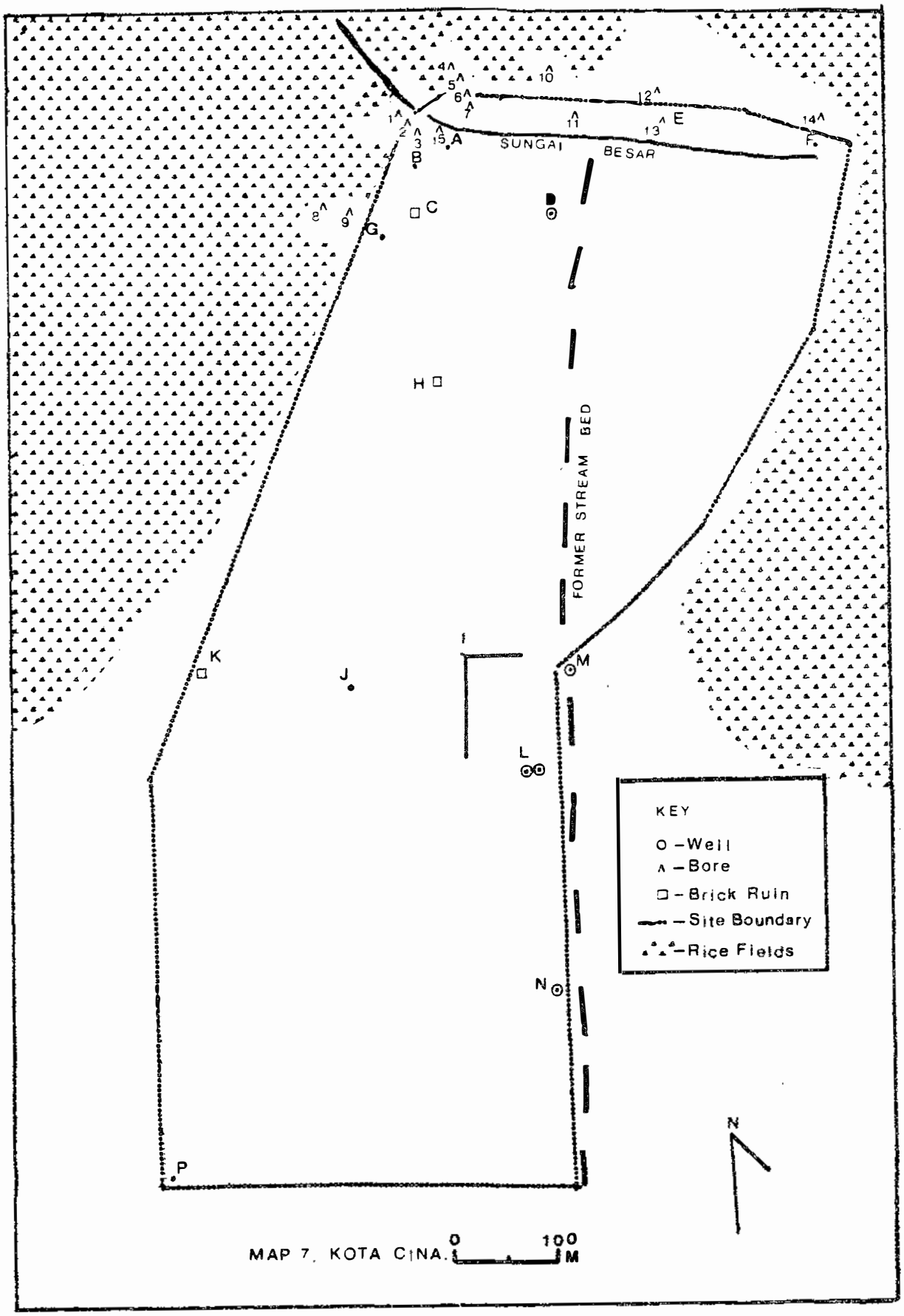
(After van Bemmelen 1944)



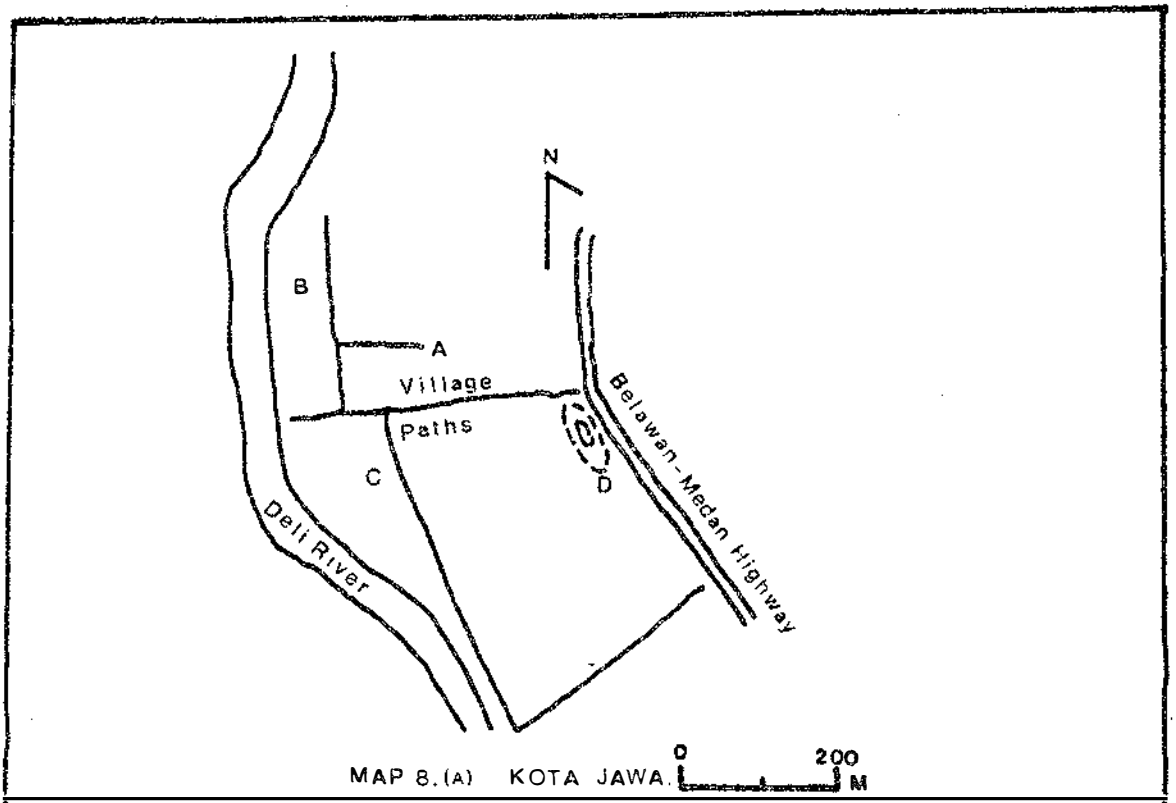
MAP 5. **NORTHEAST SUMATRA.**



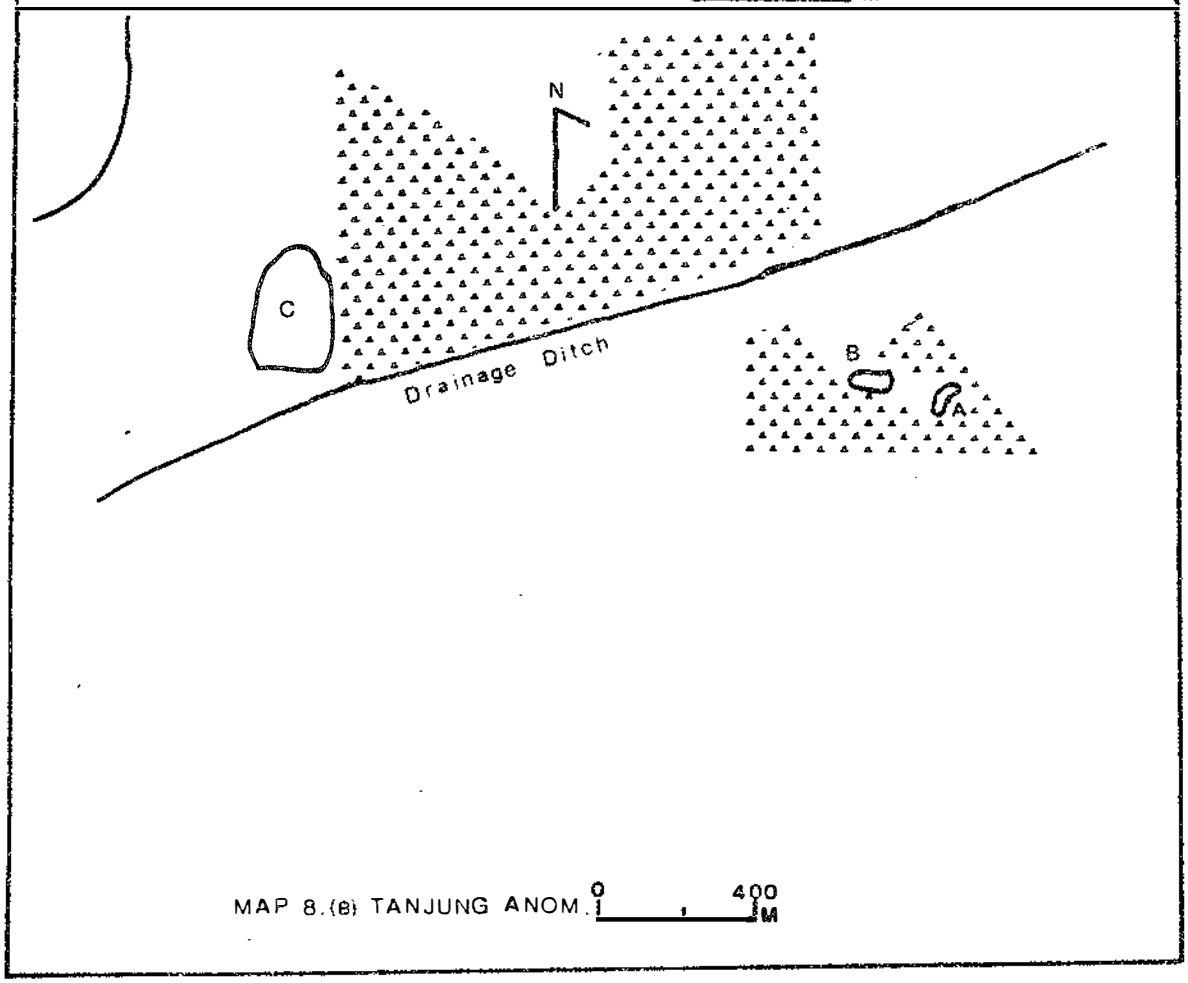
Map 6 Shell Middens of Northeast Sumatra



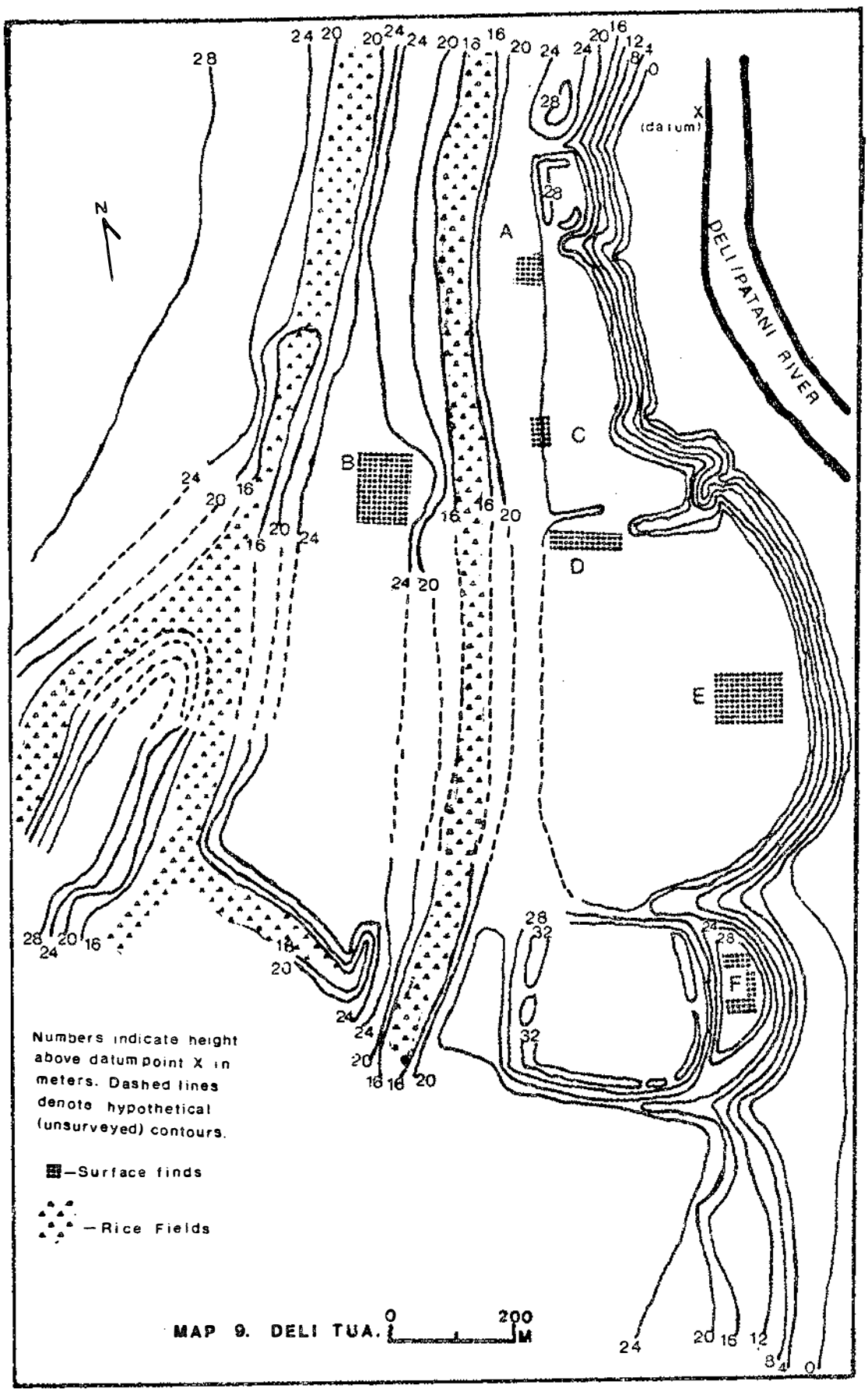
MAP 7. KOTA CINA.



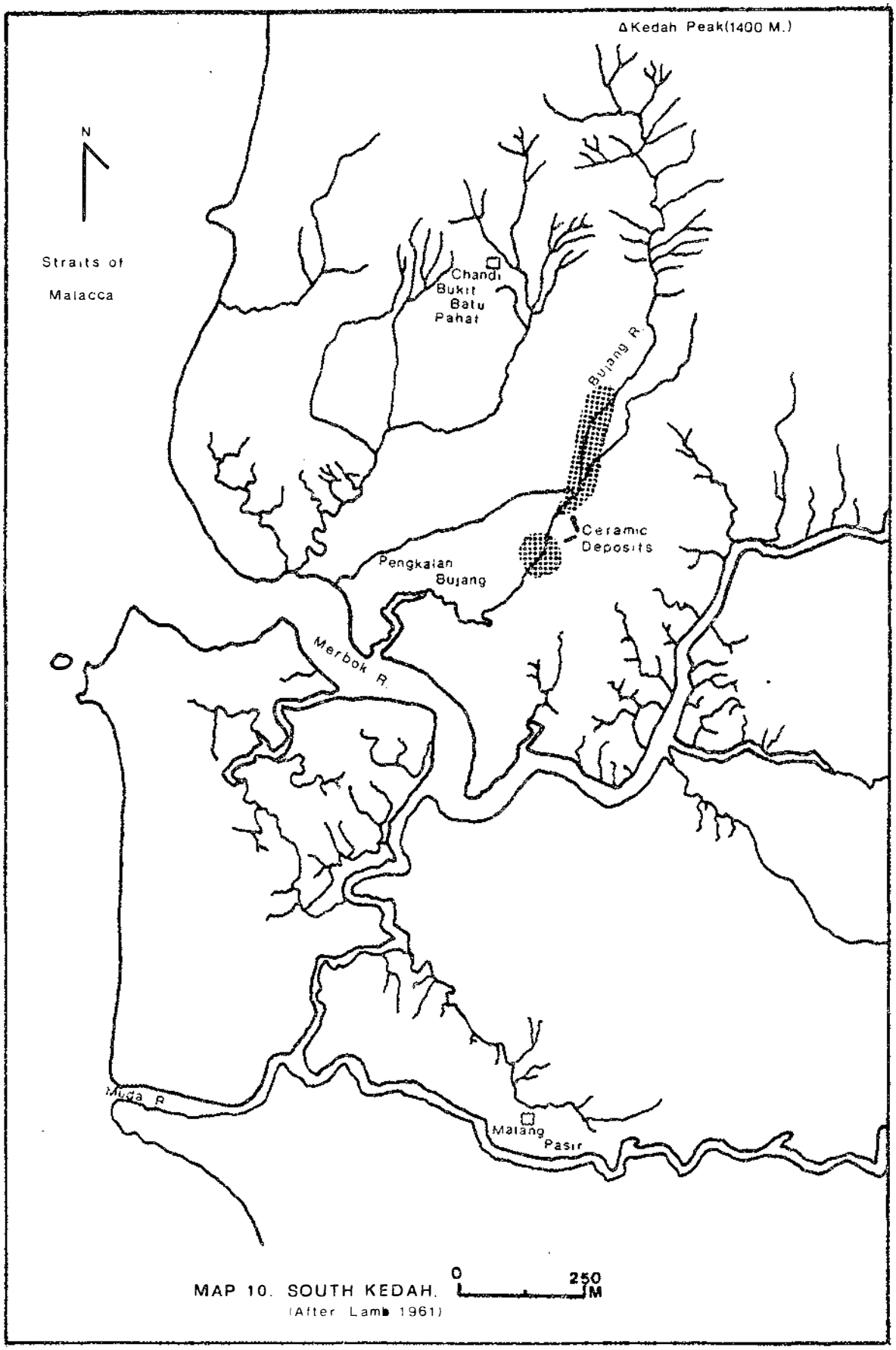
MAP 8.(A) KOTA JAWA.



MAP 8.(B) TANJUNG ANOM.

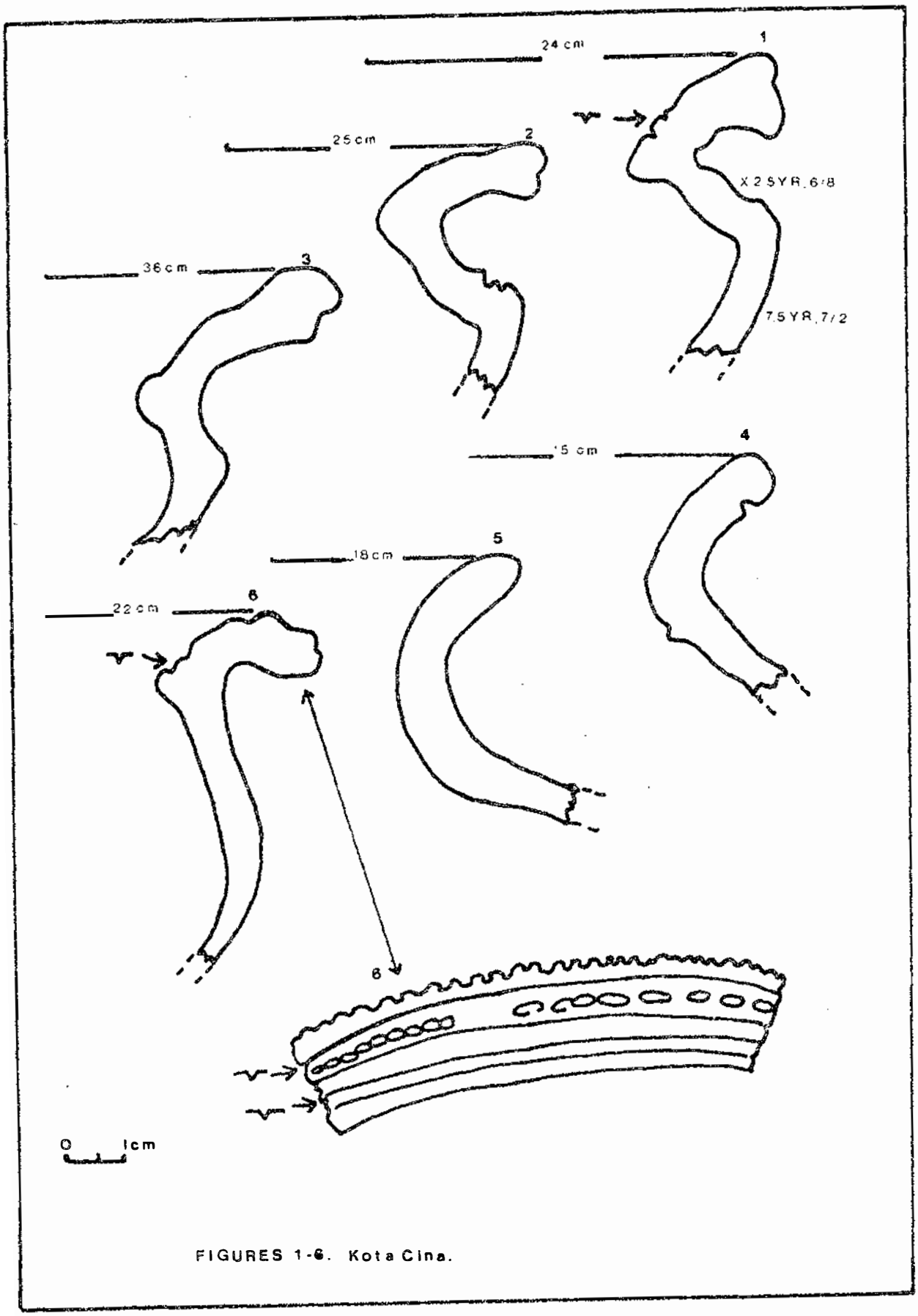


MAP 9. DELI TUA.

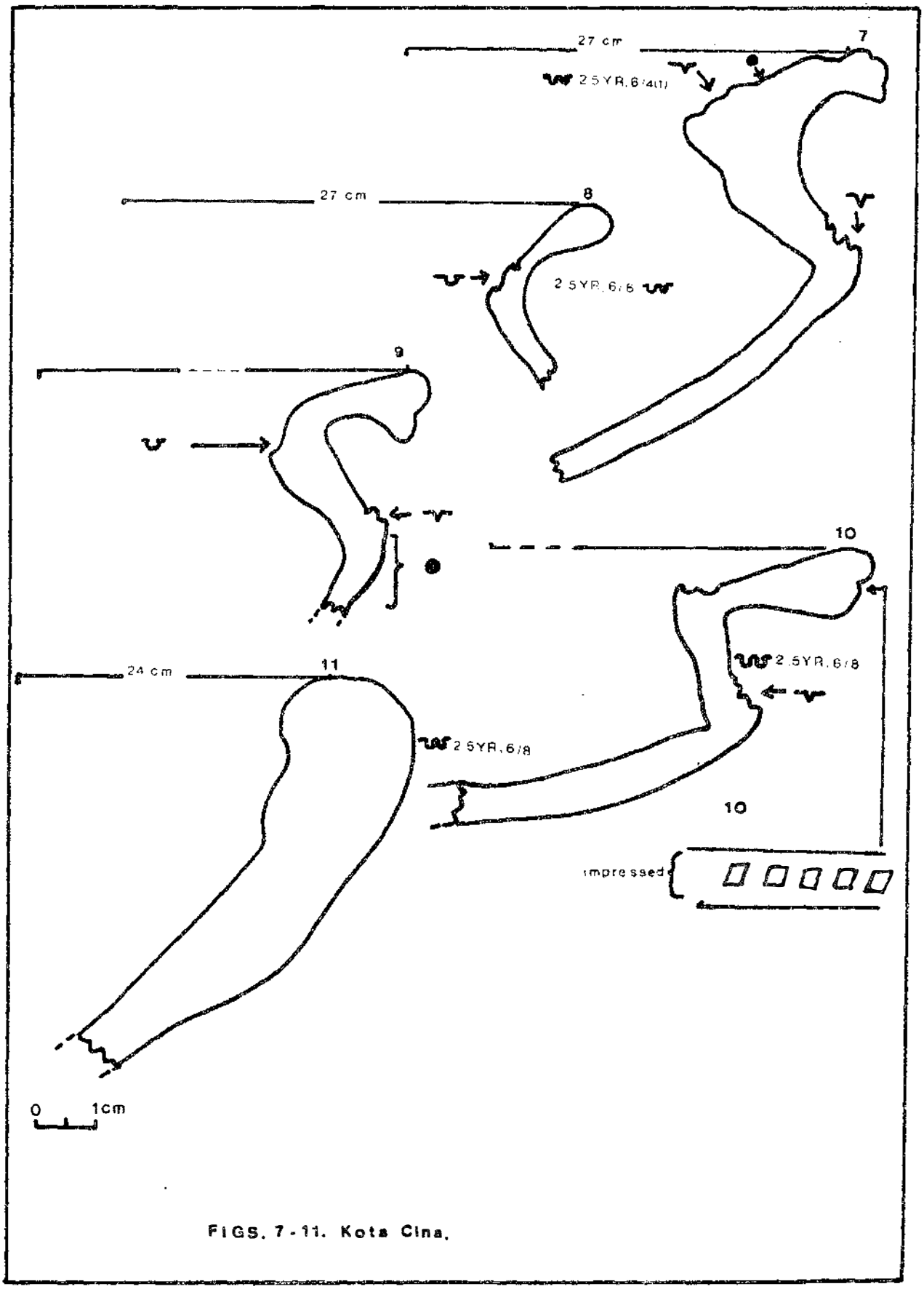


MAP 10. SOUTH KEDAH.
(After Lamb 1961)

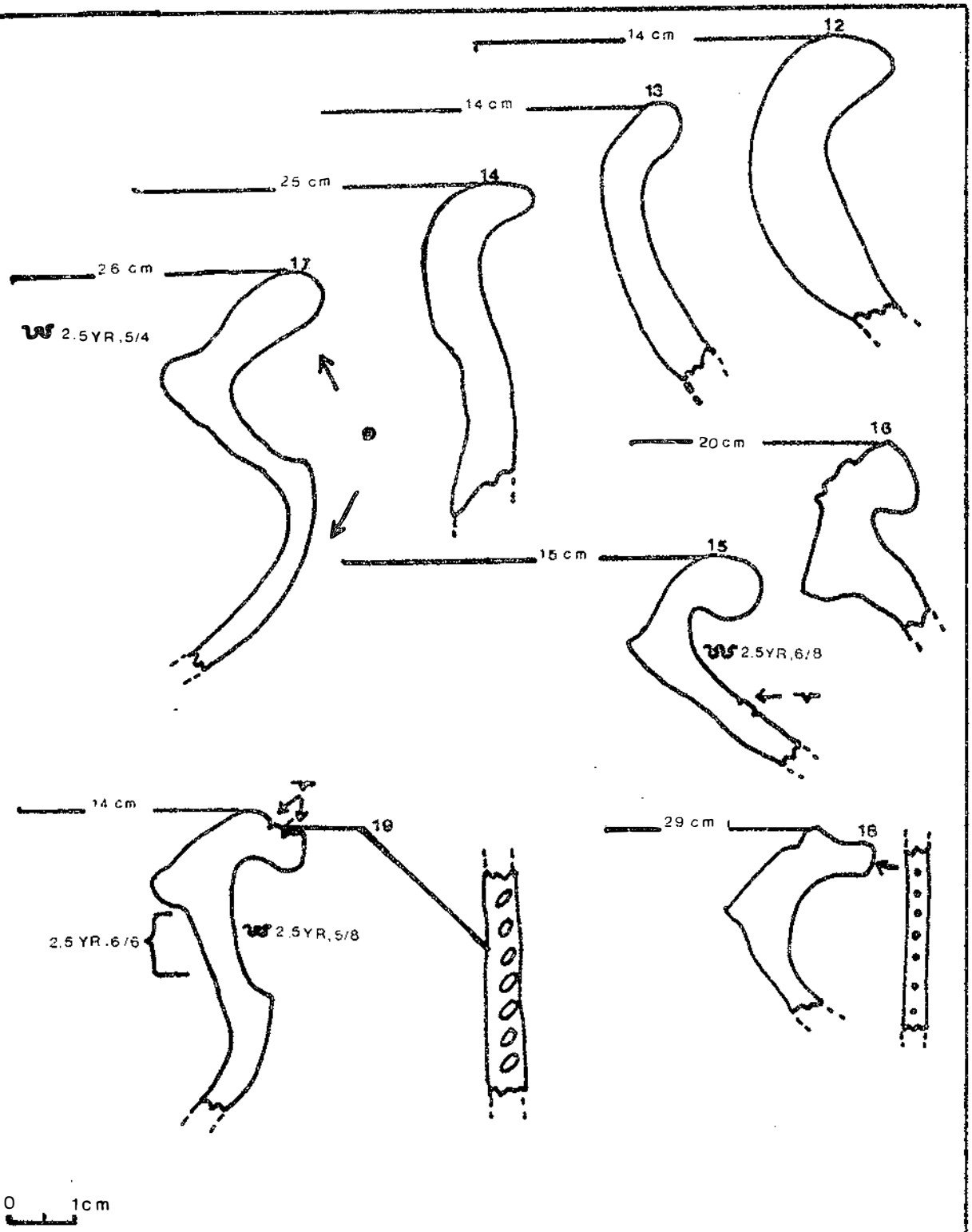
FIGURES



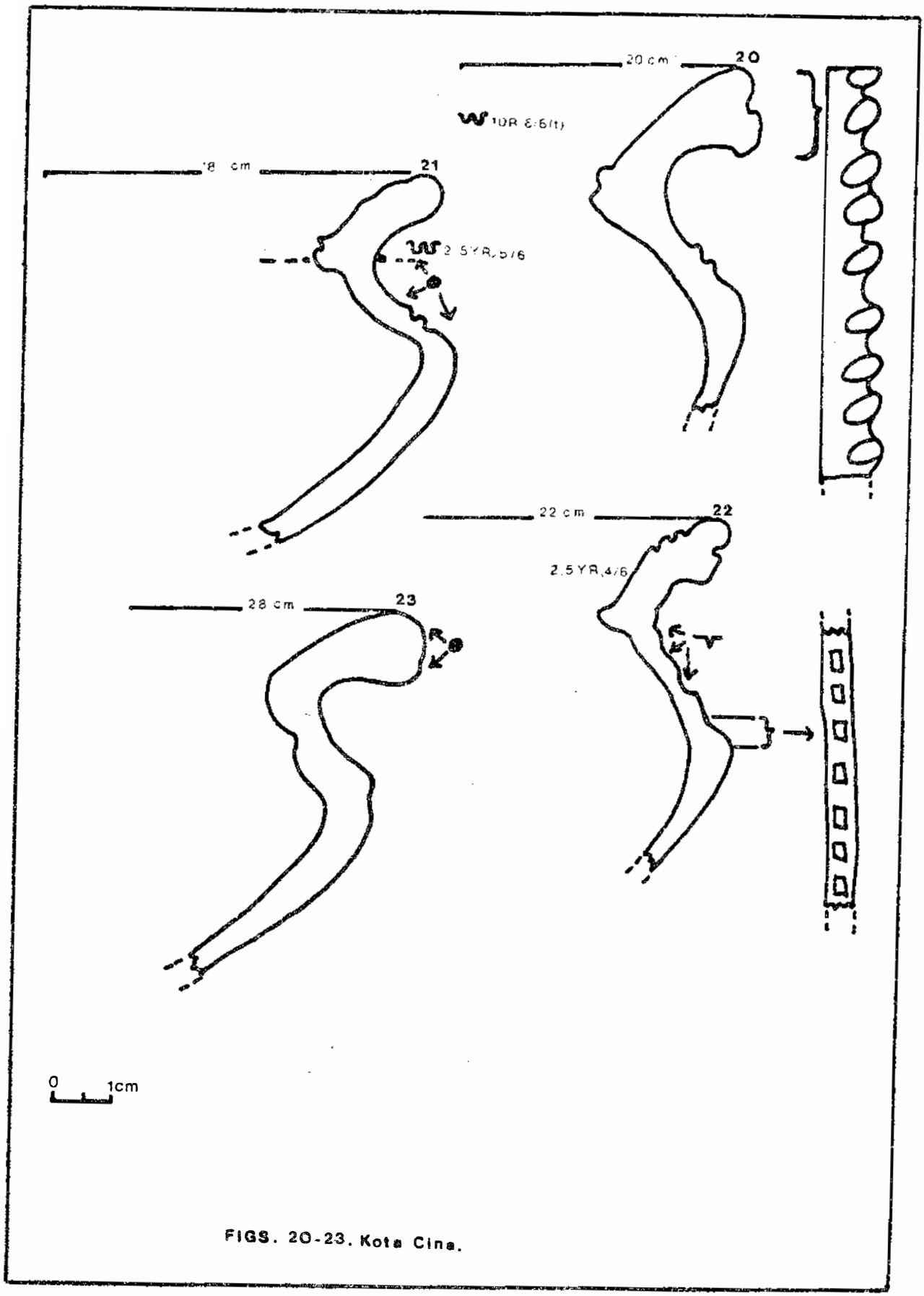
FIGURES 1-6. Kota Cina.



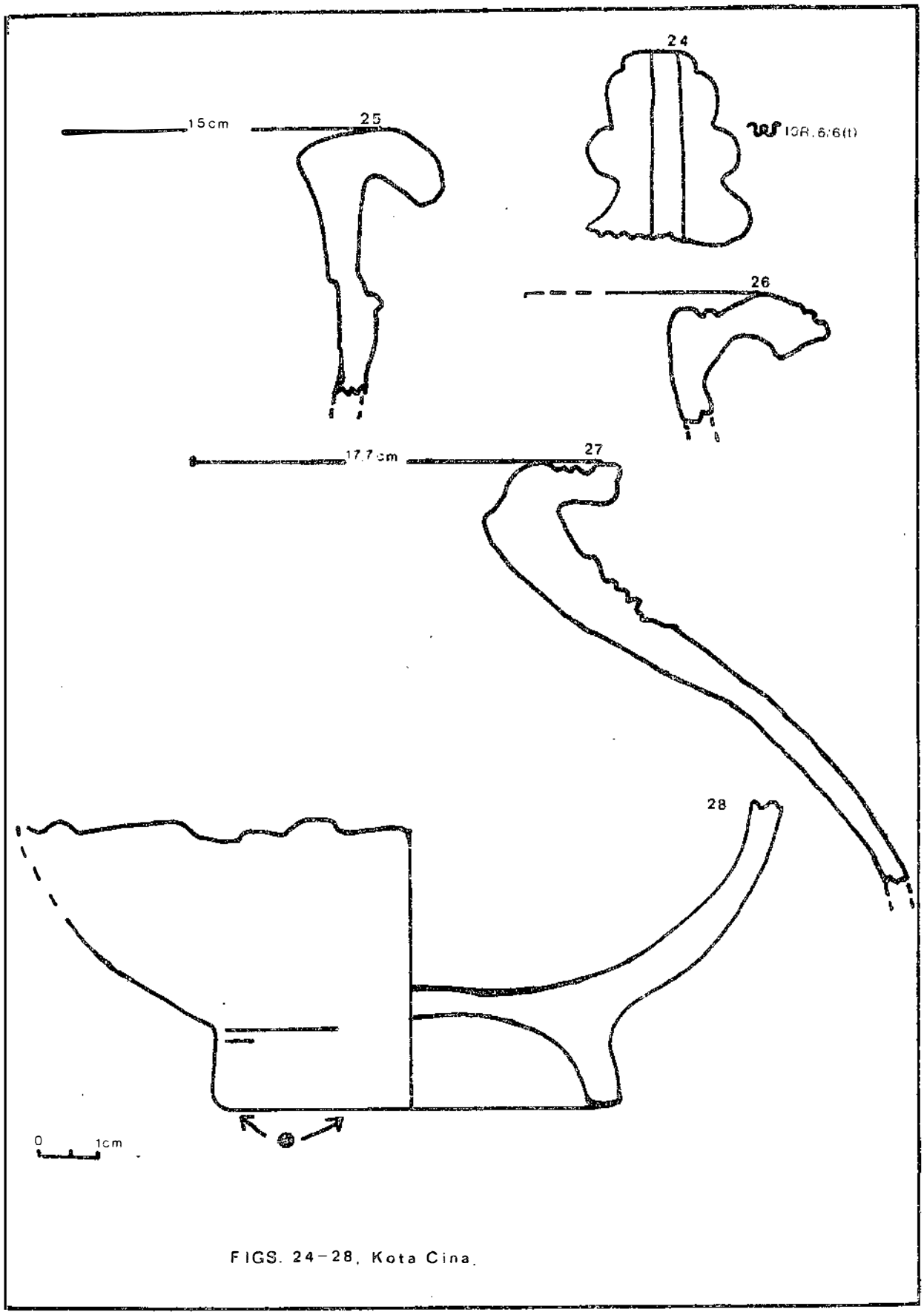
FIGS. 7-11. Kota Cina.



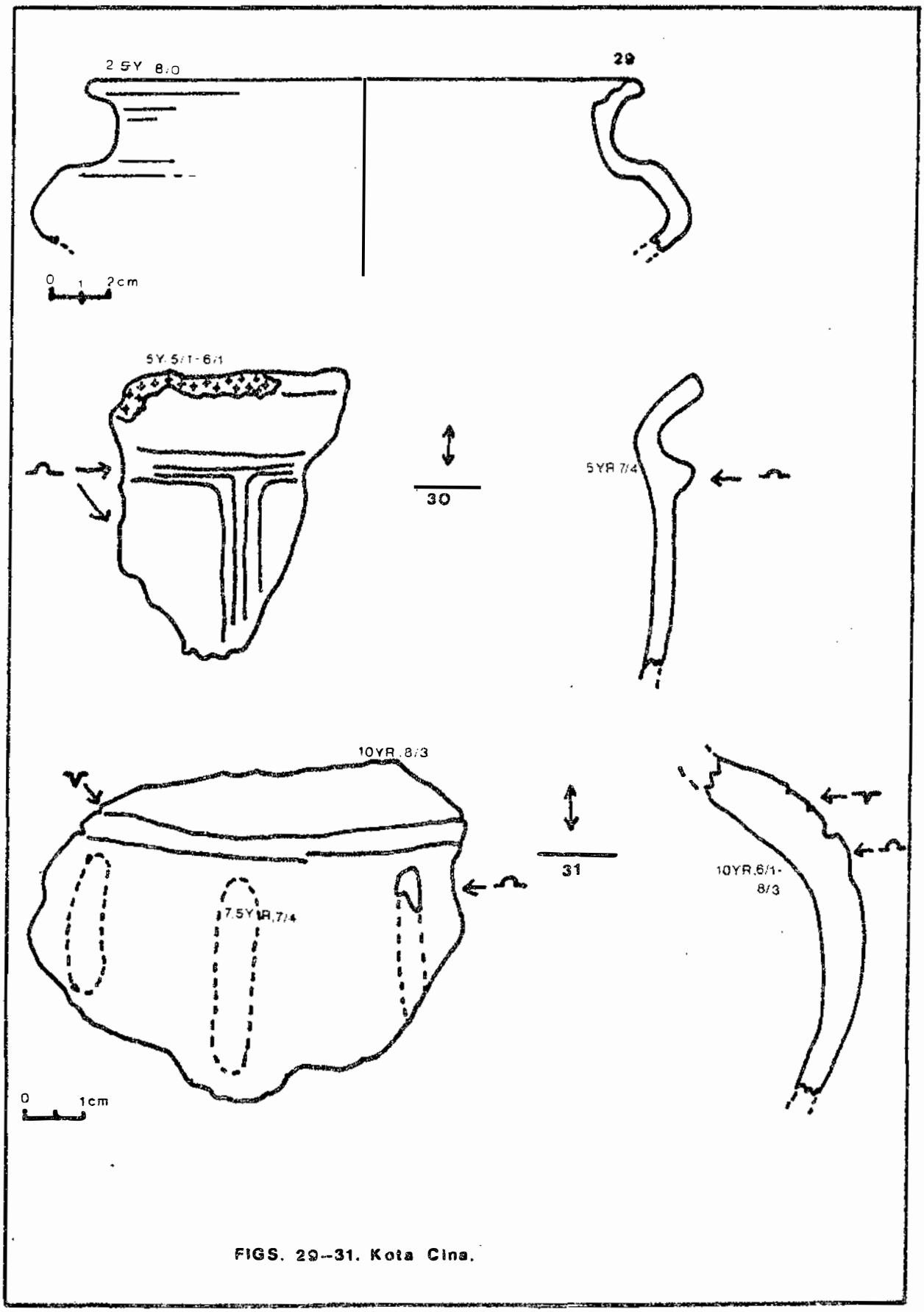
FIGS. 12 –19. Kota Cina.



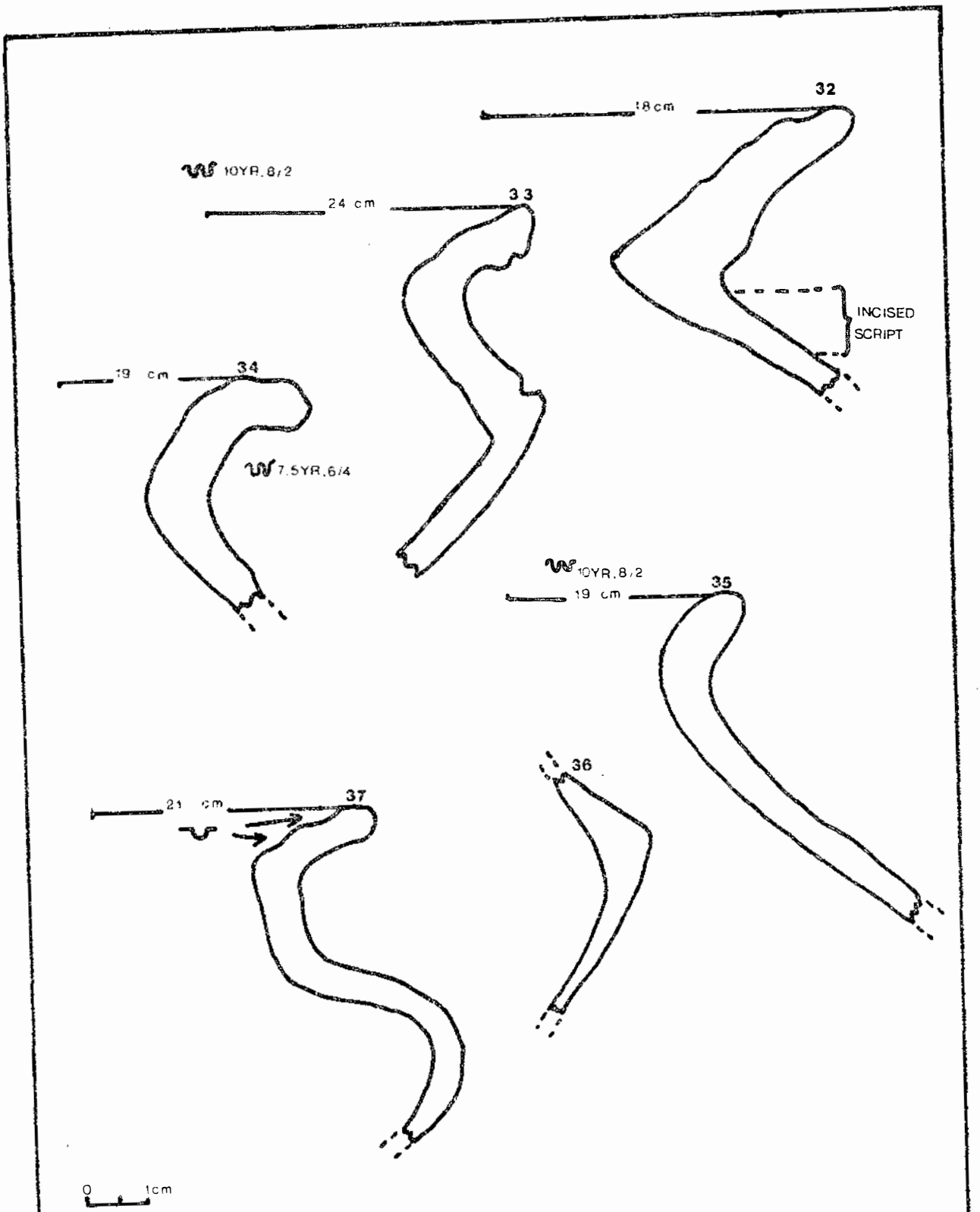
FIGS. 20-23. Kota Cina.



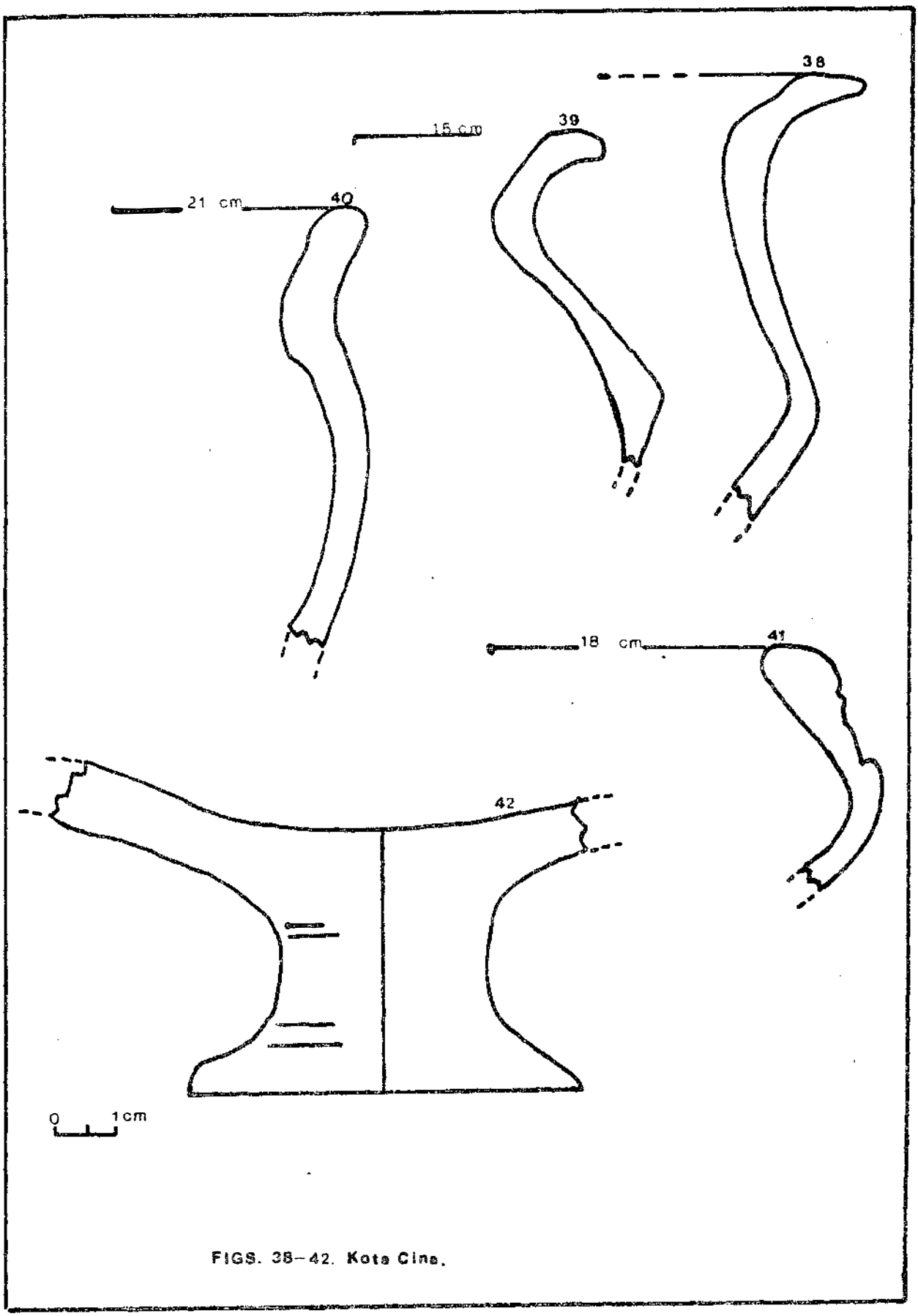
FIGS. 24–28, Kota Cina.



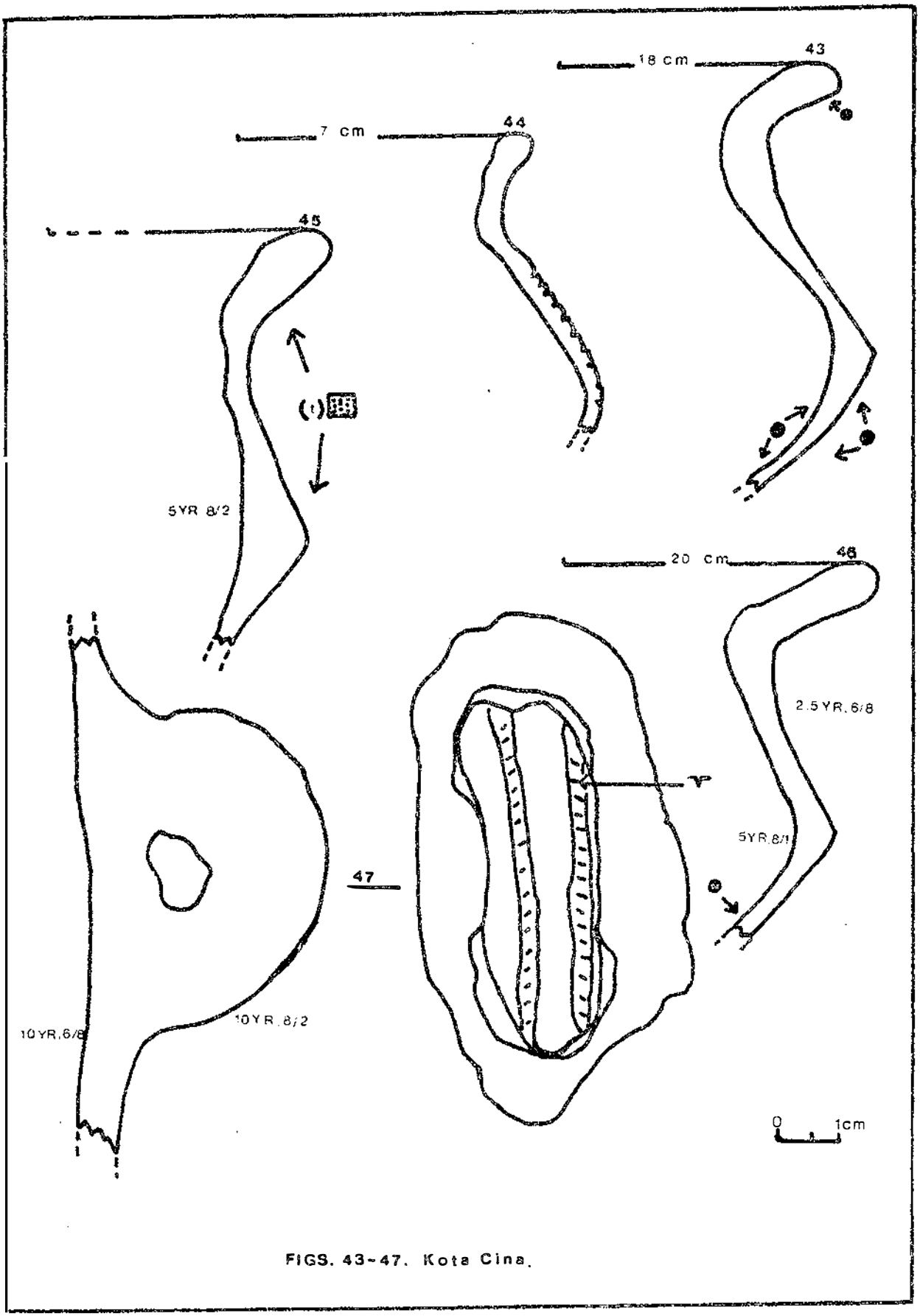
FIGS. 29--31. Kota Cina.



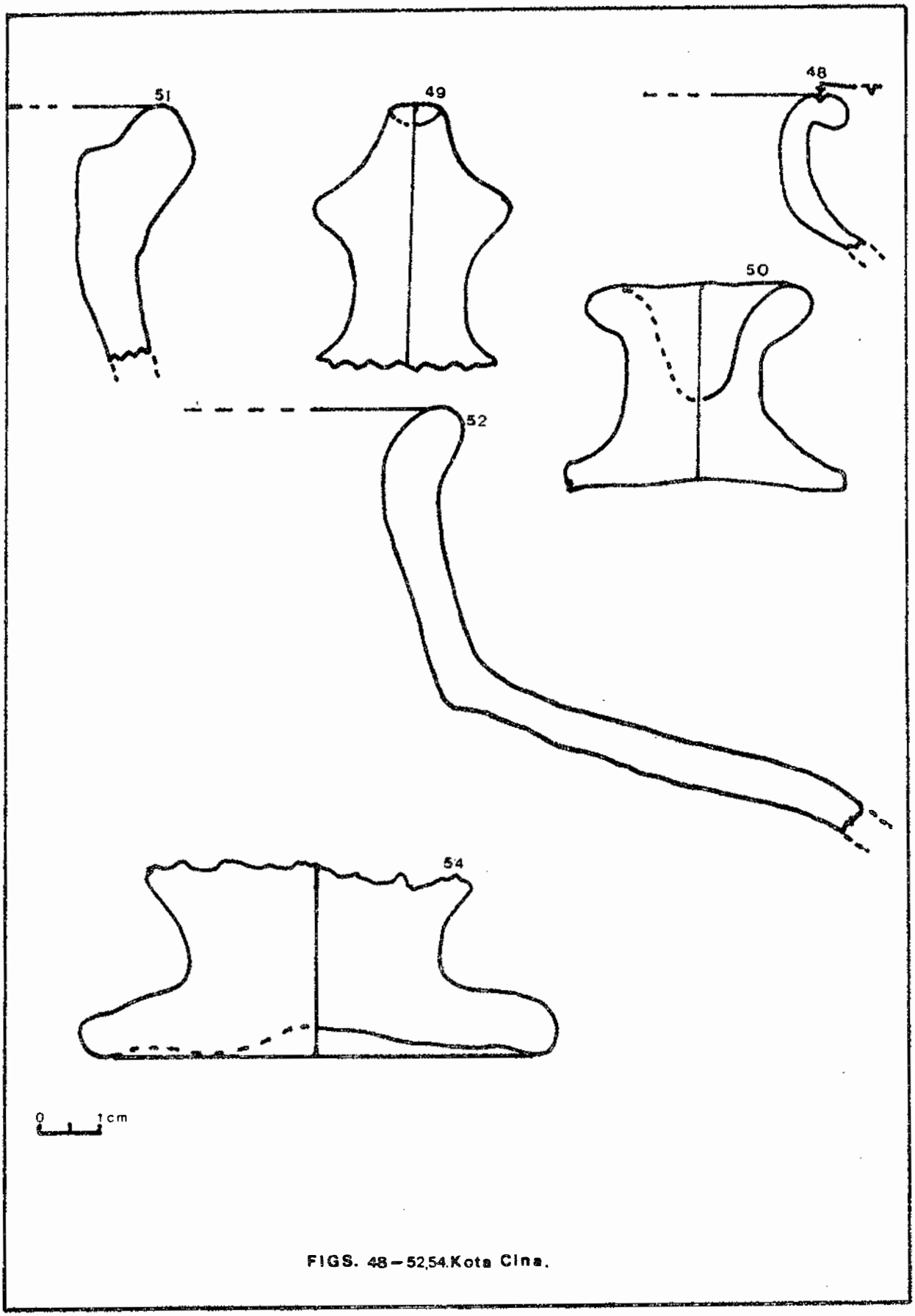
FIGS. 32-37. Kota Cina.



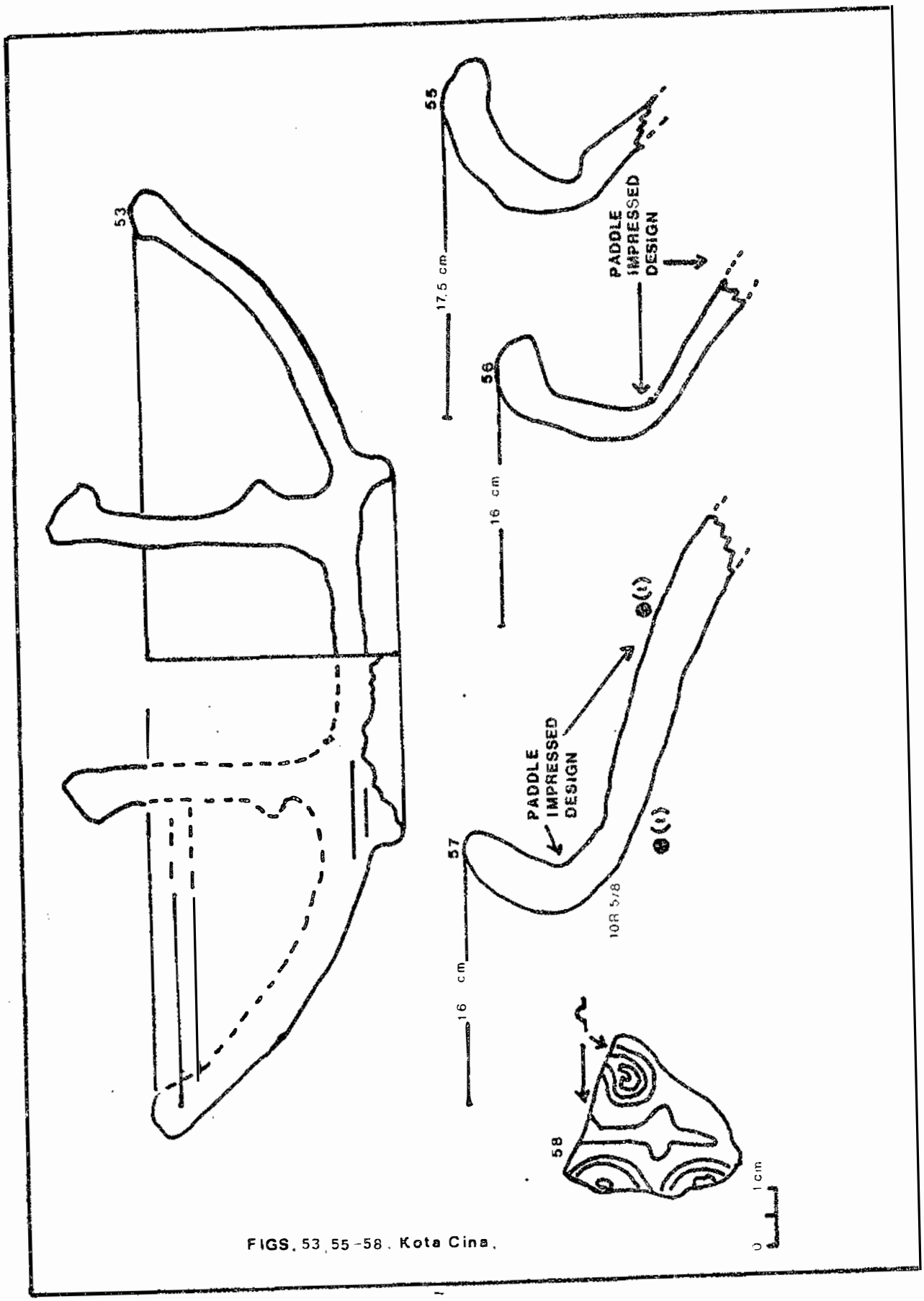
FIGS. 38–42. Kota Cins.



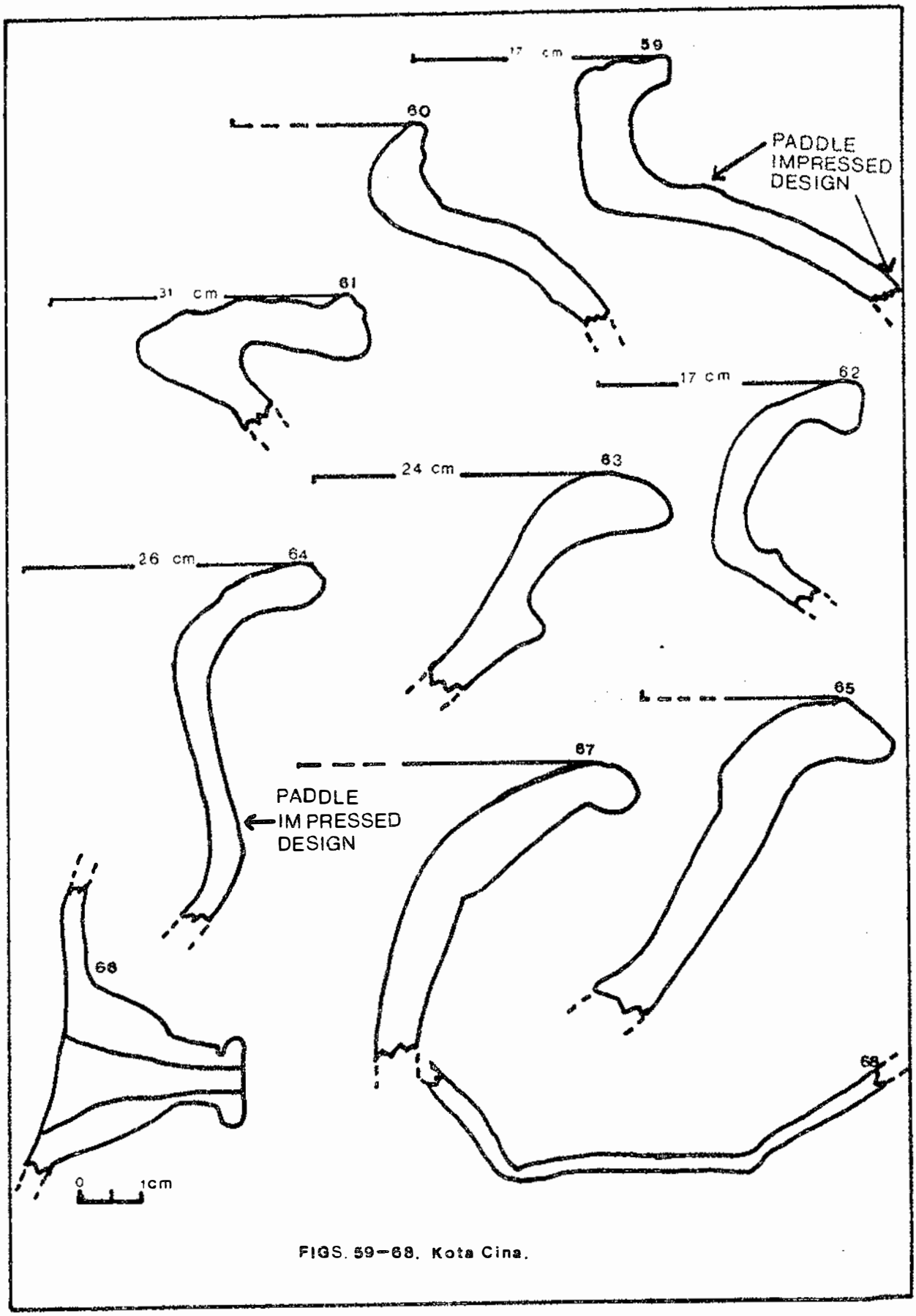
FIGS. 43-47. Kota Cina.



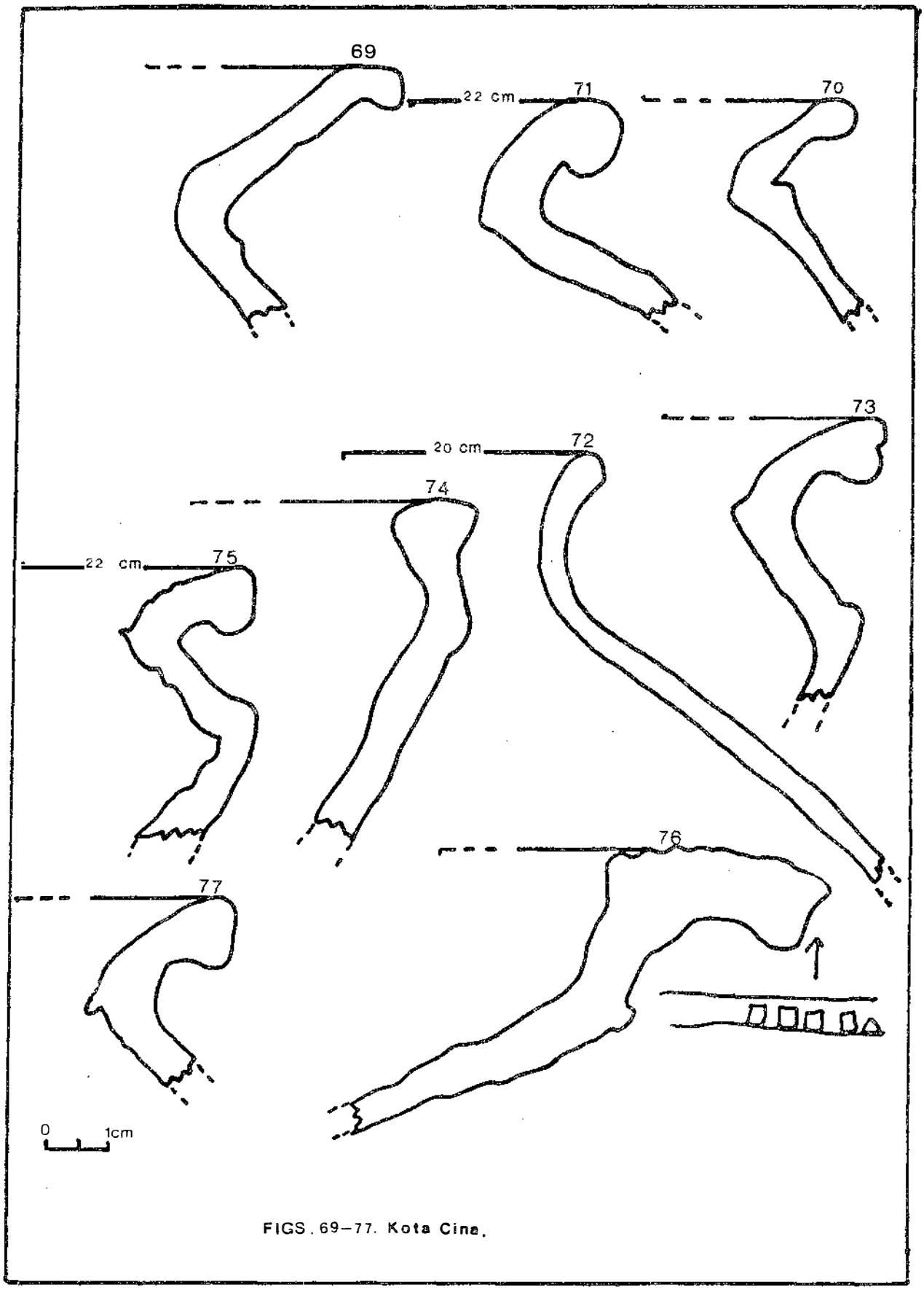
FIGS. 48–52,54. Kota Cina.



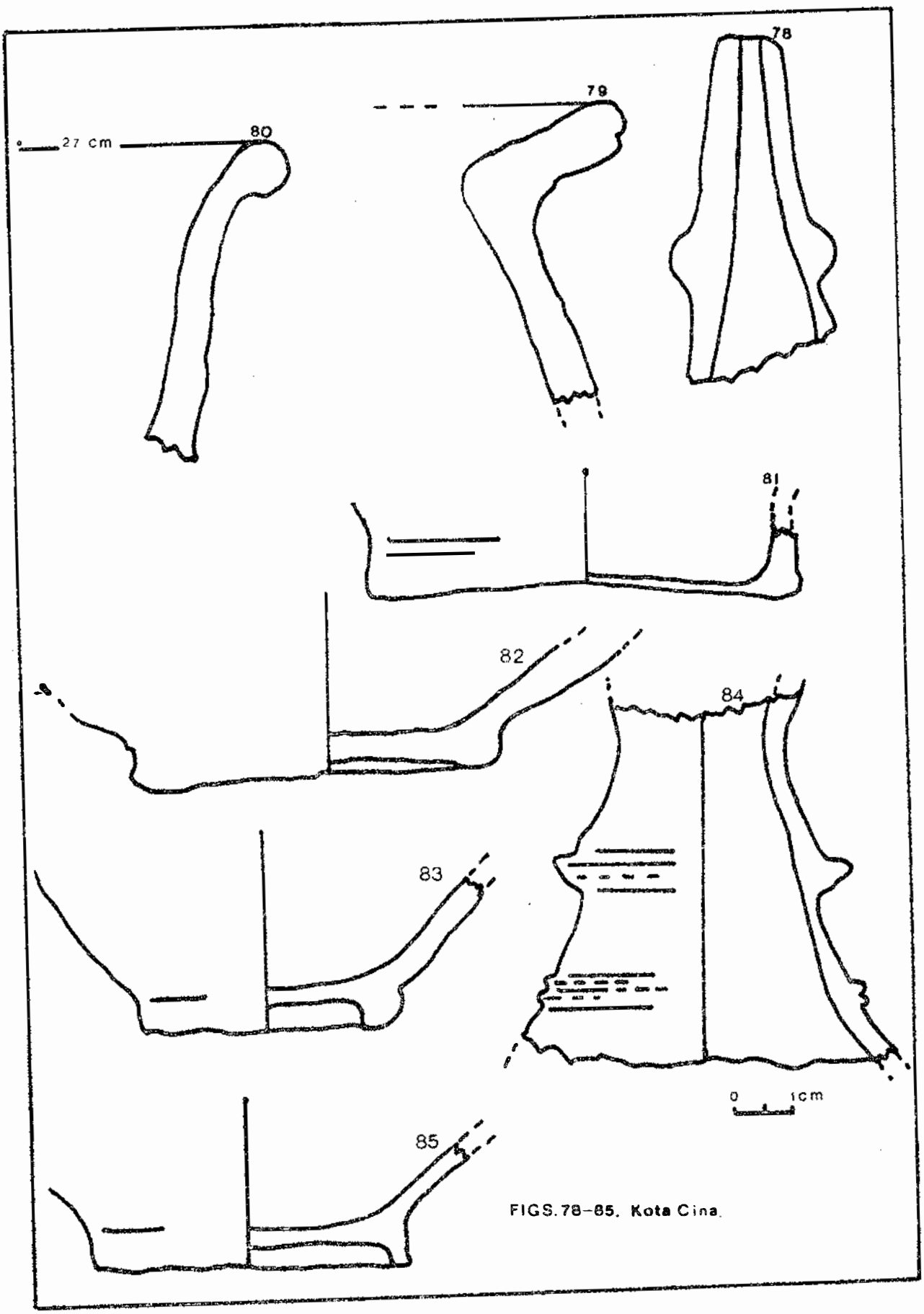
FIGS. 53, 55-58. Kota Cina.



FIGS. 59–68. Kota Cina.



FIGS. 69–77. Kota Cina.



FIGS. 78–85. Kota Cina.

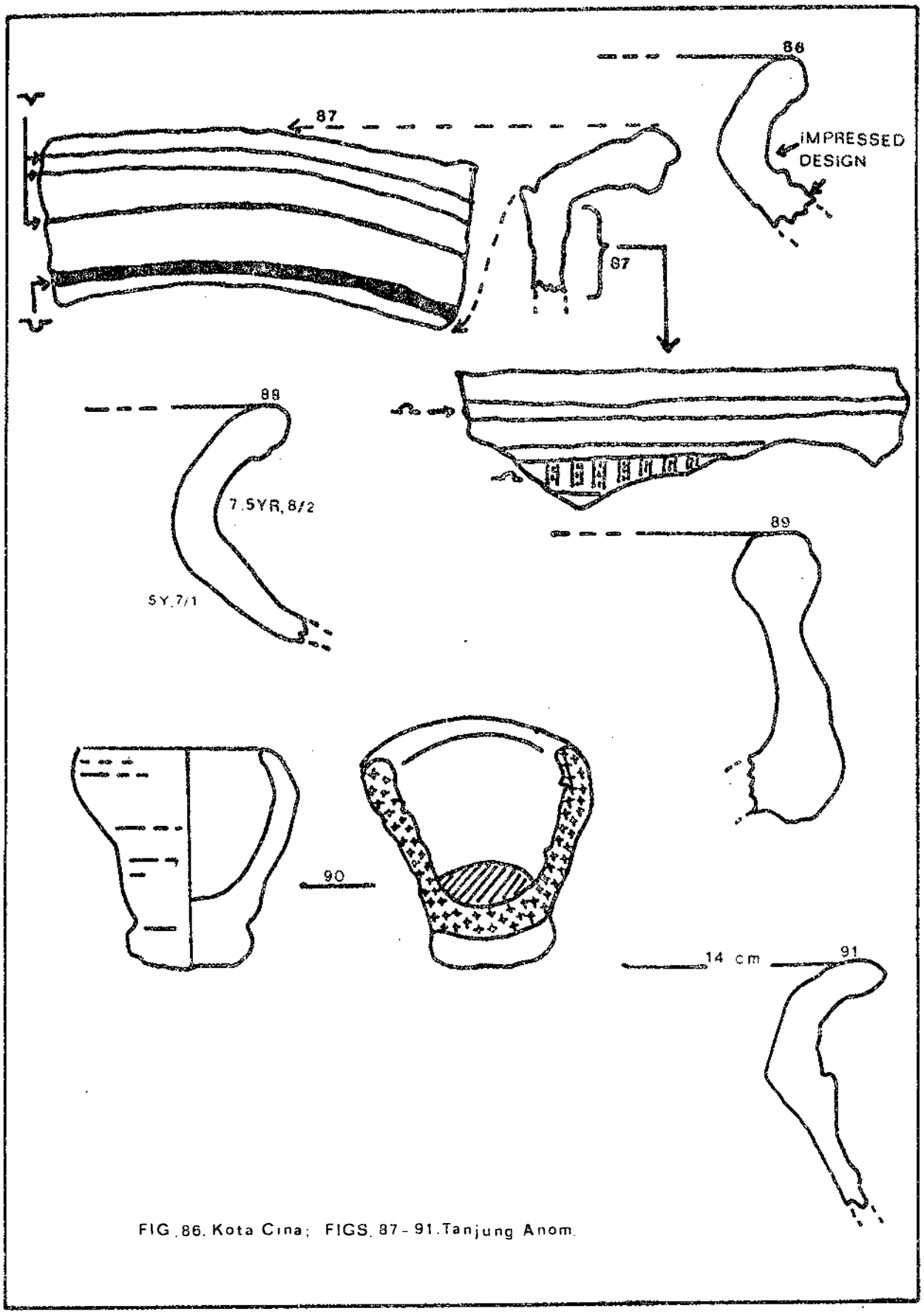
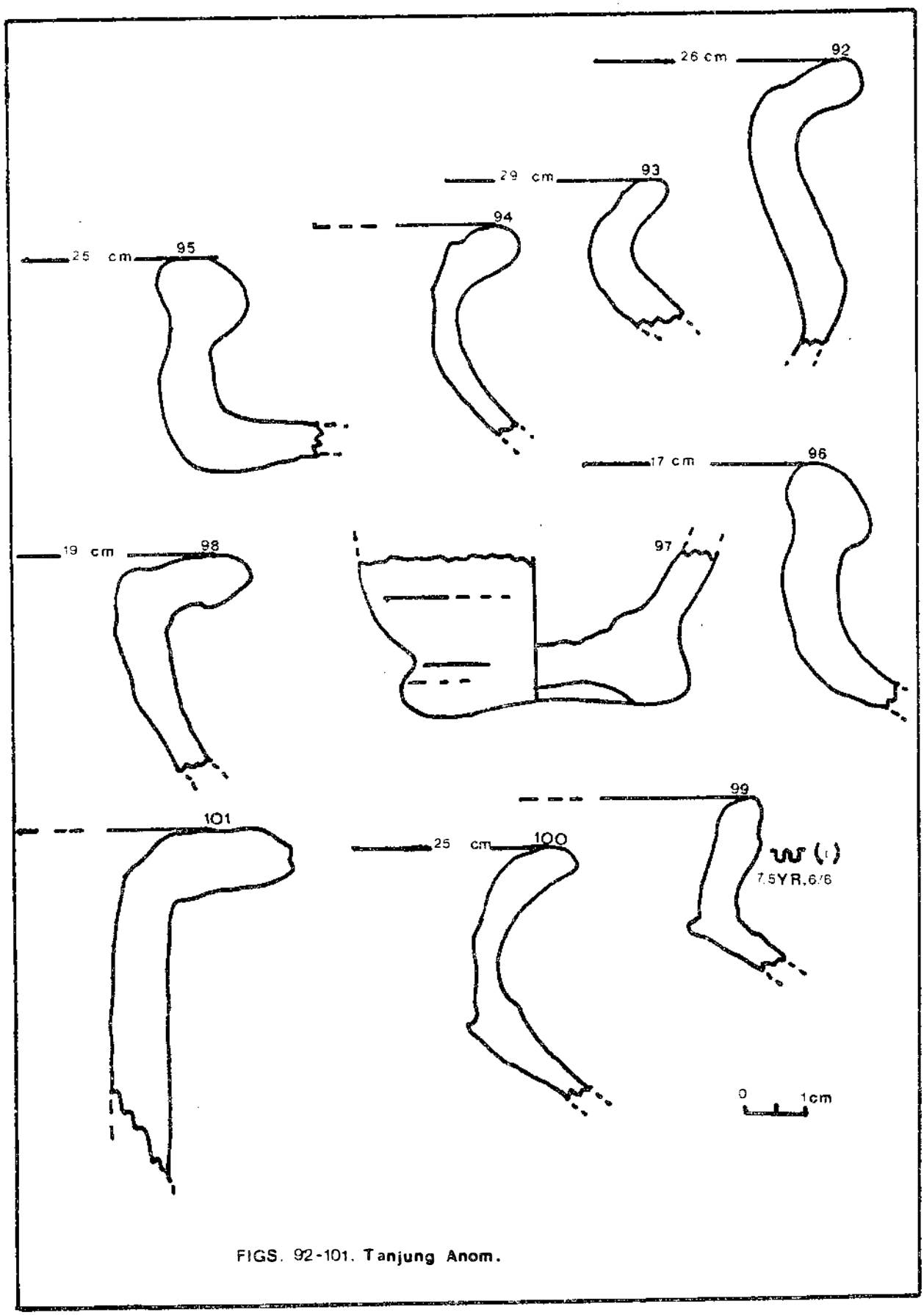
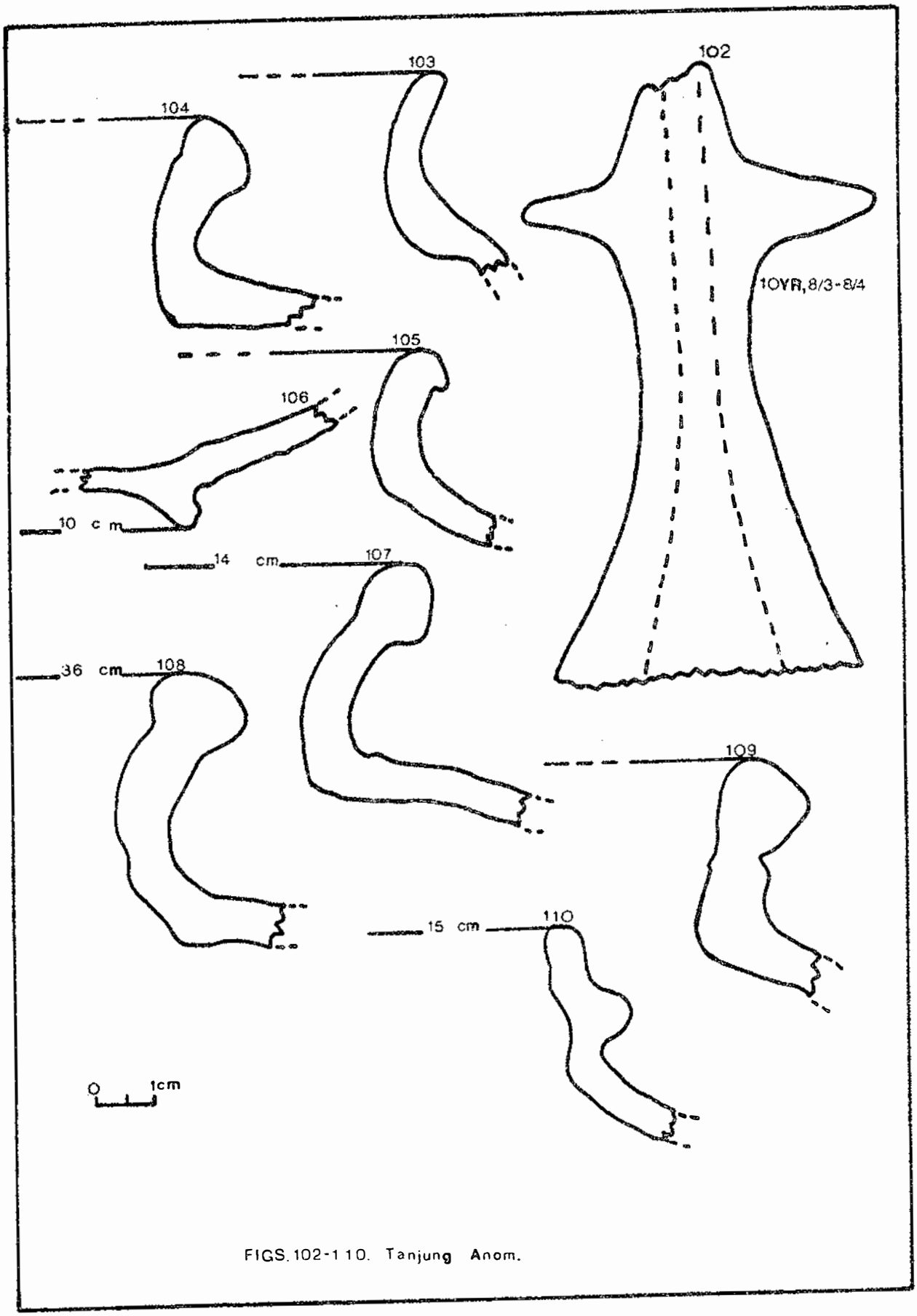


FIG. 86. Kota Cina; FIGS. 87 - 91. Tanjung Anom.



FIGS. 92-101. **Tanjung Anom.**



FIGS. 102-110. Tanjung Anom.

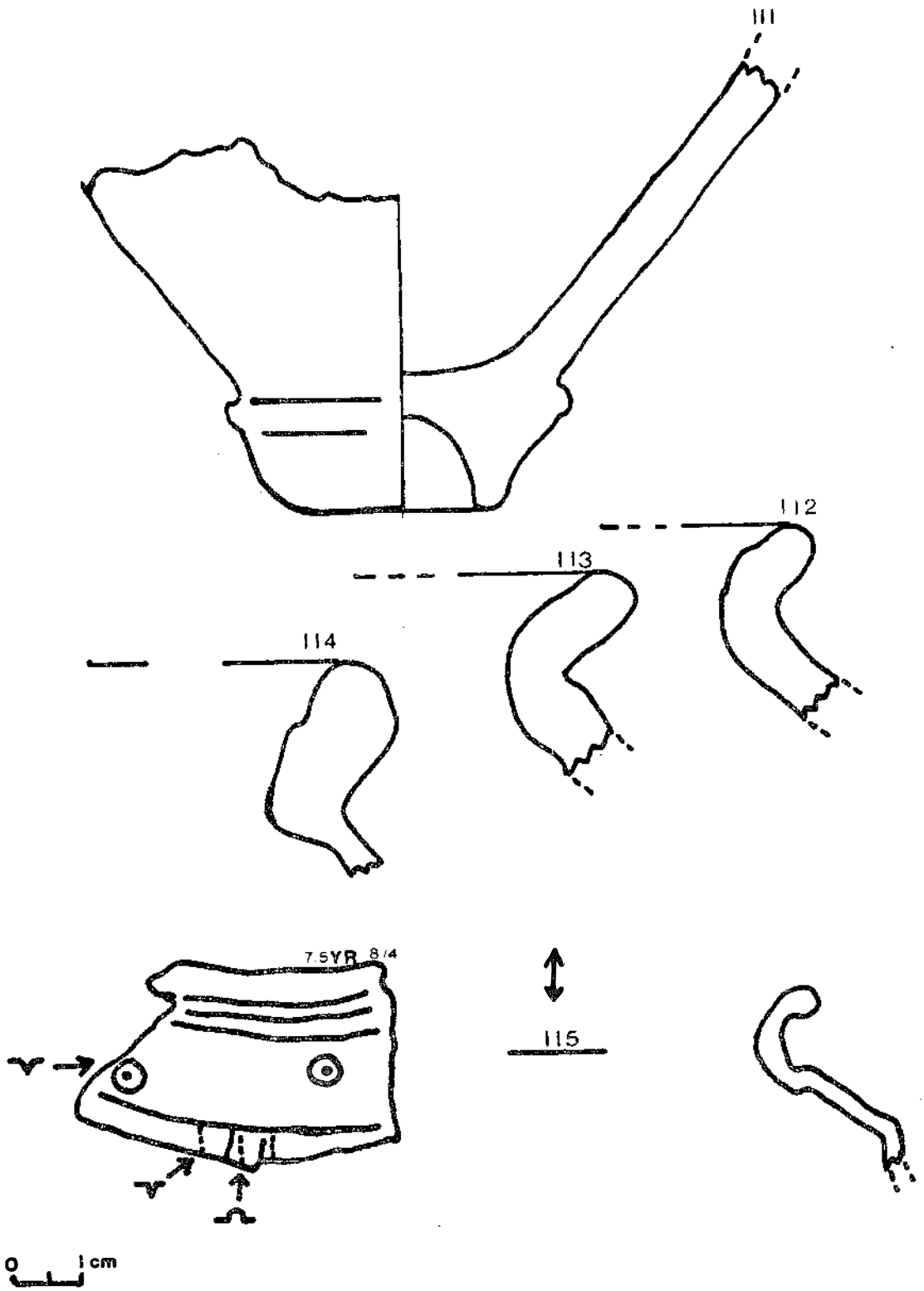
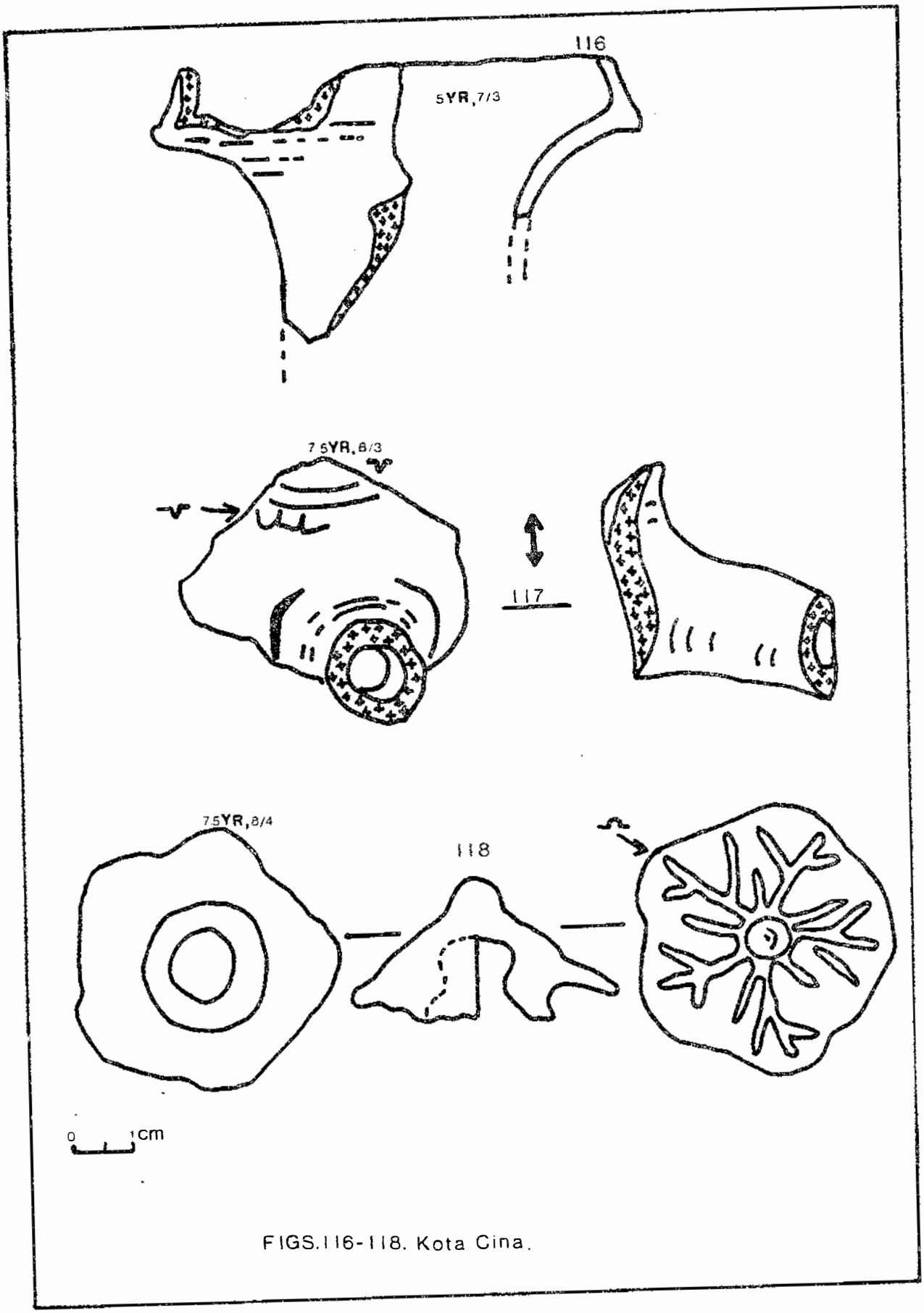
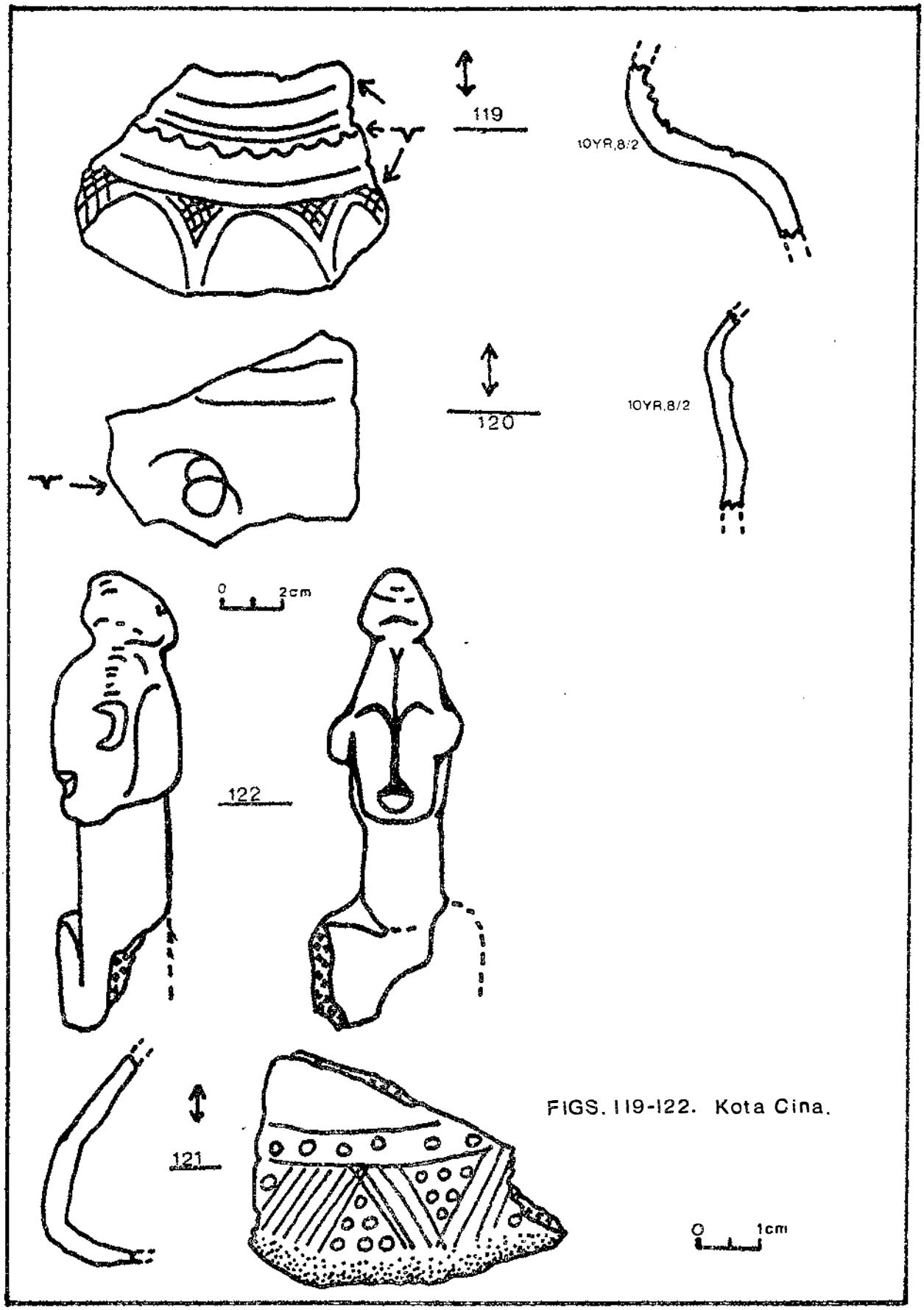


FIG. 111. Tanjung Anom; 112.-113. Kota Jawa; 114.-115. Kota Cina.



FIGS. 116-118. Kota Cina.



FIGS. 119-122. Kota Cina.

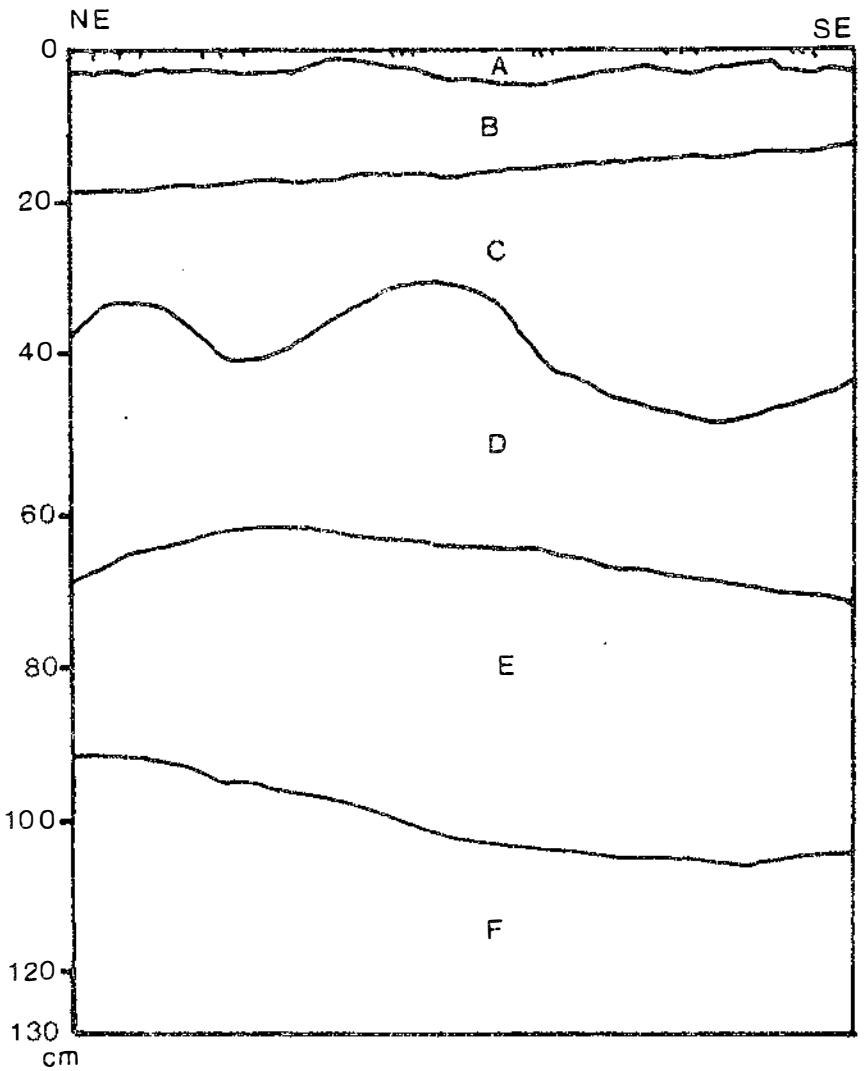


FIG. 123. PROFILE 1 POINT B KOTA CINA

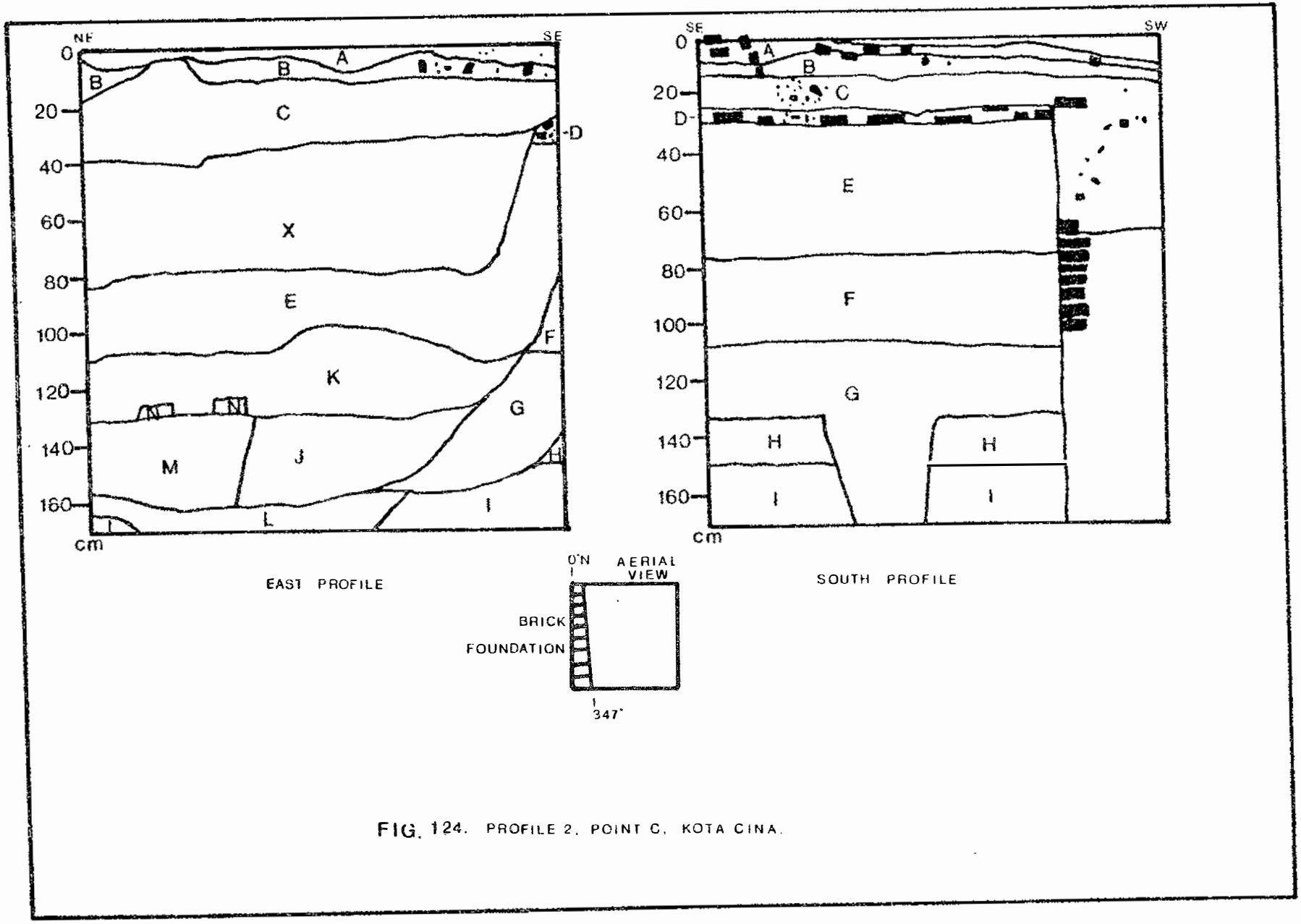


FIG. 124. PROFILE 2, POINT C, KOTA CINA.

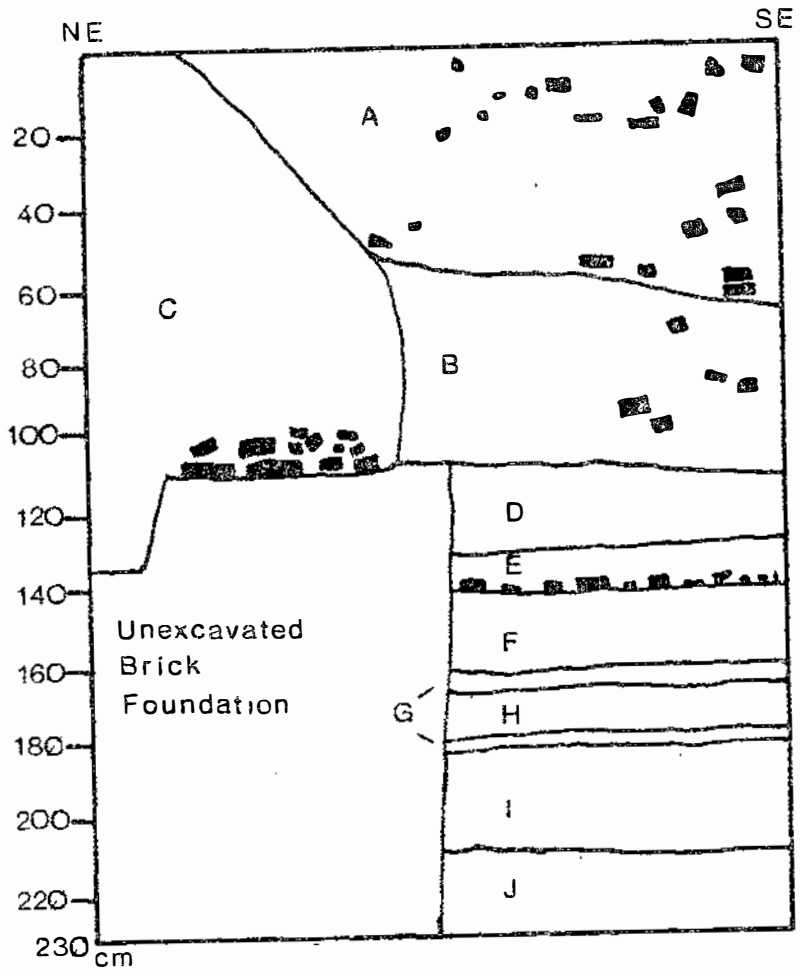


FIG. 125. PROFILE 3, POINT H, KOTA CINA

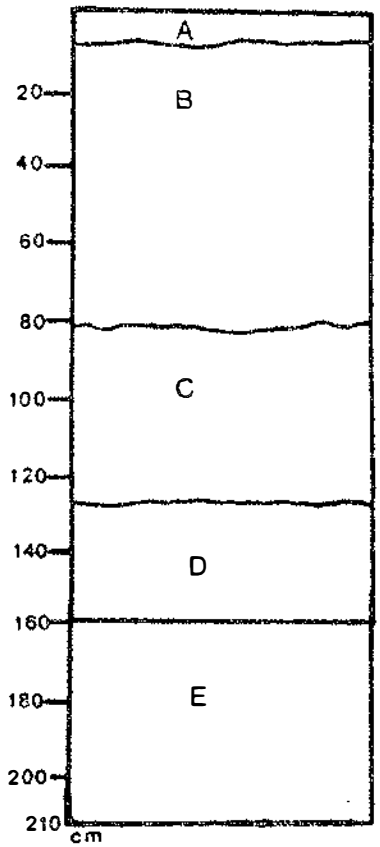


FIG. 126. PROFILE 5 POINT M. KOTA CINA

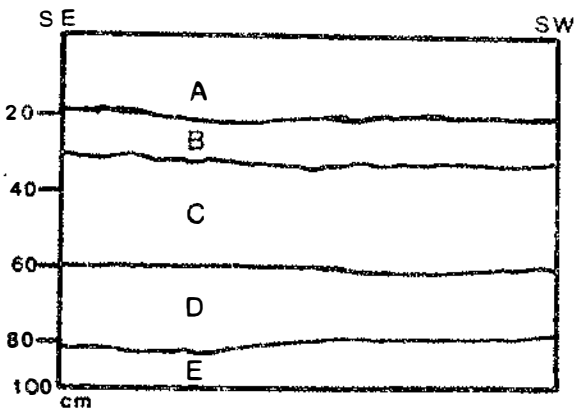


FIG. 127. PROFILE 4 POINT J. KOTA CINA.

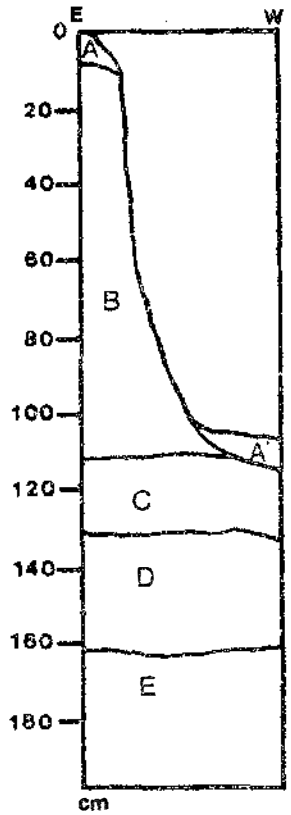


FIG. 128. PROFILE 6, POINT I KOTA CINA

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