中央研究院民族學研究所
專刊之十六

中國遠古與太平印度兩洋的帆筏戈船方舟和樓船的研究

凌　純　聲

中華民國五十九年
臺灣　南港

中國遠古與太平印度兩洋的帆筏戈船方舟和樓船的研究

目　　錄

溫洲商船 Wenchow Trader (after Donnelly, 1924, Chinese Junks, p. 78.)

Vikings of the Pacific 太平洋的海盜雙舟
The Discovery of New Zeatand 發現紐西蘭 (after Mackenzie, 1931, front piece).

壹、導　言

民國十六年(1927)作者在巴黎大學民族學研究所讀書時，業師黎維(Paul Rivet)教我體質人類學，使我印像最深刻的是蒙古種人胎生臀部青斑(Mongolian tache)，這是有色人種之一特徵。其分佈地區在舊世界的亞非兩洲，新世界的南北美洲[1]。黎師除精於體質外，亦兼長語言學和民族學，可謂人類學的全能教授。他說在北美西北部的 Na-Dene 羣的語言與漢藏語系有親緣的關係。Na-Dene 系包括 Athapaskan, Haida 和 Tlingit 三族，是北美最大的語系，分佈於北緯40度和經度75度附近[2]；其中尤以 Athapaskan 與漢藏語系相似之處較多[3]。又海洋洲語言又存在於美洲即 Haha 語系和美拉尼亞安與馬來——玻利尼亞安有親緣的關係。在太平洋沿岸自 Oregon 南部直下到哥倫比亞，在北緯 43° 與 3° 之間，在美國東部部族自 Dakata 到 Texas，又自 Saint Lanrent 達 Florida [4]。至於文化方面試舉一例：patu-patu 或稱 meré 在南北美洲已找到二十一件[5]，此一形似中國的圭笏的禮器或兵器，在海洋洲、臺灣、中國大陸及東亞其他各地都有發現[6]。再舉一例而言，亞美兩洲中隔太平印度兩洋或稱海洋洲，此三地自遠古以來即有往還，所恃水上交通工具最初爲桴栰，後有邊架艇，再進則有雙舟[7]，最後即爲有名的中國式的帆船 (junk)，使新舊兩世界與海洋洲連成一廣大的區域。南島語系民族 (Austronesian) 的分佈，西起亞非兩洲的東岸，中經印度與太平兩洋的島嶼，東抵南北美洲西海岸[8]。故在種族、語言和文化三方面、如作深入的研究，都能尋本溯源，多多少少找出它們的親緣來的。

---

(1) Rivet, 1957, pp. 71-72; Fig. 16.
(2) Rivet, 1957, pp. 71-72; Fig. 16.
(3) Shafer, 1952, pp. 12-13.
(4) Rivet, 1957, Fig. 17.
(5) Rivet, 1957, p. 160.
(6) 凌純聲 1956, pp. 2-10
(7) Rivet, 1957, p. 163.
(8) Faublée, 1952, p. 649.

黎維師在1943年始刊行名著美洲住民的來源（Les Origines l'homme Americain）、在加拿大發行法文本、同時在墨西哥有西班牙文本，至1948年在巴西又刊葡萄牙文本。民國四十五年(1956)第五屆國際人類學與民族學會議在美國費城（Philadelphia）舉行，這是我第二次在會議中遇見黎維師的，(第一次在菲律賓馬尼拉)且同住在 Normandie 旅館，當時我曾以正在研究中的巴圖（patu）和帆筏（raft）等問題向他請教，而黎維師却借給我加拿大 Montreal l' Arbre 書店出版1943年的法文本，並謂此書已售罄，將來法國還要再印。我手頭所有的一本是1957年巴黎 Gallimard 書店出版的1943年本。當時匆匆讀過一遍，做了些參考材料的記錄，就還給黎師。當時記下的加拿大本頁127有下面的一段：

> 是可斷言的、太平洋對於人類不再是一廣大的洋漠，在新舊世界之間，不是阻隔而是可以橫渡的海洋。遷移的民族有的努力成功，有的不幸失敗，到達美洲的殖民於此，還有冒險的商人越洋而來。直到大發現時代來臨，差不多有定期的航行，這是無疑問的、實行的上述兩種海上交通。
>
> 遠在歐洲帆船大發現之前，美拉尼西安和玻里尼西安不可思議的獨木舟（有邊架的），還有秘魯的原始的木栰 balsas 早已在汪洋的海上航行了，這是史前可感人的史詩，早在偉大時代歌頌英雄的史詩久已存在了。這也就是人類的所有歷史(1)。

所以黎維師謂美洲民族的來源是多源的，最主要的來自亞洲的西伯利亞、庫頁島、華西、蒙古、西藏、高麗、日本、菲律賓、中國的臺灣、婆羅洲等地(2)。美洲愛斯基摩人，大多數的民族學家都認爲源自亞洲的。澳洲人在美洲則僅限於南美最南端，其遷移路線是經過南極洲的。美拉尼西安人到達美洲是由水路去的。水運工具有葦舟、木栰、雙舟、邊架艇、船首並畫有眼形。橫渡大西洋去的有白種人和黑矮人(pygmées)還有北歐人（Normands），早在哥倫布之前，亦有移殖美洲東岸的(3)。美洲沿太平洋岸，在人種、語言和文化上與海洋洲的關係最爲密切，除上述的美拉尼西亞最早航行外，且與玻利尼西亞或多或少也有定期性的貿易往還。因此美洲西部與海洋洲特有多

(1) Rivet, 1943 p. 127.

(2) Hrdlicka, 1917, pp. 559-568.

(3) Rivet, 1957, pp. 85, 99, 111, 131, 141.

種水運工具兩洲早已發生接觸。我受了黎維師的薰陶對於橫渡太平洋文化問題早已發生興趣，到了臺灣研究土著亦是屬於南島系（Austronesian）與馬來——玻里尼西安（Malayo-Polynesian）同一語言和文化，更增加了我的信心。

近十五年來，民族所同事鮑克蘭女士常對我說奧國學者 Heine-Geldern 氏告訴她，希望中國的學人能將古代燕、齊、吳、越、閩、粵沿海諸國的歷史材料翻成西文以供西洋學者研究，他知道要明瞭亞美海洋洲的文化多數是源自亞洲的，尤其是華東沿海的古代文化。他曾說："總而言之，要解答美洲與玻里尼西亞文化接觸問題，不能忽略了亞洲的史實"(1)。他反對 Heyerdahl 著美洲印第安人在太平洋（American Indians in the Pacific）一本巨著的理論，而寫成太平洋移民的數個問題（Some Problems of Migration in the Pacific）的一篇長文，此文乃是他得 Wenner-Gren 基金會的獎助金而從事於亞洲、海洋洲與美洲文化關係橫渡太平洋研究的成績報告書。

於 1956 年在費城舉行的第五屆國際人類學與民族學會議時，我也遇到了 Heine-Geldirn 氏，他提出的論文題爲關於哥倫布以前新舊大陸之間接觸問題的理論的商討（Theoretical Considerations Concerning the Problem of pre-Columbian Contacts between the Old World and the New），其中有關新舊大陸之間在古代的交通問題，有兩段很重要的文字，茲摘錄於下：

> 我們對於馬亞（Maya）和遠東文化的某種相似點有很深刻的印象，這不得不對一個嚴正的著名的考古學家付出我們最大的崇敬。兩年前出版了一本書，其中作者主張一些人種到後來才與馬亞互相混合，這批人種來自亞洲，行經伯令海峽，他們所帶來的不僅是某些源於印度教或佛教的宇宙觀，同時也，帶進了他們祖先所從事的農業知識。這位作者他自己表明他的觀點並不是正統的。的確，這非但是目前美洲學家所流行的觀點，同時也是很合的民族學的理論。我們可以想像那些古代原馬亞人（Proto-Maya），經過一代代從西伯利亞東經阿拉斯加、加拿大、美國移植到墨西哥後，還一直記著很古很古以前，他們住在中國或東南亞的祖先所從事的農業，那種模糊的基礎，便很成功的介紹到中美

(1) Heine-Geldern, 1952, p. 357.

洲[1]。

海氏 (Heine-Geldern) 上節敍述一位美洲專家 (Americanist) 的名考古學者 (Archaeologist) 發見 Maya 文化中有印度教或佛教的宇宙觀和亞洲的農業知識。他還自己表明他的觀點並不是正統的。所謂正統的美洲專家都以美洲印第安文化多數是獨自發明的，即使有外來的文化、那也是從西伯利亞、伯令海峽、阿拉斯加、加拿大、美國而到墨西哥循陸路傳播而來。所以海氏又說：

> 這是一個恐懼太平洋的典型例子——我們也可稱爲一種恐水症 (hydrophobia)——許多人類學和考古學者好像都身受其苦。進一步言之，這又是作者前面所提到過的，對舊世界文化不够熟知的例子。在我們的文獻記載中，可看到許多有關在公元前五世紀的時候，在中國沿海地區，於造船和航海方面就有高度發展的記述；同時，中國的資料明白指出，早在公元前五百年的一段時期中，南亞的船隻比哥倫布和麥哲倫所用的那種船隻，在體積和裝備兩方面都較爲優越。此外，我們也不應忘却許多在歷史早期中，平均每五年有一隻駛抵美洲大陸沿岸的東亞帆船。這足以表示美洲大陸的存在，可能早爲亞洲人所知曉了。當然，我們不能把這些資料認作古代橫越太平洋 (trans-Pacific) 關係存在的證；明可是這可以說明，昔日橫越太平洋之接觸，在技術上來說，是辦得到的[2]。

海氏係東南亞區的民族學和考古學專家，對於亞洲的資料，尤其關於南亞的都很熟知，他深知中國原史與古史記載中國人在海上的活動，但他僅曉得“在公元前五百年的一段時期中，南亞(應包括東亞)的船隻比哥倫布和麥哲倫所用的那種船隻，在體積和裝備兩方面都較爲優越。”至於散在原史的材料或近於神話的傳說，則難於獲悉，因爲海氏不諳中文，所以他常勸中國學人把古籍翻成西文，以供研究亞洲人遠古時代在海上航行的史實。

由上所述，美洲印第安文化的起源問題略可分爲四派說法，簡述如下：

第一、土著派　美洲印第安文化完全是土生土長 (autochthonous)，換言之，

(1) Heine-Geldern, 1956, p. 280.
(2) Ibid.

沒有受到外來的影響，亦卽所謂正統派，所以哈佛教授說此派是學說上的門羅主義。

第二、陸橋派 (Land-bridge)[1] 印第安人自亞洲西伯利亞渡過伯令海峽，大約在公元前一萬五千年或更早些到阿拉斯加而散佈美洲各地，他們子孫，沒有一個受美洲人的幫助而創造出高度文化，直到西班牙人發現拉丁美洲時爲止[2]。此派又稱古典派。對於美洲人種來源，就想到伯令海峽，該峽約五十六英哩闊，接連北冰洋與伯令海，分隔亞美兩洲。中間尙有大小 Diomede 兩島，大島屬俄，小島屬美，二島相距祇有兩英哩，亞美兩洲相距如此之近，其中又有兩個跳板，任何原始的水運工具都能渡過，且在冬季結冰期間，交通更爲便捷。

第三、海洋派印第安人多數成份是橫越太平洋 (trans-Pacific) 而到美洲，尤其南太平洋中的島嶼星羅棋布。自非洲東岸，中經海洋洲，至美洲西岸，又爲同一種語系民族 (Austronesian) 所分佈的區域；且在印度太平兩洋自遠古以來水運工具早已發達，現在雖已改用新的水運工具，但古代原始的工具尙有零星殘存，足供民族學和地理學者研究的資料。現代海洋學派除黎維氏外，爭論最激烈者爲 Heyerdahl 和 Heine Geldern 二氏，赫氏認爲海洋洲的民族來自美洲的印第安人，海氏的主張則反是，已如上述。地理學者如 Edward 在 1965 年著有南美太平洋海岸土著的水運工具 (Aboriginal Watercraft on the Pacific Coast of South America) 氏在1969年又刊行歐人發見前在太平洋航行的新世界觀望，(New World Perspective on pre-European Voyaging in the Pacific) 又 Edwin Doran 氏去年曾來臺灣及菲律賓等地考察，現在研究太平洋原始船艇的航行的特質 (Sailing Characteristics of Primitive Pacific Craft)[3]，他又著有腰舵的起源 (The Origin of Leeboards)[4] 一文，Doran 氏說腰舵亦起源於中國的他曾說南美文化源自亞洲，橫渡太平洋，竹筏可以勝任[5]，其他如 Hornell 有在哥倫布以前海洋南美二洲之間的民族有沒有接觸過 (Was there pre-Columbian Contact between the Peoples of Oceania and

(1) Edwards, 1965, p. 112.
(2) Meyer, 1970, p. 46.
(3) Doran, 1970, p. 1.
(4) Doran, 1967, p. 51.
(5) 吳元熙，1970, p. 3.

South America?) 的討論 (1)。餘不勝一一列舉，總之，此派學者，日漸增多，作者十五年來亦從事此一研究。

第四、大西洋派　早在1697年 Fray Gregorio Garcia 刊行一書叫做新世界印第安人的來源 (The Origin of the Indians of the New World) 書中有云：

> 印第安人來此不是僅由舊世界一地而來，或同一路線，或同一時代；有的可能是迦太基人 (Carthagians) 的後代，別的來自沉沒的大西洋洲 (Atlantic)，或自希臘，或是腓尼基人 (Phoenicians)，其他還有來自中國的漢人韃靼人及其他的民族(2)。

上引 Garcia 氏係十七世紀初葉之說，至三百五十年後 (1943年) 黎維氏書上亦說美洲也有白種人和黑人及北歐人種，大西洋中甚少島嶼，也沒有原始水運工具殘存，所以歐非與新大陸的來往已到了歷史時代。到了1961年李惠林 (Li Hui-lin) 發表木蘭皮：在哥倫布前阿拉伯船橫渡大西洋航行的一例 (3)。李氏根據周去非(ChouCh'ü-fei)在1178年著的嶺外代答 Ling-wai tai-ta 和趙汝适(Chao Ju-kua)在1225年的諸蕃志 Chu-fan Chih 二書說：

> 二本宋代地理書記載在阿拉伯國極西很遠之地，巨艦航行百餘日，可能假定到達南美洲地方(4)。

上述三位學者：Garcia, Rivet, Li Hui-lin 都是根據文獻記載，試作假設，沒有實地的根據。

本年夏季用遠古水運工具草筏橫渡大西洋者，又是二十餘年前以 balsa 木桅作探險試航的 Heyerdahl，茲錄胡露奇氏在中華民國五十九年七月十八日中央日報第二版發表的一篇短文：

> 草筏橫渡大西洋者：二十三年前，挪威動物學家 Thor Heyerdahl 欲證明用木筏自南美洲漂到 Taumoto 羣島 (在南太平洋中部) 之可能性，完成了舉世聞名的壯舉。該筏名爲 Kontiki (Heyerdahl, Kontiki Across the Pacific

(1) Hornell, 1945, p. 191.
(2) Meyer, 1970, p. 46.
(3) Li Hui-lin, 1969, p. 114
(4) Ekholm, 1966, p. 114.

by Raft, 1956)，並有著作及電影問世，轟動一時。去年他又想到古埃及人利用草筏渡大西洋的可能性因在秘魯見到金字塔是古埃及的遺蹟，怎麼會在秘魯亦有呢？

後來，他在埃及、依索比亞等地見到一種水草（該草名爲 Papyrus 是古埃及造紙的原料），當地人紮成筏，在湖上作捕魚或交通工具之用，使他連想到古埃及人可能利用此種草筏渡洋的可能性。爲了想證明此一可能性，他於去年紮成草筏，太陽神一號 RA 工作試探，但經過五十餘天後，草筏吸飽了水，有逐漸下沉之勢，逼不得已中途棄'船'，但他不因此而中止。今年五月十七日又自摩洛哥的沙飛（Safi）啓程，預定七月中旬可抵達巴貝多。瑞典廣播公司特派攝影記者前往大西洋，爲他們拍攝記錄影片。但因一時僱不到適當的船，而與聯合國糧農組織漁業發展計劃加勒比海辦事處洽商，獲得主管翟佈施（Mr. John Dibbs）之同意，但該處所屬漁船 Calamar 船長李富定(Capt. Liefting) 受傷，翟氏特電筆者自牙買加趕來駕該船出海，協助瑞典攝影記者完成任務。該草筏目前與去年一樣已吸飽了水，但並未下沉，他們因爲有了去年的經驗，知道根本不會沉，所以仍繼續航行。我們完成任務後即返航，當時他們離巴貝多（Barbados 在西印度 Artilles 羣島）(1) 尚有六百哩，預計下星期可以抵巴貝多。筆者特儘速向國內報導此一消息(2)。

編者按：本文係由奉派出海協助拍攝挪威草筏記錄影片的胡露奇先生所撰寫，照片亦係胡先生所供給。

胡露奇氏雖駕駛漁船，協助瑞典攝影記者完成錄影，亦可說間接參加 Heyerdahl 氏用草筏橫渡大西洋探險的壯舉，所以作者不憚煩的將胡氏的短文全部錄出如上。Heyerdahl 氏在太平和大西兩洋用木桅草筏橫渡均能成功，則新舊世界的交通除伯令海峽距離五十六英哩，可說環美洲皆海，所以與美洲的交通均須由水路往還。要了解美洲的人種、文化來源等問題，非對舊世界航行到新大陸的原始水運工具加以研究不可。而上述四派除土生派外，餘均爲水路，故原始的水運工具問題一經解決，則太平洋與大西洋不是新舊兩世界的阻隔，且可視爲康莊大道矣（Water, not land, was

(1) 陳世宗，1971, pp. 1-2.

(2) 胡露奇，1970, p. 3.

looked to as providing the easy route)。

要研究新大陸的原始水運工具，當先自舊世界尤其中國古代文獻中原史和歷史保存的資料着手。國人近年來對此亦漸感興趣(1)。即以民國五十八年而論，一年中就出版兩本專著，三月刊行有逵鑑三氏著法顯首先發現美洲考證專刊，法顯佛國記一書，中外學者翻譯與研究者不下數十家，但議論紛紜，莫衷一是。逵氏的研究可述者：(一)法顯於東晉安帝義熙八年（公元 412 年）由師子國、擬乘船到廣州登陸回國，因大風而在海洋上漂流一百十餘日到達耶婆提國；（二）以方向東航時日一百十餘日計之，昔之耶婆提國，地當今之墨西哥；(三)其登陸地點，爲今日墨西哥的亞加布谷港（Acapulco），該港並建有一帆船到港碑；(四)墨西哥的神人歸薩克（Quetzalcoatl）即晉代高僧法顯(2)。逵氏不諳西文，但用力甚勤，並謂："朝斯夕斯，念茲在茲，焚膏油以繼晷，恆兀兀以窮年……研究數十載，閱書數百種。……"對於法顯首先發現美洲的問題，尚未能作定論，但逵氏此種研究精神，實值得我們欽佩！

又同年十月衞聚賢先生刊行中國人發現美洲一書，香港巨輪社出版。本書副題爲哥倫布以前中國與美洲的交通(3)，提要和目錄如下：

總提要——時間：由西元前 650 年至西歷1492年止。往來路線共計五條：

一、伯令海峽線——這一條線，中國人往來不多。

二、千島羣島阿留申羣島線——這一條線，中國人往來最多。

三、由浙江省到夏威夷線——這一條線，中國人往來的也不少。

四、由爪哇到夏威夷線——這一條線，中國人往來的不多。

五、循環線——由浙江省到夏威夷，經阿拉斯加灣由阿留申羣島千島羣島到山東省或由山東省經千島羣島阿拉斯加灣，從夏威夷回到浙江省，這一條線，中國人往來的也不少。

本書內容，共分四大章：

一、美洲特產的動、植、礦物，爲中國人所知者——共計四十多種。

二、美洲地理——分爲美洲本土，太平洋靠近美洲的島嶼，北美洲靠近北極部

(1) 呂思勉，1934, pp. 148—152.

(2) 逵鑑三，1969,

(3) 衞聚賢，1969.

分。

三、中國人知道美洲及往來美洲者——共計一百四十餘人，這其中有十幾位是美洲人到過中國的。

四、在哥倫布以前，其他各國來往美洲者——印度、巴基斯坦、日本、韓國、伊朗、歐洲、非洲。

共由六十四篇論文組合而成。篇幅長的有五六萬字，篇幅短的只有一兩千字。我從一九六一年開始寫此論文，在這八年期間完成此書。

我這本書中，共採用了中國書九百多種，其中百分之五左右是在哥倫布到美洲以後出版的書……我是根據古書的記錄而草成此書的。

本書正文共一百萬字，附錄約五萬字。引書目錄和提要，共約十五萬字，合計一百二十萬字。一時無這批款項出版，只好先把'提要'和'目錄'二者印出，知其內容的大概，再行籌款付印(1)。

衞氏此書，雖是提要和目錄，我曾拜讀一遍，書中雖多'大膽假設'，不易使人信服，更難成爲定論。但他用力之勤，眞令人嘆服！他說：

我這本書共引書九百七十餘種，有的一種書上只引一次二次，有的在一本書中引過三十次五十次不等……我是看見雜誌或報紙上，說到美洲一種特產或者美洲土人一種特俗時，我就開始在中國古書中找……我一共提出了六十四個問題也就是說一部古書要看過六十多次。

這不是說把我提出來的問題，在中國古書中把材料找完了！有些古書我未看過有些雖看過了，在生活情緒緊張之下把它遺漏了。不過像這樣的老年人（我今年七十一歲），在圖書館中爲這本書找材料，整整八年沒有間斷，尤其是吃了早餐愁晚餐，八年沒有製過一件新衣，沒有到過娛樂場的情況下，恐怕在中國人中不多得吧(2)！

衞先生研究中國人發現美洲的這一問題，參考了九百七十餘種書籍和論文，發現六十四個問題，寫成了一百二十萬文字，整整化了八年時間，且在衣食不繼的艱苦情況下

(1) 衞聚賢，1969, pp. 1—2.

(2) 衞聚賢，1970, p. 108.

工作，眞可說“在中國人中不多”的，這種研究精神，實令我欽佩！可惜衞聚賢先生和前述逵鑑三先生二位都不諳歐西文字，現在橫渡太平洋（trans-Pacific Contacts）問題，已成專題（topical）的研究[1]。如二位能自閱西文著作，則其所收資料更多，對學術的貢獻也將更大。作者在國內能得到二位同道，不勝欣幸，故在導言中特爲推介，並冀相互勉勵！

本書共分八章：壹、導言[2]；貳、中國古代與南美西岸水運工具的比較研究（新著未發表）；叁、臺灣的航海帆筏及其起源[3]；肆、中國古代與印度太平兩洋的戈船[4]；伍、中國古代與太平洋區的方舟；陸、中國古代與海洋洲區的樓船。（五）和（六）兩章，原題爲中國古代與太平洋區的方舟和樓船[5]，載民族所集刊二十八期，現增加若干材料，分列方舟和樓船爲兩章；柒、中國帆船與舢板的起源；捌、論夷越的民族。

從本書的內容看就可知道本書的目的在試圖發現問題與解決問題，這些都是古代遠洋航行的關鍵，在說明古人遠洋航行的可能性。故分讀每篇均可自成單元，合讀又可了解古代人類橫渡太平與印度兩洋的事實。由於本書爲上述的目的所限，再加上寫作的時間過長，在材料的編排與運用上難免有所重覆。

本書能付印出版承宋龍飛先生調查資料和編輯文稿，鄭格先生攝影繪圖，嚴伯英先生編譯英文，又同學石磊、邱信義、繆晶珍、孫隆基四君幫助搜集和調查資料，共得七位助理之力甚多，特此謹誌謝忱。

民國五十九年十二月廿九日凌純聲寫成導言

---

(1) Ekhlom, 1960, p. 89.
(2) 凌純聲，1971, pp. 1-9.
(3) 凌純聲，1956b, pp. 1—54.
(4) 凌純聲，1968, pp. 1—28.
(5) 凌純聲，1969, pp. 233—272.

中文參考書目

呂思勉
1934 中國民族史，上海，民國二十三年。
吳元熙
1970 竹筏橫渡太平洋，臺灣新生報，民國五十九年四月二十日第三版。
胡露奇
1970 草筏橫渡大西洋，臺灣中央日報，民國五十九年七月十八日第二版。
陳世宗
1971 巴貝多簡介，臺灣大華晚報，民國六十年一月十九日。
凌純聲
1956a 中國臺灣與東亞的巴圖石匕兵器及其在太平洋與美洲的分佈，臺灣大學考古人類學刊第七期民國四十五年。
1956b 臺灣的航海帆筏及其起源，民族學研究所集刊第一期，民國四十五年。
1968 中國古代與印度太平兩洋的戈船考，民族學研究所集刊第廿六期，民國五十七年。
1969 中國古代與太平洋區的方舟與樓船，民族學研究所集刊第廿八期，民國五十八年。
1971 中國古代與太平印度兩洋的桴筏戈船方舟樓船研究導言，中國民族學通訊，民國六十年
達鑑三
1969 法顯首先發現美洲考證，臺北，民國五十八年。
衞聚賢
1969 中國人發現美洲，香港，民國五十八年。

西文參考書目

DORAN, EDWIN, JR.
1967 The Origin of Leeboards, The Mariner's Mirror, Vol. 53, No. I.
1970 Sailing Characteristics of Primitive Pacific Craft, Man in the Pacific, No. 9. June.
EDWARDS, C. R.
1965 Aboriginal Watercraft on the Pacific Coast of South America, Ibero-Americana: 47, California Press.
1969 New World Perspective on pre-European Voyaging in the Pacific, Wisconsin.
FAUBLEE J.
1952 Langues de l' Oceanie, dans Les Langues du Monde, Paris.
GARCIA, FRAY GREGORIA.
1607 The Origin of the Indians of the New World.
HEINE-GELDERN, R.
1952 Some Problems of Migration in the Pacific.
1956 Theoretical Considerations Concerning the Problem of pre-Columbian Contacts between the Old World and the New. Philadelphia.
HEYERDAHL, T.
1952 American Indians in the Pacific, London.
HORNELL, J.
1945 Was There pre-Columbian Contact between the Peoples of Oceania and South America?

Journ. of Polynesian Society Vol. 54.

HRDLICKA, A.

1917 The Genesis of the American Indian, Washington.

HUI-LIN LI

1961 Mu-lan-pi: A Case for pre-Columbian Trans-Atlantic Travel by Arab Ships. Harvard Journal of Asiatic Studies, Vol. 23.

MEYER, K. E.

1970 Was There a pre-Columbian Melting Pot? Life, October 26, 1970.

RIVET, P.

1943 Les Origines de l'honune Americain, l'arbre, Montreal, Canada.

1957 Les Origines de l'homme Americain. Gallimard, Paris.

INTRODUCTION

(Abridgement)

During my study at the Institute of Ethnology, Paris University in 1927, Professor Paul Rivet taught me Physical Anthropology. Of his lectures I was deeply impressed by that on the 'Mongolian tache', a distinct characteristic of the colored people, widely distributed over Asia and Africa of the Old World and North and South America of the New World (Rivet 1957: 71–72, Fig. 16). In addition to Physical Anthropology, Prof. Rivet is also well versed in linguistics and ethnology, therefore, it is not too much to say that he is indeed an omniscient professor of anthropology. He said the Na-dene, a group of related American Indian languages spoken in parts of western North America from Alaska to northern Mexico, and the Sino-Tibetan language family are closely related. The Na-dene ,comprising the three stocks of Athapaskan, Haida and Tlingit, is the largest language group of North America, spread over the area, 40 degrees N. latitude and 75 degrees longitude (Rivet, 1957: 71–72, Fig. 16). The Athapaskan has more in common with the Sino-Tibetan family than the other two stocks (Shafer, 1952: 12–13). Besides, the Oceanian language also exists in America, i.e., the Haha, which has close affiliation with the Melanesian and Malayo–Polynesian languages and is wide-spread along the Pacific coast in the following areas: From south of Oregon down to Columbia, between 43 degrees and 3 degrees N. latitude; from Dakata to Texas of the United States; and from Saint Laurent to Florida (Rivet, 1957, Fig. 17). With regard to the cultural aspect, the 'patu-patu' or 'mere' is given as an example for elucidation. To date, twenty one specimens of this ancient weapon or ceremonial implement have been discovered in North and South America (Rivet, 1957: 160). Survivals of this ancient implement, which was similar to the *kuei* 圭 or *hu* 笏 (jade tablet or sceptre) of ancient China, have also been observed in Oceania, Taiwan, China Mainland and many other places of East Asia (Ling, 1956: 2–10). The watercraft used for sea travel during the old times between Asia and America which are separated by the Pacific and Indian Oceans, or called Oceania, can be cited for additional evidence. There had been contacts between Asia, America and Oceania since the very early days, and the water transports used included, by sequence of their appearance, the rafts, outrigger canoes, double-deck canoes (Rivet, 1957: 163) and finally the famous Chinese-styled junks. These watercraft had, in fact, connected the Old World, the New World and Oceania together as one big area. The distribution of the people of the Austronesian language group starts along the east coasts of Asia and Africa from the west, spreads over the various

islands of the Indian and Pacific Oceans, and ends on the west coasts of South and North America (Faublée, 1952: 649). In view of the above, it may be assumed that further studies would most assuredly bring forth some of the ancient relations between the peoples, languages and cultures of Asia, America and Oceania.

Prof. Rivet completed his famous work, "Les Origines de l'homme Americain" in 1943, which was first published in French in Canada. Almost at the same time, it was translated into Spanish and published in Mexico. Later in 1948, it was published in Portuguese in Brazil. At the Fifth International Conference of Anthropology and Ethnology, which was held at Philadelphia, United States in 1956, I met Prof. Rivet again (I met him at the same conference at Manila, Philippines for the first time after I left Paris) and we both stayed at Hotel Normandie. At that time, I asked him for his opinions and advice concerning the 'patu' and 'raft' which were the two subjects I was then doing research on. Instead of giving me what I asked for, he lent me a copy of his "Les Origines de l'homme Americain", published in French by the Montreal l'Arbre Book Company, Canada in 1943. It was, he said then, already out of print and additional editions might be printed in the near future in France. The copy I now have on hand was published in 1957 by the Gallimard Book Co., Paris. I read over the book Prof. Rivet lent me in a hurried manner and made some notes for later reference and then gave it back to him. Quoted below is an extract I then made from page 127 of that book:

"...it can be said that the vast Pacific Ocean lying between the New World and the Old was no longer an insurmountable obstacle but could be crossed. Of the various people who immigrated to America, many attained success through their perseverance and untiring efforts, and also many had unfortunately met with failure. Besides, some venturesome merchants and traders had also come by crossing the big ocean. It is unquestionable that down until the advent of the period of the 'Great Discovery', there had been sailings to America from abroad almost at fixed intervals.—The above-mentioned two types of sea transports were used at those times."

"Long before the 'Great Discovery' by the European sailboats the inscrutable canoes (with outriggers) of Melanesia and Polynesia as well as the primitive balsas of Peru had travelled over the oceans—this can certainly be described as a great epic of prehistoric period, existing long before those epics which recounted the deeds of historic heroes. This can also be said as the whole history of mankind" (Rivet, 1943: 127). Prof. Rivet therefore stated that the peoples of America originally came from many sources, which included mainly the following Asiatic places: Siberia, Sahkalin, West China, Mongolia, Tibet, Korea, Japan, Philippines, Taiwan, Borneo, etc. (Hrdlicka, 1917: 559–568). The Eskimos of America, most ethnologists

believe, initially came from Asia. Australian settlers are found only at the southernmost tip of South America, who came originally by way of the South Pole. The Melanesians originally came to America by water. The watercraft used during the early times included the reed-floats, log-rafts, double-deck canoes, and outrigger canoes, some of which were decorated with an ocular design on the front of the prow. There had also been many white people and pygmies who came to America by crossing the Atlantic. Additionary, many Normands had immigrated to the east coast of America during the pre-Columbian periods (Rivet, 1957: 85, 99, 111, 131, 141). So far as peoples, languages and cultures are concerned, the Pacific coast of America is intimately related to Oceania. Aside from the early voyages from Melanesia, it had more or less periodic trade contacts with Polynesia. Therefore, it may be concluded, based on the common watercraft America and Oceania had, that they had been in contact with each other since the remotest times. Being influenced by Prof. Rivet, I have long been interested in problems concerning the trans-Pacific cultures. Since arrival in Taiwan, I have done a great deal of research work on the aborigines of this island. As a matter of fact, most of these aborigines belong to the Austronesian and Malayo-Polynesian groups in language and culture; this discovery has heightened my interest and confidence in the study in this area.

During the past 15 years, Mrs. Inez de Beauclair, one of my associates at the Institute of Ethnology, Academia Sinica, often mentioned to me that Heine-Geldern of Austria had expressed to her that he hoped some Chinese scholars would translate into foreign languages the historical materials pertaining to Yen 燕, Chi 齊, Wu 吳, Yueh 越, Mien 閩, Yueh 粵 and other coastal states of ancient China so that the western scholars might use them in their studies in the relevant areas. Heine-Geldern understands that most of the cultures of America and Oceania stemmed originally from Asia, particularly from the coastal areas of East China, as he once said: "In brief, the historical facts of Asia must not be neglected, if we want to solve the problem of cultural contacts between America and Polynesia" (Heine-Geldern, 1952: 357). In objection to the theory brought forth by Heyerdahl in his voluminous work, the "American Indians in the Pacific", Heine-Geldern completed a long paper, entitled "Some Problems of Migration in the Pacific." This paper was, in effect, the report of his study, which was supported by a grant from the Wenner-Gren Foundation, on the trans-Pacific cultural contacts between Asia, Oceania and America.

At the fifth International Conference of Anthropology and Ethnology at Philadelphia in 1956, I also met Heine-Geldern, who presented before the conference a paper entitled "Theoretical Considerations concerning the Problem of pre-Columbian Contacts between the Old World and the New". Cited below are two paragraphs

from that paper which seem very important with regard to the situation of the ancient contacts between the Old World and the New:

"A rightly famous archaeologist, for whom all of us have the greatest admiration, was impressed by certain similarities between the Maya and Far Eastern cultures. In a book published only two years ago he suggested that some of the ethnic group which later amalgamated into the Maya, coming from Asia via the Bering Strait, may have brought with them not only certain cosmological concepts derived from Hinduism or Buddhism, but also the knowledge that their ancestors had once practiced agriculture. The author himself says that his view is unorthodox. It is indeed, not only from the prevailing point of view of Americanists, but from that of any reasonable ethnological theory. Imagine those ancient proto-Maya, after having migrated for generations through eastern Siberia, Alaska, Canada, the United States, and Mexico, still remembering that in the far-off days when they had lived in China or southeastern Asia their ancestors had practiced agriculture and, on the basis of that dim tradition, successfully introducing it in Meso-America" (Heine-Geldern, 1965: 280).

In the above paragraph, Heine-Geldern recounted about the discovery of the existence of the conceptions of the universe of the Hinduism or Buddhism and the knowledge of agriculture in the Maya culture by an Americanist archaeologist, who also said that his view was unorthodox. The so called orthodox Americanists all believe that most of the American Indian cultures were originally developed independently, and that the imported cultures, if any, had originally come and spread to Mexico through Siberia, Bering Strait, Alaska, Canada, and the United States. On this point, Heine-Geldern again says:

"This is a typical case of that terrific fear of the Pacific Ocean—one might almost say that kind of hydrophobia—from which many anthropologists and archaeologists seem to suffer. Moreover, it is again a case of that lack of familiarity with Old World cultures which I mentioned before. We have literary indications of the high development of boat building and navigation in coastal China at least as early as 500 B. C., and Chinese sources make it perfectly clear that in the first half millennium A. D. the ships of southern Asia were superior in size and to a certain extent in equipment to those of Columbus and Magellan. Nor should we forget the large number of East Asiatic junks which were driven to the shores of America in historic times, on the average of about one every five years. This indicates how the existence of the American continent could have become known to the peoples of Asia. Of course, one cannot consider all this as proof of the reality of ancient trans-Pacific connections, but it shows that they were technically feasible" (Heine-Geldern, 1956: 280).

Heine-Geldern is specialized in the ethnology and archaeology of Southeast Asia, who is well familiar with the materials concerning Asia, especially South Asia. He also understands that sea-going activities of ancient Chinese people were recorded

in the proto-history and other ancient annals of China; however, he only knows that "...in the first half millennium A. D. the ships of southern Asia were superior in size and to a certain extent in equipment to those of Columbus and Magellan." whereas other records and data contained in the proto-historic documents or legends were unknown to him because he cannot read Chinese. For this reason, he often advises Chinese scholars to translate Chinese ancient historic works into western languages, so that foreign scholars may benefit in their study of the sea-going activities of the Asian people during the remote antiquity.

In view of the foregoing, the opinions concerning the origin of the American Indian cultures may be categorized into four groups as follows:

(1) *The Autochthonous Group*: This group believe that the American Indian culture was entirely autochthonous. In other words, it evolved independently without any outside influence. This group is also known as the orthodox school. Earnest A. Hooton, a distinguished professors of Harvard anthropologist, once complained: "We have set up for aboriginal America a sort of referred to the theory upheld by this group *ex post facto* Monroe Doctrine, and are inclined to regard suggestion of alien influence as acts of aggression" (Meyer, 1970: 46).

(2) *The Land-Bridge Group*: (Landbridge, Edwards, 1965: 112) The scholars of this group contend that the aboriginal stocks of America originally came across the Bering Strait from Siberia, Asia, beginning around 15,000 B. C. or earlier. They first arrived at Alaska, whence they were later scattered all over America. Their descendants had developed a high culture, without any assistance from the Americans until the discovery of Latin America by the Spanish (Meyer, 1970: 46). This group is also called the 'Classical Group'. When thinking about the origins of the races of the people of America, the Bering Strait almost unfailingly comes to one's mind. at the he Bering Strait, 56 miles wide, connects the Arctic Ocean and the Bering Sea and, same time, separates Asia from America. The islands in the Bering Strait comprise the Big Diomede (USSR) and Little Diomede (US), which are only two miles apart from each other. Considering the narrow expanse of water between America and Asia and the existence of the above two islands as stepping-stones even in this short distance, we are led to believe that any type of primitive water-craft was capable of crossing this narrow strait, and that crossing it was much easier during the winter season when the water was frozen.

(3) *The Oceanian Group*: The majority of the American Indian people originally came to America by crossing the Pacific Ocean, especially from the various islands in South Pacific. Some came to the west coast of America from the east coast of Africa by way of Oceania. Generally, all of these people had come from areas of the Austronesian language family. Besides, water transports had been well developed and in wide use over the Indian and Pacific Oceans since the re-

motest antiquity. Even though the primitive water transports have long been replaced by new vessels, relics of some primitive watercraft are still in existence which become reliable material for ethnologists and geographers in their studies. Except Rivet, Heyerdahl and Heine-Geldern are the two most vehement contenders of the Oceanian Group. The former argues that the Oceanian people had originally stemmed from the Indians of America, while the latter maintains just the contrary, as discussed previously. Recently, some geographers have also exerted great efforts in the study of ancient watercraft. For example, Edward published a paper, entitled "Aboriginal Watercraft on the Pacific Coast of South America" in 1965 and another paper under the title of "New World Perspective on Pre-European Voyaging in the Pacific" in 1967. Edwin Doran came to Taiwan and the Philippine Islands last year for a field survey in connection with his research work. He just recently published the report of his study under the title of "Sailing Characteristics of Primitive Pacific Craft" (Doran, 1970: 1). Also, he completed a paper titled "The Origin of Leeboards" in 1967 (Doran, 1967: 51), in which he stated that the leeboard could trace its origin in ancient China. He also said that the culture of South America originally came across the Pacific Ocean from Asia and the bamboo rafts might then be used as the trans-Pacific transport (Wu, Yuan-hsi, 1970: 3). In addition, Hornell published a paper, entitled "Was There Pre-Columbian Contact between the Peoples of Oceania and South America?" (Hornell, 1945: 191). There are many others who have made studies in regard to the trans-Pacific contact and the ancient water transport. In brief, the number of scholars of this group is increasing from day to day. As a matter of fact, this present author has also devoted his efforts to problems in this area for the past 15 years.

(4) *The Atlantic Group*: In as early as 1607, Fray Gregorio Garcia published a book entitled "The Origin of the Indians of the New World" in which it was said:

"In fact, the Indians who had arrived here were originally not from only one place, one route, or one generation; some of them were possibly descendants of the Carthagians; others could have come from the submerged Atlantic, or Greece, or Phoenicia; and still others might have been children of the Chinese and Tartar peoples of China" (Meyer, 1970: 46).

The above quotation indicates an opinion popular in the early part of the 17th century. 350 years later, Rivet (1943) also stated that peoples of the white, black and Nordic races were all in existence in America. Inasmuch as there are very few islands in the Atlantic, nor have there been any survivals of primitive watercraft discovered on this ocean, it seems most likely that the contact between Europe, Africa and the New World took place after the beginning of the historic time. As late as 1961, Li, Hui-lin 李惠林 put forth his work, "Mu-Lan-Pi 木蘭皮, A Case for

Pre-Columbian Trans-Atlantic Travel by Arab Ships" (Li Hui-lin, 1961: 114), in which, based on the "Ling-Wai Tai-Ta" 嶺外代答 completed by Chou, Chu-fei 周去非 in 1178 and the "Chu-Fan Chih" 諸蕃志 written by Chao, Ju-kua 趙汝适 in 1225, Li stated:

> "Two geographical works completed in Sung Time narrated that the strange country farther to the west of the land of the Arabs, which could be reached in a hundred days by sailing in large ships, may supposedly be identified as South America."

All of the above three scholars, Garcia, Rivet and Li, Hui-lin, made their assumptions singly based on records or data contained in literary or historic work written in the past, without any substantial evidence.

The man who crossed the Atlantic Ocean this summer on a reed-raft built after the most primitive style is again Heyerdahl. He attempted an exploratory voyage across the ocean by a balsa, a log-raft, over twenty years ago. Quoted below is the short narrative written by Hu, Lu-chi 胡露奇 and published in the Central Daily on 18 July 1970:

"*The Man Who Crossed the Atlantic by A Reed Raft*: Twenty-three years ago, in order to prove the possibility of drifting on a log-raft from South America to Tanmoto Islands (in the central portion of South Pacific), Thor Heyerdahl, a Norwegian zoologist, achieved one of the most sensational adventures in the world. The raft used was named Kontiki (Heyerdahl, Kontiki Across the Pacific by Raft, 1956). Books were written and movies made about his adventure, arousing a great excitement all over the world. Last year, he happened to come upon some pyramidal structure in Peru. Since the pyramid was an ancient Egyptian structure, how can its relics be found in Peru? This question led him to believe there was the possibility that the ancient Egyptians had managed to cross the Atlantic by certain type of raft. Later, he observed in Egypt and Ethiopia a kind of water grass or reed (named papyrus—a plant used in ancient Egypt in making paper). The local people made rafts with this kind of grass for fishing on the lake or as a means of transportation on the water. Thus, the idea came to his mind that the ancient Egyptians might have crossed the Atlantic by rafts made of such grass. In order to prove the possibility of this idea, he made a reed-raft last year, named it 'Apollo I' and set out on a new experimental voyage. After a little more than 50 days' rafting, he was forced to abandon the 'boat' because he noticed that the raft showed a tendency of gradual sinking due to saturation with water; but he would not give up his attempt. As a result, he started out on 17 May this year on another voyage from Safi, Morocco, planned to arrive in Barbados in mid-July. The Broadcast Company of Sweden assigned a special press photographer to make documentary films of his voyage. Because boats for rent were hard to find, the

Swedish press photographer requested assistance from the Caribbean Office of the Fishery Development Project, the UN's Agriculture and Food Organization, the official in charge of which, Mr. John Dobbs, made available for his use a fishing boat, named Calamar. However, since Captain Liefting, the Officer in Charge of that boat, was unexpectedly wounded, Mr. Dobbs sent for me from Jamaica to come to help navigate the boat so as to assist the Swedish press photographer in accomplishing his mission. At this moment, the grass-raft is saturated with water same as was the one used last year, but it has not shown any signs of sinking. With the experience gained last year and the knowledge that it would not sink at all, the crew are keeping on their course of sailing. We turned back after having accomplished our mission. At that time, they were about 600 miles from Barbados, and as estimated would reach that place some time in the following week. This reporter is losing no time in reporting this news to the public at home." (Hu, Lu-chi, 1970: 3)*

Although Hu, Lu-chi's main task was to navigate the fishing boat and help the Swedish photographer make the film, yet it may be said that he participated indirectly in Heyerdahl's trans-Atlantic exploratory voyage by raft, therefore his report is quoted above in its entirety. Heyerdahl's efforts have proven the practicality of crossing the Pacific and Atlantic oceans by either log-raft or grass-raft. This further reveals that as the American continent is surrounded by the sea, all travels between the New and the Old World had to be made by water during the ancient times. For this reason, we must study first the primitive watercraft used for travels between the Old World and the New before we can understand the races of the people of America and the origins of their cultures. Except 'the Autochthonous Group', all of the above mentioned groups maintain that the American Indians originally came to that continent by water routes. Hence, the Pacific and the Atlantic Ocean had no longer been an obstruction between the Old and the New World, and water, not land, was looked to as providing the easy route, once the primitive problem of watercraft was solved.

To study the early water transports of the New World, it is essential to begin with the materials of the Old World, particularly those preserved in Chinese protohistoric and historic books and documents. As a matter of fact, the number of Chinese scholars interested in this area of study has been increasing during recent years (Lu, Shih-mien 呂思勉, 1934: 148–152). Take 1969 for an example, two monographic works were completed in that year, Ta, Chien-san's 達鑑三 "Fa Hsien's Discovery of America" was published in March and Wei, Chu-hsien's 衛聚賢 "Discovery

* NOTE: This article was written by Hu, Lu-chi who was assigned to help the Swedish press photographer make the documentary films of the Norwegian grass-raft, and the pictures were also provided by Mr. Hu.

of America by Chinese" in October. The book "Fa Hsien Fo Kuo Chi 法顯佛國記" has been for many years a subject in debate among a great number of scholars, both Chinese and foreign and to date no general agreement has been reached. Ta's study points out the following: (1) In the 8th year of Yi Hsi under the reign of Emperor An of East Chin Dynasty, Fa Hsien departed from Shih-Tzu Kuo 師子國 for home by boat. He planned to debark at Canton, however, due to big winds, he finally landed in Ye Po Ti Kuo 耶婆提國 after drifting on the sea over a hundred days; (2) According to a thorough calculation, an eastward journey of about 110 days would take one to the ancient Yi Po Ti, the present Mexico; (3) The place where he landed should be the port of Acapulco of today's Mexico. There is an ancient monument still standing at this port, which, it is said, was erected in the early days in remembrance of the first sail-boat that had reached there; (4) Fa Hsien, the monk of high order of Chin Dynasty became Quitzalcoatl, one of the deities of Mexico. (Ta, Chien-san, 1966).

Ta has spent decades of years and has read hundreds of books in his study of Fa Hsien, yet he still has not been able to reach a conclusion as to whether Fa Hsien was the first man to discover America. However, the spirit and devotion he displayed in his research of the problem merit our respect and admiration.

Wei's "Discovery of America by Chinese" is also known as the 'Summary and Bibliography of the Pre-Columbian Contact between China and the American Continent'. This book may be outlined as follows:

Time—from 650 B.C. through 1492 A.D.

A total of five routes were outlined, through which travels were generally made during the ancient times:

(1) The route to the Bering Strait—Few Chinese traveled by this route.

(2) The route via the Kuril and Aleutian Islands—Most frequently used by Chinese travellers.

(3) The Chekiang—Hawaii Route—Chinese travellers were often found on this route.

(4) The Java—Hawaii Route—Not many Chinese traveled by this route.

(5) The Circular Route—Starting from Chekiang province to Hawaii, then through the Gulf of Alaska, and the Aleutian and Kuril Islands, and terminating in Shantung province, and vice versa.—Many Chinese travelled on this route.

The book is divided into four chapters as follows:

(1) There were altogether a little over 40 kinds of native products of America, animal, plant and mineral, that were known to the Chinese people.

(2) The physical geography of the American Continent—Consisting of the America Proper, islands in the Pacific, and that part of North America which is proximate to the North Pole.

(3) The number of Chinese who either knew about or had been to America—There were altogether about 140, of which ten or more were Americans who had been to China.

(4) Peoples from the following countries/continents had travelled to America during the pre-Columbian period—India, Pakistan, Japan, Korea, Iran, Europe and Africa.

The book is, in fact, an embodiment of 64 essays and took its author eight years to complete it. The book was based on almost one thousand volumes of Chinese books, approximately 5% of which were published after Columbus' arrival in America. The book contains about 1,200,000 words. Due to lack of funds, it was printed for the time being in its present form which comprises only summary statements and a bibliography (Wei, Chu-hsien, 1969: 1–2).

To study the problem that America was first discovered by Chinese, Wei perused over 970 books and essays, discovered 64 questions, and completed this huge work of 1,200,000 words. The whole project took him eight years, and all the time, though life was hard for him without enough clothing and food, he worked strenuously and persistently. The arduous spirit and perseverance he demonstrated for study, despite hard life,—few instances, as he said himself, similar to his situation can be found among Chinese scholars, is indeed admirable.

Now, the 'trans-Pacific contacts' has become a problem for topical study (Ekholm, 1960: 89). Unfortuantely, both Wei and Ta don't know any western language. If they did, they could have collected much more materials in their research and their studies would have contributed a lot more to the academic world. Nevertheless, this author is very glad to know that there are two more scholars at home who are interested and engaged in studies in the same area as he is. Thus, a detailed introduction of them has been made early in the Introduction of this book as a mutual encouragement for further pursuit in this same field of common interest.

This book is divided into six chapters: (1) Introduction; (2) A Comparative Study of the Watercraft of Ancient China and South America; (3) Formosan Sea-going Raft and Its Origin in Ancient China (Ling, Shun-sheng, 1956: 1–54); (4) Outrigger Canoes in Ancient China and the Indo-Pacific Ocean (Ling, Shun-sheng, 1968: 1–28); (5) The Double Canoes of Ancient China and the Pacific Area; (6) The Deck Canoes of Ancient China and the Oceanian Area. The last two chapters are primarily based on the article, "The Double Canoes and Deck Canoes of Ancient China and the Pacific Area" (Ling, 1966: 233–272) contained in Bulletin No. 28 of the Institute of Ethnology, Academia Sinica; (7) The Origin Of the Junk and Sampan; and (8) The Yi and Yueh People.

The author is much indebted to Mr. Sung, Lung-fei for his assistance in the

preparation and editing of the manuscript; to Mr. Cheng, Ke for his help for the photographic and drawing work; to Mr. Yen, Po-ying who did the translation of the English Introduction; and to Messrs Shih, Lei, Chiu, Hsin-yi, Miao, Chin-chen and Sun, Lung-chi for their help in collecting and investigating most of the materials.

Ling, Shun-sheng
Taipei, Taiwan
Dec. 29, 1970

貳、中國古代與南美西岸水運工具的比較研究

引　　言

著者在民國四十五年，民族學研究所集刊第一期曾發表臺灣的航海帆筏及其起源一文，根據臺灣航海帆筏推論兩洋上的帆筏的起源地，可能在中國。在中國古史的傳說時代，約在紀元前三十三世紀，第一位皇帝伏羲氏卽始乘桴。到了黃帝時代（2697 B. C.）乃變桴筏以造舟楫。同刊第二十六期，著者又發表了中國古代與印度太平兩洋的戈船考，其後於二十八期，續發表了中國古代與太平洋區的方舟與樓船。證明了太平洋與印度洋上航海的工具有四種：（一）桴筏；（二）戈船；（三）方舟；（四）樓船。這四種水運工具能載重致遠，將操南島（Austronesian）語系的同一民族，由亞洲東岸，散佈移居在印度太平兩洋星羅棋佈的島嶼上，且西達非洲東岸，東抵南美西岸。

距臺灣的航海帆筏及起源一文之發表，轉瞬便十四年了，在這十四年中，已有不少的中外學者從事於太平洋上航行問題的討論，這是著者欣於樂見的，因爲著者始終覺得，研究亞美兩洲文化關係，應先有人來研究古代亞洲沿岸的航海問題，如能證明在紀元之前，亞洲人確已利用桴栰、戈船、方舟與樓船在海洋上航行，則整個太平洋成爲亞、美、海洋三洲處處可通的大路。今雖有學者多人開始注意到此一問題之研究，但多數學者注意到的，只是太平洋上的航行問題，像：Sharp(1), Golson(2), Shapiro(3), Fraser(4), Carter(5) 等氏便是，祇有 Edwards(6) 與包遵彭(7)二氏，始論及亞、美兩洲的水運工具。

根據 Edwards 氏的調查和研究報告，在南美太平洋沿岸上著的水運工具有：（一）葦舟；（二）皮筏；（三）樹皮船；（四）拼板船；（五）獨木舟；（六）匏筏；（七）木筏

（1） Sharp, 1956.
（2） Golson, 1963.
（3） Shapiro, 1964.
（4） Fraser, 1965, 1967.
（5） Carter, 1961.
（6） Edwards, 1965.
（7） 包遵彭，1966.

七種之多。就著者十餘年來研究所知，在太平洋沿岸還另有（八）戈船；（九）雙舟；（十）樓船等，則在太平洋及其沿岸的土著的水運工具便有十種之多了。前七種是南美現有土著的水運工具，這七種南美土著的水運工具，在中國的文獻上和民族學、民俗學現有的材料上都可以找到。我們不敢說南美的水運工具都源於中國，但是土著的水運工具都類似中國古代的航行工具，這是很值得我們注意的。現在僅把七種水運工具，按其在東亞和中國的發展階段分爲(一)匏筏；(二)葦舟；(三)皮筏；(四)木桴；(五)獨木舟；(六)樹皮船；(七)縫板船等加以敍述。

一、匏筏（Gourd Rafts）

南美洲西部用大匏繫緊或結網成筏，像個大圓盾，面積約一碼半平方左右，或在頂端放些木棍，以便裝載東西，在前端有一皮索，像個馬鞍，人將頭套進這皮索，游泳過河；必要時，可用一二人在後面推，這一匏筏在早期的記載中只見於秘魯的北部[1]，1890年 José de Acosta 記載云：

> ……印第安人使用多種方法渡過河川……他們有一種葫蘆大網筏，上載人或運行李……印第安人前結一繩，人在前游泳和拖運，像馬拖車子，還有人在後推泳。過河之後，將筏揖起而行……遇溪再渡。他們在秘魯的 Santa 用此法渡過溪河[2]。

南美西海岸用匏濟水的習俗到十七世紀中葉尚可見到。但以匏濟水，在中國則傳說甚古。羅欣物原曰：

> 燧人以匏濟水，伏羲始乘桴，軒轅作舟。

按匏在中國有以下數種名稱：果實扁圓者曰匏，細長橢圓者曰瓠，匏之有短柄大腹者曰壺，壺之兩端大而腰細者曰蒲蘆，古人多混稱不分。以匏濟水爲中國最原始的水運工具。詩經邶風匏說：

> 匏有苦葉，濟有深淺。

這已明確指出了匏爲濟渡的用具。易經泰卦九二爻辭云：

（1） Edwards, 1965, pp. 59-60.

（2） Acosta, 1894, p. 247.

包荒，用馮河，不遐遺。朋亡，得尚于中行。

上錄易經泰卦爻辭中的包卽是本文所說的匏，匏可用以馮河，在可靠的周初文獻中，已有這項記錄。屈萬里先生在說易散稿一文中曾譯泰卦九二爻辭爲今語曰：

葫蘆大，用以泳渡黃河，不會墜溺。同夥的人失散；(自己獨)得上於路中(1)。

國語魯語下記載著：

諸侯伐秦，及涇莫濟。晉叔向見叔孫穆子曰：'諸侯謂秦不恭而討之，及涇而止，於秦何益？'穆子曰：'豹之業、及匏有苦葉矣；不知其他。'叔向退，召舟虞與司馬曰：'夫苦匏不材於人，供濟而已。魯叔孫賦匏有苦葉，必將涉矣。具舟除隧，不共有法！'是行也，魯人以莒人先濟，諸侯從之。

屈氏解釋上段錄文云：

夫叔孫示濟涇之決心，而賦匏有苦葉；叔向遂解其意，而有苦匏供濟之語。(韋昭解云：'佩匏可以渡水也。')此伐秦之師，雖以舟濟涇；然可證佩匏渡水之俗，爲魯人及晉人所習知也。

莊子逍遙遊云：

惠子謂莊子曰：'魏王貽我大瓠之種，我樹之成，而實五石，以盛水漿，其堅不能自擧也，剖之以爲瓢，則瓠落無所容，非不呺然大也，吾爲其無用而掊之。'莊子曰：'夫子固拙於用大矣……今子有五石之瓠，何不慮以爲大樽，以浮乎江湖；而憂其瓠落無所容。'

此又以瓠馮水之證。鶡冠子學問篇云：

中河失船，一壺千金。

此壺卽瓠也。詩豳風七月：

八月斷壺。

毛傳卽訓壺爲乾瓠，此解甚確。宋程大昌演繁露腰舟條有云：

匏之苦者，不可食，則養使堅大，裁以爲壺；而用之濟水，則雖深涉無害也。

此皆古代用匏濟水之明證。屈氏又云：

---

(1) 屈萬里，1956, p. 34.

今運河船家小兒，猶多繫匏於背，以防墜水滅頂，可謂古風猶存(1)。

作者三十多年前行經廣東，曾親見廣州蛋家小兒背繫一封口的鉛皮罐頭用以代匏，而防墜水不沉。這種風俗不僅見之於中國，東亞的日本也有這種習俗。西村眞次說：

……用乾而堅硬的匏結在小孩腰部，這似乎在說明匏的原始用法最主要是能浮力大，可以防備小孩下落河川時免於沉溺。後來才漸漸的形式化而變成一種普遍的習俗。到後來，象牙或玻璃做成的手工藝品出現後，依然用之繫於小孩的衣帶上，作爲裝飾品(2)。

可見在古代文獻和民俗學上用匏爲水運工具的資料，並不少見。民族學上的資料，在臺海使槎錄卷五番俗六考北路諸羅番二器用有云：

又製葫蘆爲行具（圖版壹），大者容數斗；出則隨身，旨蓄，毯衣悉納其中；遇雨不濡，遇水則浮（圖版貳）(3)。

滿洲六十七著番社采風圖考云：

熟番居處山外，溪無舟楫；水漲時，腰挾葫蘆，浮水徑渡。

臺灣銀行經濟研究室編印的臺灣文獻叢刊第九〇種，共收三種圖本：第一種是省立臺北圖書館藏的六十七著的兩采風圖合卷渡溪圖中有兩人"腰挾葫蘆，浮水而渡"；第二種是中央研究院歷史語言研究所藏的臺番圖說渡溪圖中亦有兩人腰挾葫蘆，但其中一人是正面圖，看不到葫蘆（圖版貳）；第三種是從故宮明信片第十三輯第一組臺灣內山番地風俗圖翻印的，渡溪圖上雖看不到葫蘆，然圖說有云："水漲時，腰挾葫蘆，浮水徑渡。"(4)

除此，海南島的黎人亦有用匏濟水之俗，黎岐紀聞三有云：

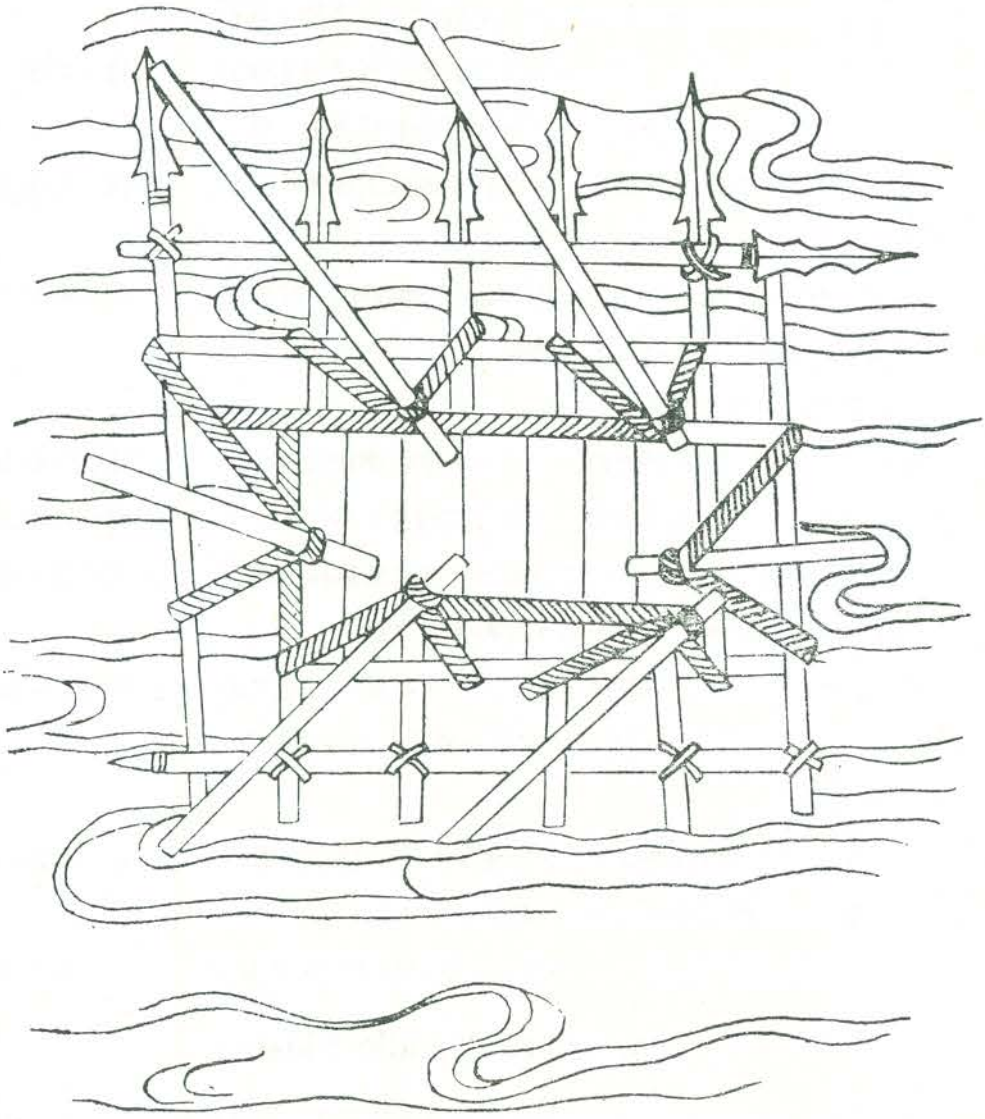
黎水盛漲時，勢洶流急，最苦難渡，黎人往來山際，多用大葫蘆帶身間，至溪流漲處，雙手抱之浮水而過，亦有於山村取竹束作一梱，藉其浮勢，夾挈而渡者，不可謂非智矣。

海南島除匏濟水外，亦有竹筏。又韓國濟州島的海女，亦有挾匏浮海(圖版叁A)(5)。

（1） 屈萬里，1965, p. 33.
（2） 西村眞次，1934, p. 44.
（3） 黃叔璥，1736, p. 102.
（4） 六十七，1962, pp. 82, 24, 65.
（5） 西村眞次，1938, p. 5. 1934, 76-78.

又有一種木罌代匏做成筏的，三才圖會器用卷四有云：

木罌者，縛甕缶以爲筏。甕缶受二石，力勝一人。甕圍容五寸，下以繩勾聯，編槍其上，形長而方，前置筏頭，後置梢，左右置棹（插圖一）。



插圖一 木　　罌

木罌在紀元前三世紀時卽見諸中國史書，史記淮陰侯列傳云：

以信爲左丞相擊魏、魏王盛兵蒲板，塞臨晉，信乃益爲疑兵，欲渡臨晉，而伏兵從夏陽以木罌甀渡軍，襲安邑。

集解引服虔曰："以木押縛罌缾以渡。"韋昭曰："以木爲器如罌缾以渡軍，無船，且尙密也。"木罌想係木製瓶，用以代匏，今臺灣土著尙有用木罌者，本所藏有木罌四個，如圖版叁B所示。

上述木罌的罌字乃係陶土燒成之器，鴨綠江上有甕筏，西村眞次說：

> 在鴨綠江，浮了許多大甕，將其甕口封起，放在用木條做成橫直格子之中，上面便可放東西，搭著順流而下，到海可以航行海上（圖版叁C）(1)。

中國古代又有土船、泥船的記載，想亦是泥土燒成的罐甕等浮在水上之物。如後漢書南蠻傳有云：

> 又令各乘土船，約能浮者，當以爲君，餘姓悉沉，唯務相獨浮，因共立之。是爲禀君，乃乘土船，從夷水至鹽陽。

又宋周去非嶺外代答卷六有云：

> 深廣沿海州軍，難得鐵釘桐油，造舟皆空板穿籐約束而成，於籐縫中以海上所生茜草乾而窒之，遇水則漲，舟爲之不漏矣。其舟甚大，越大海商販皆用之，而或謂要過磁石山而然，未之詳爾，今蜀舟底以柘木爲釘，蓋其江多石，不可用鐵釘，而亦謂蜀江有磁石山，得非傳聞之誤。

至於泥船以竹篾編成船殼，塗以泥土和松脂，可不透水，今之越南尙在使用（圖版肆A.B.C）(2)，臺大考古人類學系陳列室藏一標本（圖版肆D）。

呂思勉中國民族史云：

> 日人西村眞次以爲古事記之'日無堅間小舟'，卽今安南之籠舟，編竹爲籠，形如鷄卵。塗以椰子油，或牛矢，以浮水(3)。

上錄中呂氏謂籠舟塗以椰油或牛矢，Paris氏則謂以樹脂和牛糞混成脂灰，以艙船縫。

二、葦舟 (Reed Bundle Floats)

許多旅行家一到南美西海岸往往會把目光移到葦舟上，許多代表性的葦舟，在史前 Inca 遺址中已被發現，這證明遠在史前時代，Inca 已有葦舟的建造。目前南美

（1）西村眞次，1938, p. 7.

（2）Paris, 1942, pp 25-27.

（3）呂思勉，1934, p. 222.

的葦舟雖有很多部份已非原有形式，但在一些特點上，還保有古代的型態。今日南美所見的葦舟是用乾的蘆葦或菖蒲所作成，通常是把兩束或三束蘆葦捆緊，中間葦桿最厚最長，向兩端漸薄漸短。最小的葦舟差不多有六呎長，周圍最厚的部份，差不多可容一人環抱；較大的一個有十五呎或二十呎長，十呎或十二呎寬，前者乘載不能超過兩人，後者可以乘坐十二人。把兩條大的葦舟捆成一條，還可用來裝載馬或牛。這些葦舟通常不能用來遠航，因爲它們很輕，一遇有風，便會翻覆。葦舟乾的時候只有幾磅重，常只能使用一個月，因爲蘆葦會吸水，變重了以後，划行速度便會隨之減慢。南美的葦舟的分佈甚爲遼濶，它分佈於秘魯沿海，智利海岸，厄瓜多高地、秘魯高地、阿根廷中西部，玻利維亞的 Majo 區域及東部巴西 São Francisco 河口等地，尤其秘魯的 Titicaca 湖的葦舟最爲有名，其形式爲雙頭的，仍是文獻上的古代形式。其製紮方法見圖版伍ＡＢＣＤ(1)。爲了防止被風吹偏方向而保持正確的航線，秘魯的葦舟有從甲板上垂直插入水裏的中央板，一如臺灣的竹筏(2)。

葦舟在中國古代早已存在。詩經衞風河廣曰：

誰謂河廣，一葦杭之：

疏云："言一葦者，謂一束也，可以浮之水上而渡，若桴栰然，非一根葦也。"古時卽用蘆葦作爲濟渡的工具。太平御覽卷七七一引吳錄曰：

孫策欲渡江，舡少欲往便求策姑，王氏分命伐蘆爲櫂，以佐舡渡人。

宋蘇軾前赤壁賦云：

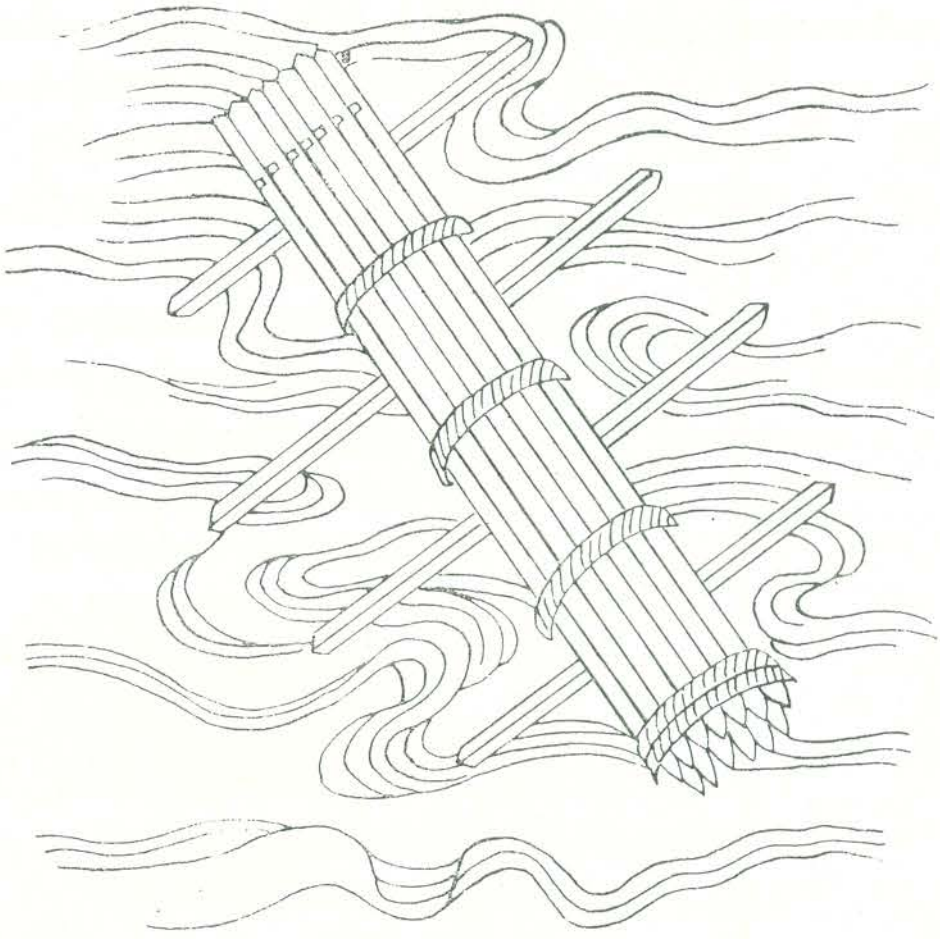
縱一葦之所如，凌萬頃之茫然。

一葦謂小舟也。葦，蒹葭之屬。有時又用蒲來替代。三才圖會有云：

蒲筏者（插圖二），以蒲束九大圍，顚倒爲十道，縛如束槍狀，量長短爲之，無蒲用葦。

據西村眞次的調查報告：今中國東北圖們江上尙有用蘆舟渡水者(3)。圖們江爲中韓兩國界河，當西村氏1923年夏季到韓國考察時，在滿洲的間島和豆滿江(卽圖們江)鍾城

(1) Edwards, 1965, pp. 1-14.
(2) 西村眞次，1925, p. 151.
(3) 西村眞次，1925, pp. 119-121.



插圖二　蒲　　筏

的渡口，發見一原始的葦舟，這一葦舟用五束蘆葦捆成，三束在下，兩束在上，每束有葦百根。此葦舟有六呎長、三呎寬，既不乘人，也不載物。由人繫一繩索在前游泳過河，到岸將葦筏拖到岸上。這種葦舟的用法與日本的木栰是一樣的，爲了搬運的方便，都暫時用繩索綁結一處。這是韓國最原始的葦舟形式，這似乎要比埃及人、亞述人或非洲黑人用以載物或乘人的葦舟更爲簡單，型式更舊(1)。

亞洲古時葦舟所用的材料，型式與特徵，從以上的敍述，與南美同點頗多，西村氏則以爲：

古亞洲的葦舟，一直殘存在亞洲西部的 Hamun 湖和東部的臺灣海峽，沒有人

(1)　西村眞次，1925, pp. 119-121.

能否認秘魯的葦舟是古代亞洲文化的遺留(1)。

至於它的傳播路線，據西村氏說是橫跨太平洋的南半部，那裏有很多呈零星狀的島嶼，古代亞洲人曾經過這些島嶼，並把這些島嶼當跳板及補給站，而作冒險的航行(2)。

三、皮筏 (Hide Floats)

用皮革做成的浮筏，最近在南美西海岸才逐漸消失。它的出現、建造、使用及分佈，曾見於早期的西班牙編年史家，以及稍晚殖民與共和時代的旅行記者等之記載，至二十世紀早期才有民族學上的研究記錄。雖然沒有直接的考古上的證據可以證明皮筏在古代已行於南美。但 Junins Birdo 調查在智利海岸北部曾使用最古考古上的保留物地區的人民，在他的調查訪問所搜集到的資料是“用一縫著皮的水袋，類似於機器用途的東西，連著浮筏的皮。”

可能在南美西海岸最早的歷史記錄是出自 Cieza da León (1553)，他說 Tarapa'ca 流域的印第安人和智利所有沙漠地帶的海岸，以海豹皮製成的 balsas 用來釣魚。此後 Padre Arosta (1590) 描寫著秘魯海岸漁民使用葦舟，而 Ica 流域的其他印第安人則使用海豹皮做成的浮筏。他們把海豹皮吹得像風球，故航行時不致沉溺。他還說：Ica 和 Arica 的印第安人，在古代曾用海豹皮做的浮筏航行到西部的一些島嶼，甚至於更遠。

這種皮筏最早的記錄是被 Arica 省的印第安人所建造的。用海豹皮製成，吹滿了空氣後再粘結起來，這些吹入空氣的皮筏，一航至海裏，通常會少了些空氣，他們就裝置一小管時時吹氣。這種船很輕便、很靈活，就像內部所組成的物質——空氣一樣，不需張帆，唯一的推進器是槳。

根據 Amaty Junient 的記載，十八世紀時，智利中部的 Maipo、Rapel、Mataquito 和 Maule 等地曾用皮筏來乘載旅客和他們隨身的行李渡過河口。製皮筏的人，剝了海豹皮後，把皮撕成兩半，約八呎四到十一呎二長。皮由强硬的針刺沿邊連結而成。由一小管吹氣，船首船尾用一橫截的木板支撐，用雙槳來推進。

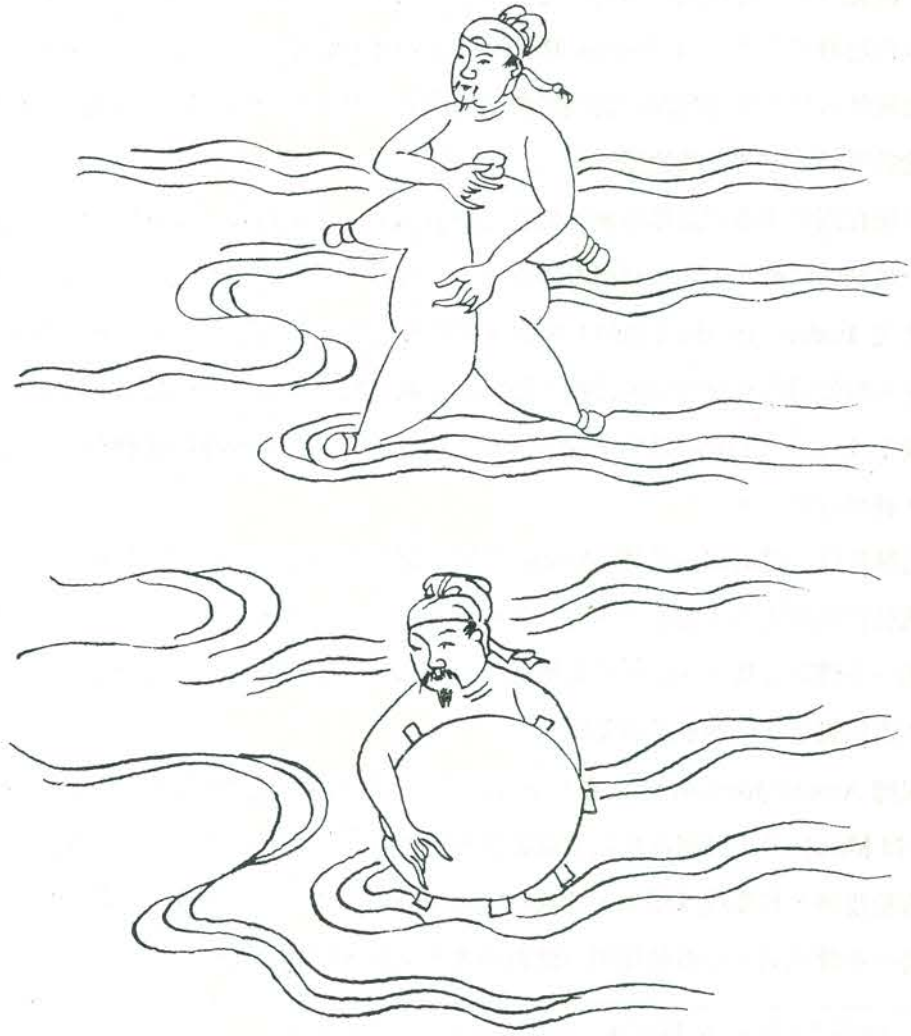
---

(1) 西村眞次，1925, pp. 153-154.

(2) 上引書 pp. 154-155.

這種皮筏很是輕浮，所以碰到浪花也能安然渡過，不像其他小艇常遭淹沒。因此運往內陸的食用品，通常由皮筏裝運。這種皮筏的甲板通常是用四呎寬，六至八呎長的竹莖編成的平臺所作的。

另據 Ricardo Latcham 在十九世紀初葉的調查報告說：一隻皮筏由四頭或更多的雄海豹或海獅製成。將皮一直泡在鮮水中直到軟曲爲止。然後再切成所需要的尺寸，用腱或用晒乾動物的腸做成的繩索將皮縫結起來。張開部份用泥沙或葦草填實，直到它完全膨脹變成乾硬爲止，再將所填的東西拆去，再把張開部份縫上，塗上從海豹身上所搾擷出來的油脂，使它更能防水。經過這一階段後，在外部再用某種紅土做



插圖三　浮　　囊

的半液體的物質混合著油脂塗上。那麼，外部表皮將形成一種不可滲入的一層，他們才把它停放在海上二、三天。看似脆弱的輕舟，却有一種難以相信的航行年限(1)。

中國古代的浮囊（插圖三）與南美的皮筏頗爲類似，武備志卷一一八云：

浮囊者以渾脫羊皮，吹氣令滿，繫其空束於腋下，人浮以渡。

宋王延徽高昌行紀曰：

次歷第女喝子族，族臨黃河，以羊皮爲囊，吹氣實之，浮於水，或以橐駝，牽木栰而渡。

元史卷四云：

冬十月丙午，過大渡河，又經行山谷，二千餘里，至金沙江，乘革囊及栰以渡。

清杜昌丁的藏行紀程也記著：

橋濶六尺餘，長五十餘丈，以牛皮縫錕鈍數十隻，竹索數十條貫之，浮水面……土人絜竹索於兩岸，以木爲溜，穿皮條，縛腰間一溜而過。

清姚瑩康輶紀行曰：

夏水盛之，則去浮橋，蕃人以皮船渡。

以上所記均爲黃河流域所見的皮筏，除上述的皮筏外，其他地區尙有眞正用牛皮縢成的船。松花江下游的赫哲族下冊，七薩里比五故事有云：

獨有他子哈見江邊無船可渡，心中煩悶，輾轉不能成寐。直到半夜，精神甚覺疲倦，朦朧間忽見一位老丈對他子哈說道：'你們要想無船渡江，非到冬令不可。剋下有現成的船，放着不渡，反而自尋煩惱，實屬可笑。'他子哈問道：'船在那裏？'馬法道：'你們的牛皮篷帳，不就是你們的船嗎？'他子哈一轉眼間已不見了馬法，驚醒過來，却是一夢。心中很是奇怪，細細一想，才知道是神人前來指示的。就叫了榮他思士等人前來，把夢中的事情告訴了他們。榮他思士道：'這明明是神人令貝子用牛皮篷帳做船的意思，這是天助你的啊！'次日他子哈令人先用柳條做船形，然後用牛皮帳套上，推入水中，水泄不漏，可以乘坐。一共製有七隻，每隻可乘五六人(2)。

（1） Edwards, 1964, pp. 17-20.

（2） 凌純聲，1934, p. 433.

這雖屬故事性質，但用皮筏濟渡爲他們所想出的妙計。另長白西清著黑龍江外紀卷四云：

'扎哈'，小船也。較'威呼'（獨木船）尤輕捷，載受兩三人，相傳墨爾根察邊者，猝遇江漲，協領那黑勒泰以馬皮爲'扎哈'，徑渡。

明萬曆三十七年(1609)的三才圖會器用卷四載有皮船圖（見插圖四），其說明云：

插圖四　皮筏船圖

皮船者以生牛馬皮，以竹木緣之如箱形，火乾之，浮于水。一皮船可乘一人，兩皮船合縫，能乘三人，以竿繫木助之，可十餘返。

著者前在西康考察時，過大小金川時，曾乘皮船渡河(圖版陸)。

中國的皮筏，以黃河流域最爲聞名。黃河共長二千五百英哩，自西寧至包頭間的七百英哩通行皮筏。黃河的皮筏有用羊皮吹氣膨脹而成的皮筏和牛皮塞羊毛的皮筏兩種。羊皮小筏用十二至十五隻羊皮編成，載貨大栰則多至五百隻。至於牛皮常用 120 隻始成一筏者。圖版柒：A. 以羊皮作浮囊，用以游泳；B. 羊皮浮囊吹氣；C. 牛皮塞滿羊毛，以作浮囊；D. 在蘭州附近，用皮栰運棗子。圖版捌：A. 放氣皮筏，便於揹帶；B. 個人划羊皮筏；C. 黃河上運貨的大皮筏[1]。

四、木栰 (Log Rafts)

南美西部用綁紮或釘牢木柱而成的排筏，可說是起源甚古的。當歐洲人初發見新大陸時，就熟悉這種水運工具，對它的構造則殊少記載，他們僅注意是否用帆而已。西班牙人稱之爲 balsa，常不管它構成的材料。這一名叫 balsa 的航行工具，不僅適用於木栰，亦用於葦筏和匏筏。

據 Edwards 氏的調查報告，南美西海岸，至今仍用 balsa 航行，如圖版玖：A. 秘魯北部之栰，有一槳亦用作舵；B. Paita 半島一岩石海灣栰的小栰；C. 在秘魯近 Sechura 海岸的 Mataballo 地方的漁人在栰尾的右邊示範中央板的位置；D. Sechura 沿岸航海栰尾，表示中央板的位置用在航行，這板在一長隙縫中提上插下，可使栰身平穩和航路正確。圖版拾：A. 秘魯 Palo 地方 Sechura 沿岸的航海筏，因浪擱淺，漁人想使栰張帆，用風力脫離淺灘；B. 秘魯 Palo 地方 Sechura 沿岸，所謂 batalón 張帆，用一薄木幹撐桅桿至縱帆前邊。

南美的木栰有航行川流的河栰 (river rafts)，沿海的無帆栰(nonsailing coastal rafts)、航海帆栰 (sailing rafts)，還有在湖泊中航行的湖栰。

現在我們先錄下一段 1703 年 Dampier 氏所記南美帆栰的情形：

住在 Paita 地方的 Colan Indians，都是漁人，他們到海上去是乘坐 Bark-

(1) Moore, 1932, p. 743.

logs，所謂 Bark-logs 就是用圓的木柱，作成筏的形狀，這種筏是根據他們不同的用處，而設計成不同的結構；或者是依據製造者的心情而決定它們的形狀；或者是依據建築材料而決定形狀。如果它們是被建造用來捕魚的，那麼就包括三根七、八呎長的木柱，這些木柱都是並列的；用木栓或是木釘，將其釘牢在一起，然後再用柳條捆緊，這樣縛在一起的木柱，中間的木柱往往要比兩旁的要長一些，特別是在船頭的部份逐漸變窄，而成爲尖角狀，便於在水裏航行。另外一種是爲了携帶貨物而建造的，它的底部是由二、三十根大的木柱，長約二十、三十或四十呎，如前述並列形式連結起來，在木排的頂上另外橫放著成排的木柱，也是彼此釘牢在一起，同時與下面直放的木柱相互的釘牢在一起，這種雙排的併柱，造成了浮木的底部爲一相當大的寬度。由筏的底部向上約有十呎高，豎着成排的木柱，而支持著一個地板面，或是兩個地板面，但是我所觀察到的是由粗木柱彼此交錯而成的，就如木材堆似的；但柱與柱之間並非緊接在一起的，就如浮木的底部一樣，僅在木柱的兩端與邊緣的地方接觸著，因此中間空虛如室，偶而還在中間穿插了一些橫木，使浮木更形牢固。在中間的空室約距底部四呎高處，他們又放了一些木柱緊密的接在一起，而造成了另外的一個室的地板面。在空室的頂部，他們又放置了別的木柱而造成另外的地板面。空室兩旁的入口只是用來在這種海上房屋的橫木墻中爬行而已。筏的最底層用作地窖，在那兒放置大石頭作壓艙物，儲放淡水的甕，以及經得起潮濕的東西。由於壓艙物和貨物的重量，空室和艙底沉至水面下約二或三呎。筏的第二層供水手住宿和放置必需用品，第二層的上面，貨物可盡量裝載，通常堆高到八至十呎，用木柱豎立圍成圓形；只有筏的尾端留一空地供操舵使用，在前面也有空地，是爲了安置火爐用的，特別是要作遠航時，供烹煮之用，例如從 Lima 駛往 Truxillo 或 Guiaquil 或巴拿馬等地時；其航程有五、六百里格（league，一里格約等於三哩），在筏上貨物的中央，則豎立一桅，桅上緊繫一大帆，就好似在吾國西部泰晤士河上的平底船一般。其航行常是順風而行，以保持不與風向衝突；因此這種筏僅適宜航行海洋，由 Lima 起程，除一、二地外，風向經常不變，直到進入巴拿馬灣爲止，甚至不會遇到大

浪，但有時會碰上北風；當此時，他們將帆落下，順風駕駛，以待其變。他們唯一顧慮的只在避開 Shoar；他們這樣做的用意是在避免沉沒海上。這種筏可裝載六十或七十大桶（tun，一桶相當於252加侖）的貨物；其貨物包括：酒、油、花卉、糖、布料、肥皂和羊皮衣等。筏一般由三、四人操縱，而這些人是不能在頂着貿易風的情形再把筏駛回的，當他們到達了巴拿馬後，便將貨物和筏同時處理掉；然後再搭乘船舶重返他們來的港口；他們再造一新的Bark-log作爲他們下次載貨的工具。

最小的一種 Bark-logs，如前所述，是平放在水面，而用來捕魚和運水的，這樣半桶一桶的運載，或較他種筏易於控制，其上亦有桅和帆。因有桅和帆的設備，故夜間可藉陸上風之力航行出海，而於白晝時則藉海風之力返回陸地(1)。

上面的記載我們不憚煩地錄下，主要是因爲它可以用來與孔子曰'乘桴浮於海'一語作比較研究的資料。

中國在西元前三十三世紀便有伏羲氏'始乘桴'的傳說，其後黃帝軒轅氏（2697 B.

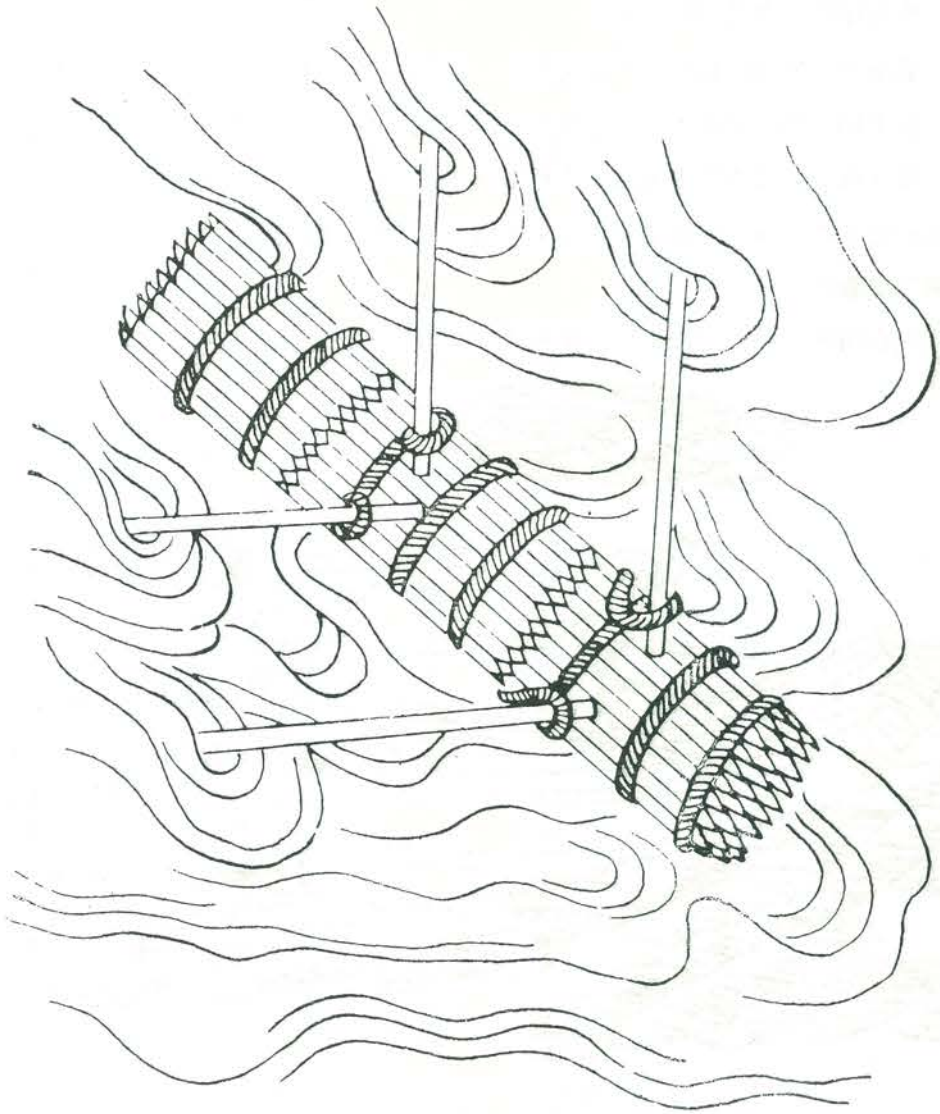
插圖五　筏　圖（採自三才圖會）

（1） Damfier, 1703, pp. 141-143; Edwards, 1965, pp. 71-73.

C）變桴筏以造舟楫，少昊氏（2597 B.C）乘桴泛於海上，紀元前五世紀時越王勾踐伐松柏以爲桴，孔子（551—479 B.C）欲之九夷乘桴浮於海。這一桴桅文化，可謂淵源有自，由來已久了。且至目前，它依然是一活的文化，而且遍佈地區廣及中國的沿海、江河、湖泊、溪流。

中國古代有關筏排的圖說的記載，曾見於三才圖會。其器用卷四有云(插圖五)：

拾遺記曰：軒皇變乘桴，以造舟楫，則是未爲舟前，第乘桴以濟矣。筏卽桴



插圖六 械　　筏

也。蓋其事出自黃帝之前，今竹木之排，謂之筏是也。

又同書同卷另載有械筏（插圖六）：

械筏者以槍十條爲束，力勝一人；且以五千條爲率爲筏，槍去鋒刃，鱗次而排，縱橫縛之，可渡五百人。或左右各繫浮囊二十，先令水工至前岸，立大柱，繫二大絚，屬之兩岸，以夾筏。絚上以木，絚環貫之，施繩聯著於筏，筏首繫繩，令岸上牽挽之，以絚爲約，免漂溺之患。

古代水運工具，除竹筏、械筏外，尙有匏筏、蒲筏和皮筏，已如前述。

至於現代的排筏，我們祇舉長江的木排和臺灣的竹筏爲例說明如下：

長江的木排是世界聞名的，它是一個浮村，上住有一百至一百五十人。此排由一萬至一萬五千根木幹綁紮而成。排之長達兩百至三百公尺，濶約三十公尺（圖版拾壹A）。航行木排必須在河川中流，最怕擱淺，因若遇擱淺必需散排重紮，費時甚多，甚至三、四個月。木排順水而下，主要航行工具有絞車（圖版拾壹B）、纜索和浮錨（圖版拾壹C），排的兩旁有五或六隻三板船，用以運錨（圖版拾壹D）。排上建有兩排房屋，中間空出一條街道。在排的一端，堆土成一菜圃，以種蔬菜[1]。長江木排並非一水運工具，本身是運輸木料，只要到達目的地便算達成了任務。

臺灣的航海竹筏，在海洋民族學（Maritime Ethnology）上佔有很重要的地位，它用插板或中央板（Center boards），和越南的竹筏用插板航行[2]，同爲亞洲唯一用中央板地區，可以說和南美秘魯的 balsa 與巴西 jangada 的中央板是同源的，有很多人便主張南美帆筏起源於亞洲說[3]。

臺灣竹筏可分四種：(一)河川竹筏，用以渡溪（圖版拾貳A）；(二)湖潭竹筏，日月潭上現在常可看到許多竹筏，竹筏上有拱形小屋，筏前有大網（圖版拾貳B），……筏用二十多根大竹編成，長十多公尺，寬達三丈餘，用以誘魚；(三)沿海划筏（圖版拾貳C），在近海划行捕魚；(四)航海帆筏（圖版拾貳D）。據民國四十三年臺灣農業年報的統計，臺灣的無動力漁船共計 21,541艘，其中竹筏 13,808隻，幾佔總數三分之二，餘三分之一爲木船。十多年來，臺灣經濟發達，工商業進步神速，漁船

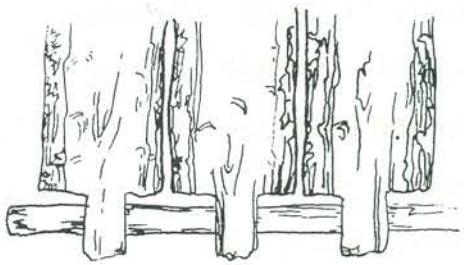
（1） Audemard, 1965, pp. 74-76.

（2） Heine-Geldern, 1952, p. 332.

（3） 凌純聲，1956, pp. 21-22.

多已改爲動力化，但臺灣現仍爲世界上使用航海竹筏最多之地。據傳日據時代，商人走私，帆筏能遠航香港。至於臺灣帆筏的構造及其航海的技術，請參閱本書第叁章臺灣的航海帆筏及其起源(1)。

中國海洋民族學至今尚乏人研究，各地搜集的資料不多，排筏的資料，有西村眞次述及鴨綠江的木栅(2)和四川雅河的竹筏(3)，見插圖七 a 和 b 圖。



a

b

插圖七　a. 鴨綠江滿州筏綴合法（串刺型）
b. 四川雅河之筏

五、獨木舟 (Dugout Conoes)

Robert West 氏提過在哥倫比亞早期土著獨木舟的式樣和造法上的資料甚爲缺少，這實在是南美西海岸所有獨木舟的地方的一般眞實情況。當土著與西班牙人接觸

(1) 凌純聲，1956.
(2) 西村眞次，1938, p. 410.
(3) 西村眞次，1925, p. 124.

之後，Nūnes de Balboa 氏在1513年元月份呈西班牙國王的信中才說到達連安 (Darien) 的印第安人的獨木舟。Oviedo 氏並說了獨木舟還有用帆的，他說：

> 那邊來了十八隻舟，他們最大的，比之基督徒所有還要大些。船頭和尾都很高，有木製構造物，有一人高高在上。他們用帆和划槳而航行，乘坐人身部、手臂和頭上有金銀裝飾，在船尾亦載有許多金葉子。

目前南美的獨木舟多數分佈於巴拿馬的達連安灣，哥倫比亞和厄瓜多等國（圖版拾叁ABC），船頭形式有四：在 Choco 沿岸有兩式，Cayapa 和 Manabi 沿岸各有一式，如插圖八所示。秘魯和智利，現在只有極少數的獨木舟還存在，他們已不另行添造，舊的已漸趨腐朽消失矣！(1)

插圖八　獨木舟之四型

據 Barrett 氏對厄瓜多內部的 Cayapa 印第安人的調查研究說：印第安人選擇了適當的樹木後，便把樹幹砍下，在樹殼的內外邊作成某種形式，然後把它高高豎起，讓它在陽光下晒幾個星期。於是他們用斧頭將它剝成一定的尺寸，當這適當的體積做成後，便把外部磨平，再度晾乾，最後外邊再打上一層蜂蠟。設備上包括尖葉槳和U字型把手，同時也有一薄櫈。錨是用石頭繫在木架上，這種型式大概爲西班牙人所介紹來的，同時，每一獨木舟還帶有一葫蘆用來汲水。

另外 Hornell 在 Gorgond 島及其附近地區見到的有趣而不同的原始型式的獨木舟。他說：在此區內獨木舟的自由板比一般的還少。但兩旁則有浮木以增加其平穩。這些平衡的浮木大概有半個獨木舟長，並且穿過船殼的洞，用纖維質的東西使其穩固在每一邊上。

Hornell 在 Gorgond 島上所見到的獨木舟，是雙架艇的原始型式（圖版拾叁D）他另外對 Charcas 的大獨木舟作了如此的描述，他說此一大獨木舟只是一個短的邊架，並不跟船殼接觸，它包括有橫過的帆杠，這一平穩的木料離船身約八呎，被壓在木塊上緣的下端，介於帆杠與邊架之間。

（1） Edwards, 1965, pp. 35-58.

對這一平穩木料的解釋，Hornell 認爲那是西班牙影響的結果，是從亞洲的菲律賓所介紹來的。因爲西班牙在菲律賓設立了永久的殖民組織，保持跟新大陸作有規則的貿易。在馬尼拉附近使平穩的木幹是一種當地船隻正常的特徵。這種獨木舟可以裝載三、四人(1)。

1680年 Wafer 觀察到印第安人把樹幹中間燒空，這是巴拿馬地區獨木舟的建造情形，是用木棉樹做的，無疑的，那便是 Ceiba 樹。Dampier 氏則以爲是用紅木棉樹造大的獨木舟，因那木料比較堅實。同時也用來製造小的獨木舟。木棉樹造的獨木舟並不能支持得很久，特別是沒被挖琢過或沒塗過焦油的，因爲那一下子就被蟲啄腐或被水浸壞(2)。

獨木舟在東亞的中國起源甚古，如上引羅欣物原便提到：

燧人以匏濟水，伏羲始乘桴，軒轅作舟。

可知中國遠古的水運工具，最先用葫蘆，其次綑紮竹木爲桴，第三步再剜木爲舟。玉嘉拾遺記云：

軒轅變乘桴以造舟楫。

淵鑑類函卷三八六引稗編云：

則是未爲舟前，第乘桴以濟矣。筏，卽桴也。蓋其事出自黃帝之前，今竹木之簰，謂之筏是也。

中國在未發明舟之前，中國人已知用桴以濟，舟之發明亦觀自然現象所得，故世本云：

古者觀落葉因以爲舟。

淮南子曰：

見窾木浮而知爲舟。

窾木浮而爲舟的現象很是普遍，因此古籍上記載發明舟的便有多人，如三才圖會器用卷四：

呂氏春秋曰虞姁作。物理論曰化狐作。墨子曰工倕作。山海經曰番禺作。束晳

(1) Lothrop, 1932, pp. 229-233.

(2) Edwards, 1956, p. 37.

發蒙記曰伯益作。世本曰共鼓貨狄作；注云：'並黃帝臣'。釋名曰黃帝造。拾遺記曰軒皇變乘桴以造舟楫。黃帝內傳曰'帝既斬蚩尤，內剡舟楫'。易繫辭曰黃帝氏作，刳木爲舟，剡木爲楫。蓋以黃帝爲是。

上錄三才圖會所謂"蓋以黃帝爲是"雖不能說一定是黃帝剙作，但可說在黃帝時代，約在西元前二十七世紀卽已發明。淮南子說"見窾木浮而知爲舟"的時代，或較黃帝時代爲早。甲骨文中有俞字，如𠂤(續3.28.3)，𠂤(古28)，𠂤(菁1.1)。說文曰："空中木爲舟也，从亼从舟从巛，巛水也。"如插圖九所示。殷商時代舟已有多種形態，是以推知黃帝之時，舟楫當已發明使用了。另世本云：

共鼓貨狄作舟。注：共鼓貨狄黃帝二臣。

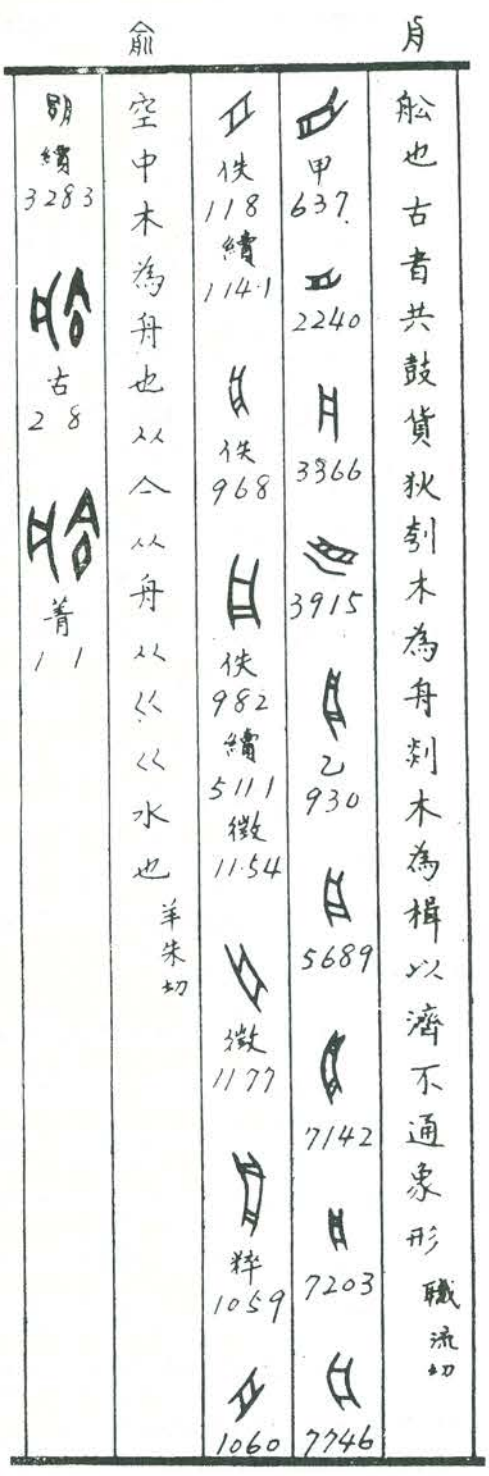
因工具的進步，黃帝時已"刳木爲舟，剡木爲楫"而作有舟楫了。

我們在民族學上還可以找到如下的材料。宋時湖湘南西尚有存者，朱輔溪蠻叢笑曰：

獨木船，蠻地多楠，有極大者，刳以爲舟。

又宋周去非嶺外代答中記載了廣西的獨木舟說：

廣西江行小舟，皆刳木爲之，有面濶六七尺者，雖全成無罅，免繅袂之勞，釘灰之費，然質厚遲鈍，忽遇大風浪，則



插圖九　甲骨文中所見的俞舟兩字

不能翔，多至沉溺，要不若板船，雖善不能爲矣。欽州競渡獸舟，亦刳全木爲之，則其地之所產可知矣。海外蕃船亦有刳木者則其爲木何止合抱而已哉！

他如黑龍江外記卷四有云：

威呼，獨木船也。長二丈餘，濶容膝，頭尖尾銳，載數人，水不及舷寸許，而中流蕩漾，駛如竹箭，此眞刳木爲舟也。遇河水暴漲，則聯二爲一，以濟車馬。余來時奉天吉林道中數乘之，中流瞑目不敢視，其險可想。

上錄中有“余來時奉天吉林道中數乘之。”可見這種舟楫文化亦廣及東北九省。

不獨此也，在現今臺灣地方，獨木舟還一直留存下來，這一舟楫文化在中國不僅有五千年的歷史，至今在民族學上依然不失爲一活的文化。屠繼善在光緒二十年（1894年）修的恒春縣志云：

海之中距岸八十里爲紅頭嶼……其地無船，以老樹之中朽者，鑿爲艇。

紅頭嶼的“以老樹之中朽者，鑿爲艇。”尙保存著獨木舟的最古造法，與說文“兪，空中木爲舟也”的解釋正相切合。臺灣本島尤多用獨木舟。六十七番社采風圖考有云：

艋舺（一作莽甲，一作莽葛），彰化水沙連社，背山環水，水廣數甲，深不可測。社出苦茗，性極寒。漢人以貨到社交易，番以獨木鑿其中爲舟，名曰‘艋舺’；然非本社番不能使也。郁永河有詩云：‘莽葛元來是小舠，刳將獨木似浮瓢。月明海澨歌如沸，知是番兒夜弄潮。’

臺灣番族之原始文化有云：

獨木舟附槳（舟 lura 槳 balura）各一件（圖版拾肆A），形甚狹長，約十七英尺，濶不及二英尺，深不及一英尺，重約二百斤。用樟腦樹幹一段刳成，蓋用樟方免被蝕也。底無龍骨，前尾不尖削，艙底不平坦。無帆櫓等物，只有手提小槳，其槳端手提處不加橫木。甚不平穩，非經練習不能使用，然番人能立於其上，行駛自如。據番人云：彼等不曉他法；只能將整個獨木刳成。此種舟實爲舟類之祖先，人類文化史上有名之物也。現世界上已不易覯，蓋已將絕迹矣。此一隻爲臺灣中部高山湖日月潭之特有物，湖距海面二千四百英尺(1)。

林氏自述購買此獨木舟之經過云：

（1）林惠祥，1930, p. 71.

細視獨木舟有四隻，有破損者，有太大者，其中有最小者一隻，甚完美，長約一丈半，尙嫌稍大。既登岸，舟人導予入番屋。余問欲賣否？答不願賣，因此舟係湖中往來必需之物，並爲撈魚之要具，生活全資於是(1)。

民國十九年林氏遊臺灣時所見獨木舟有四隻。三十八年作者到臺灣時，見臺大考古人類學系藏有一隻，長 515 公分，濶71公分，深40公分（圖版拾肆B）。四十四年余往遊日月潭，見湖岸尙有獨木舟數隻（圖版拾肆C）。又近今日生活雜誌二卷二期底封面刋載湖邊獨木舟兩隻（圖版拾肆D），似爲新近刻成者。

臺灣本島除日月潭外，臺北宜蘭等縣亦有獨木舟，如劉枝萬的南投縣名勝古蹟有云：

蟒甲原爲臺北附近先住民所用獨木舟之稱，卽今萬華(舊名艋舺)名稱之由來。但水沙連化番稱之爲 ruzu，稱所用菱頭形木槳爲 pattan，鄭傳安所謂‘甲舵’恐係 ruzo 之譯音(2)。

黃得時臺北市志稿沿革志：

艋舺，今名萬華爲本市最古老市街之一部……艋舺亦作‘蟒甲’、‘蚊甲’或‘文甲’，爲番語 moungar 之音譯，意指獨木舟及獨木舟聚集之處。其地濱河而膏腴(3)。

按‘莽葛’之首見於文獻者，當推郁永河在康熙三十七年(1698)的稗海紀遊卷中記云：

二十七日……視沙間一舟，獨木鏤成，可容兩人對坐，又操一楫以渡；名曰莽葛，蓋番舟也。

十六日……乘莽葛返茆屋中，與病夫二人具。

又詠土番竹枝詞云：

莽葛元來是小舠，刳將獨木似浮瓢。月明海濱歌如沸，知是番兒夜弄潮。注云：番人夫婦，乘莽葛射魚，歌聲竟夜不輟。

至於蟒甲之大小及使用情形，諸羅縣志記述至詳，內云：

蟒甲以獨木爲之；大者可容十三、四人；小者三、四人，划雙槳以濟，稍欹側

（1） 林惠祥，1930, p. 89.
（2） 劉枝萬，1954, p. 58.
（3） 黃得時，1961, p. 31.

卽覆矣。番善水，故雖風濤洶湧，如同兒戲，漢人鮮不驚怖者。

康熙壬寅（公元1662年）五月十六至十八三日大風，漳州把總朱文炳帶卒更戍船，在鹿耳門外爲風飄至南路山後；歷三晝夜至蛤仔難，船破登岸。番疑爲寇，將殺之；社有何姓者，素與番交易，力爲諭止。晚宿番社，番食以粪，朱以片欖餉番，輒避匿不食。借用木罌瓦釜，番惡其汚也，洗滌數回。所食者生蟹，烏魚，略加以鹽；活嚼生吞，相對驩甚。文炳臨行，犒以銀錢，不受；與以藍布舊衣，欣喜過望，兼具蟒甲以送。蟒甲，獨木挖空，兩邊翼以木板，用藤縛之，無油灰可觖，水易流入，番以杓不時挹之。行一日至山朝，次日至大鷄籠，又一日至金包裏。

又咸豐壬子（1853年）噶瑪蘭廳志卷之五下：

番渡水小舟名曰蟒甲，卽艋舺也，一作蟒葛。其制以獨木挖空，兩邊翼以木板，用籐繫之。又無油灰可觖，水易溢入，彼則杓時時挹之，恰受兩三人而已。

上錄臺海使槎錄和噶瑪蘭廳志所記的“蟒甲，獨木挖空，兩邊翼以木板，以籐縛之。”我們可以知道，臺灣的獨木舟可能有兩種：一種航行於河川與湖泊的；另一種爲有邊架（outrigger）的，而且是雙邊架（double outrigger）。行於河川者爲普通獨木舟，沿海航行者爲雙邊架獨木舟。臺海使槎錄所記漳州把總朱文炳的行程自蛤仔難爲閩南語的噶瑪蘭卽今之宜蘭，行一日至山朝卽今三貂嶺，次日至大鷄籠卽今基隆，又一日至金包裡爲今之野柳。自宜蘭至野柳沿海岸行三日，所乘的是兩邊翼以木板，以籐縛之的雙邊架獨木舟。可知雙邊架艇亦航行海上。又噶瑪蘭廳志卷八，蘭陽雜詠八首：泖鼻（入蘭洋路）有云：

鰲島斜拖象鼻長，天公設險界重洋，噓帆兼候風南北，鈎舵時防石顯藏，米艇挨邊行當穩，草船浮海勢難狂，梭巡樓艦終須愼，艋舺營師水一方。

上錄詩中有‘艋舺營師水一方’之句，艋舺用作戰船，想是邊架艇，始能用作戰船。

六、樹皮船（Bark Canoes）

南美西海岸的 Yahgan 和 Alacaluf 兩族不務農業，漫遊於智利的 Taitas 半島和 Horn 島之間的島嶼及海道間，專以射獵海獸與採集爲生。據1767年 Smuel Wallis

在 Cape Upright 看到的樹皮船云：

> 他們的船長 15 呎，濶 3 呎，深亦近 3 呎，船以樹皮用獸筋或革條縫合製造。以草心填塞縫隙，外塗以樹脂或膠汁，以防水之滲入樹皮。十五根細枝曲成弧形橫在船底和兩旁，幾條直枝舖在上面，緊緊紮牢。就全體而講，這是粗製的(1)。

以樹皮造船在二十世紀初葉，中國還在使用，東北的松花江、烏蘇里江沿岸及濱海地區，有黑津人尙在造用，薩英額吉夫所撰吉林外紀卷八有云：

> 黑津名目不一，琿春東南濱臨南海一帶者，謂之恪哈爾。三姓城東北三千餘里，松花江下游，齊集以上，至烏蘇里江東西兩岸者謂之赫哲。齊集以下至東北海島者謂之費雅喀，又東南謂之庫葉。齊集，地名也。恪哈爾隔年一次至烏蘇哩、莽牛河、三姓派員收給貢皮九十張。

吉林外紀所述的恪哈爾和赫哲兩族都用樺樹皮造船。皇清職貢圖卷三云：

> 恰喀拉散處琿春沿東海及富沁岳邑等河，男女俱於鼻傍穿環，綴寸許銀銅人爲飾。男以鹿皮爲冠，布衣趺足，婦女則披髮不笄，而襟衽間多刺綉紋。其屋廬舟船（插圖十）俱用樺皮，俗不知網罟，以叉魚射獵爲生。性游惰，無蓄積。土語謂之恰喀拉，歲進貂皮。

以上錄述的恰喀拉或卽 Kiakar(2), Lopatin氏說：Kiakar 是赫哲人與沃爾欺(Olchee)人稱 Udekhe 的，他們自稱則爲 Udekhe(3)。嚴格說來，Udekhe 與赫哲，其音雖皆由窩集一語轉變而來，然並非同族，但他們的屋廬舟船俱用樺皮製造，則是相同的。

至於赫哲又有黑哲、黑津、黑眞、黑金、黑斤、額登等不同的稱呼，這些都是音近形異字。赫哲族的樺皮船在松花江下游的赫哲族記云：

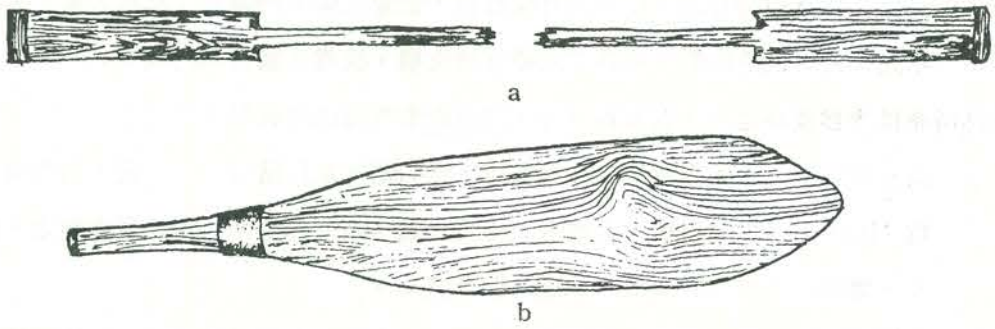
> 夏日赫哲人在水上的交通，乘坐樺皮船，赫哲語名'五米日陳'，如圖版拾伍A，長 208.5；濶 45.5cm，船骨用楊木構成，外包以樺樹皮。船之頭尾形尖，船身

(1) Edwards, 1965, pp. 21-22.
(2) 凌純聲，1934, p. 51.
(3) Lopatin, 1925, p. 27.

又輕，故行馳甚速。槳有兩種：一爲長槳，如插圖十一 a ，長 284cm ，短槳如插圖十一 b，長 162cm，其使用法：在船之左右分划（插圖十）。每船常備

插圖十　恰喀拉乘樺皮船

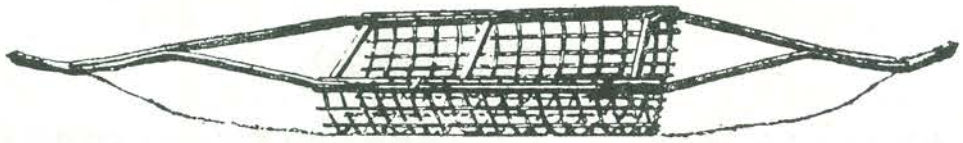
長短槳各一副，在中流時用長槳。樺皮船非常輕便，一人能負之行，遇水卽渡，然質脆，不結實，近多廢棄不用，改用木舟。



插圖十一 a. 長槳
b. 短槳

同書又云：

製樺皮船，須先做船骨。取楊木削成濶約 3 cm，厚約 4 mm 的板條，編成方格以爲身骨，如插圖十二，先以樺皮壓平如圖版拾伍B，外包樺皮如圖版拾伍C，卽成船身如圖版拾伍D，後再以連根的楊樹幹削成船頭骨和尾骨如圖版拾伍A的兩頭。從前無鐵釘，造船均用木釘、麻、籐等物。樺皮聯接處有時用麻線縫連，再塗松脂，以防其漏水(1)。



插圖十二 樺皮船用楊木作船架

恪喀爾和赫哲兩族和北美、北亞的其他民族一樣(2)，多有樹皮工藝，利用樹皮來建造居室、舟船、食具、箱籠等等。滿州人入主中原後，關外產的樹皮列入貢品。郭熙楞吉林彙徵有云：

夏間剝其皮入汙泥中謂之糟；糟數日乃出而曝之，地白而花成形者貴。特設樺皮工廠，有章京，有筆帖式，有打樺人。每歲打樺人入內務府。遼東樺皮遂有市於京師者。有以樺皮作船，大者能容數人，小者挾之而行，遇水輒渡，游行

(1) 凌純聲，1934, pp. 81-96.
(2) Speck, 1925, p. 407.

便捷。又以樺皮蓋窩棚，並有剝薄皮紉綴爲油布，大雨不濡。

又薩英額吉林外紀亦云：

樺皮吉林諸山皆有之。烏拉向有樺皮村，世笈佐領，帶領兵丁剝取入貢。雍正年間，裁去世笈佐領，將兵丁撥給官地支糧，改爲八旗官兵剝取。

吉林所產樺皮爲貢品之一，其名貴可知。又西清著黑龍江外紀卷八亦云：

山谷多樺木，土人以爲箭笥，爲鞍版，爲刀柄。皮以貼弓，爲車蓋，爲穹廬，爲'扎哈'，縫之如栲栳，大檐水，小盛米麵，謂之樺皮斗。俄羅斯亦有之，極小，雕鏤精巧，宜貯檳榔，鼻煙，號老羌斗。

上錄中有爲'扎哈'一語，卽前引同上書卷四所云的小船，初以馬革爲之，後用樺皮製造。其文曰：

'扎哈'，小船也。較'威呼'尤輕捷，裁受兩三人。相傳墨爾根察邊者，猝遇江漲，協領那里勒泰以馬革爲扎哈，經渡其後預以樺皮爲之，猶那遺法。

另外明方觀承卜魁風土記曰：

紉樺皮爲渡船，長六、七尺，可容二人。

樺皮所造的渡船爲中國所習用，樺皮產於緯度較高之地，在低緯度處，則以竹篾編爲籠舟，已如上述。

七、縫板船（Dalcas）

南美沿太平洋海岸所用的水運工具除上述幾種渡船外，還有一種用細繩縫拼木板而成的小船，土名叫 dalca，1560年 Alonso de Góngora 描寫 dalca 的造法如下：

艇（piraguas）造用木板三塊：一塊做底，兩旁各一塊，以細繩拼縫而成。木板的縫隙下面襯以縱長的裂篠，上面舖以容易縫製的 maqul 樹樹皮。這樹皮以防水之透入。它們長30至40英呎，船樑濶一碼，船的頭尾狹小，像一把織布的梭子。西班牙人集合如此的小艇，基督徒叫它爲 piraguas，印第安人稱之曰 dalca(1)。

這種小船並非用樹皮製造，實乃拼縫木板而成（圖版拾陸A）。日人西村眞次氏稱此

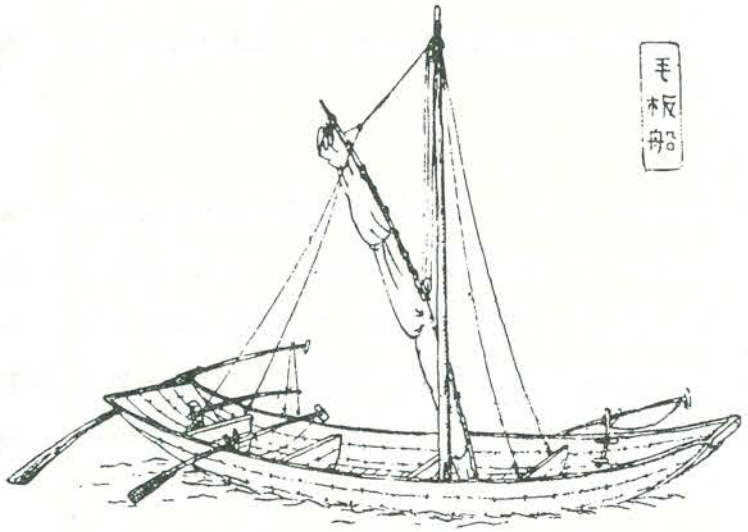
(1) Edwards, 1965, p. 25.

種船名縫合船 (Stiched boats)(1)。中國古代亦有此船，辭源中收有'舢'字，注云："讀若山。舢板，船名，詳三板條。"又三板條云："船名，今多作舢板。"並引稗海紀遊云：

> 丁丑（康熙三十六年，1697年）二月二十二日，午刻，至澎湖之馬祖澳；相去僅十許丈，以風不順，帆數轉轉不得入澳。比入，已暮。二十三日，乘三板登岸。三板卽脚船也。海舶大，不能近岸，凡欲往來，則乘三板；至欲開行，則繫上大船載之。

郁永河所記的三板船，不詳其製造方法，僅知爲三塊木板造成的船。今湖南寶慶的毛板船，其製作材料和方法，尙有些與 dalca 近似。據 Audemard 氏說：

> 這種帆船叫做毛板船，它用薄板造的。木材是松木用鐵割和竹篾粗製而成，水漲時順流而下航行一次卽可。到達目的地後卽將船解體，木板出售，其他船具和帆錨等物，送還寶慶，以造新船。中國人如此做法，因爲這種船再逆流航行回去，消費大，實在得不償失。



插圖十三 毛 板 船

如插圖十三所示(2)，毛板船縫合痕迹還顯露在外，原始的造法想係用籐篾紮成。

（1） 西村眞次，1923, p. 19.

（2） Audemard, 1965, p. 72.

現在越南順化一帶尚有縫合船而無肢體的 (Bateawx ã bordage consus sans membrures)。此船主材原爲三塊中央板，此或三板 (Sampan) 的得名，後加兩邊共計五塊木板。每板長須十五公尺。製作很細緻。五板之間共有四條拼縫，兩板之間上下鑽有小孔，孔的間距約二十公分，上加一條長木，用籐篾紮緊，再嵌以松脂，以防透水（圖版拾陸：B. C. D）(1)。

臺灣的外島蘭嶼土著雅美族，以造拼板船聞名於世。在臺東縣轄的蘭嶼島，至今仍盛行製造一種典型的刳木拼板船 (plank-built boat)，這種船並不像一般普通形式的船，在製造時將板子浸濕或者用火將板子烘乾呈彎曲狀，而是將所需用的船板，龍骨等材料直接從樹幹砍削成所需要的形狀，然後以龍骨作爲基底，將船板拼接於其上，而製成這種特異結構的拼板船。西歐與東方的學者對蘭嶼的拼板船都曾加以特別的注意，因爲它對於研究東南亞及西南太平洋地區的文化史上，可提供一項有力的證據。

蘭嶼的拼板船以其構造的型式可分爲大小兩種，就其外表的裝飾分，又有施以雕刻與無雕刻兩種型態。小船叫做 Tatara，大船則稱之爲 Chinurikuran(2)。兩者的構造大體是一樣的，祇是在細部的結構上有其不同之點，作者僅將此二種大小不同的拼板船分述如下：

(一)、小船

小船 tatara 又分一人乘，二人乘，三人乘等三種，（見圖版拾柒A）(3)，一人乘用者曰 pikatayian，二人乘用者曰 pikavayan，三人乘用者曰 pinunuyuan(4)。爲白天在近海捕魚的漁船，多數爲一家所有，偶而也有二家共一艘的。小船的船頭與船尾呈'U'字形，突然的向上隆起，左右兩端隆起的尖狀部份是同一種形式，船體整個的結構非常優美，中央是船體最實部分，由中央向兩端逐漸的狹小。現將本所所藏的二件小船標本尺寸介紹於後：

(1) 標本 (03557號) 爲二人乘小船，船首尾至船底龍骨，全高 1.36米，中央腹部

---

(1) Paris, 1942, pp. 22-23.

(2) 鹿野忠雄，1938, p. 3; Leach, 1937 p. 185. 則稱大船爲 Chinedkulan

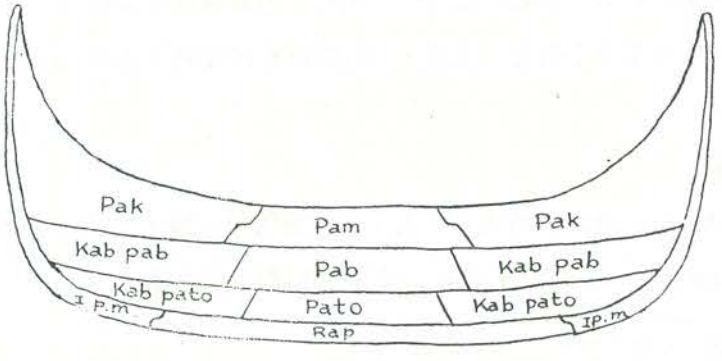
(3) 鹿野忠雄，1956, p. 295.

(4) 衛惠林，1962, p. 128.

的寬度爲 0.91米，腹高 0.42米，船身全長 4.70米。

(2) 標本(03558號)爲一人乘小船，船首尾至船底龍骨，全高 1.17米，中央腹部的寬度爲 0.72米，腹高 0.39米，船身全長爲 3.92米。

二船的構造，都是以幅度狹窄的突出龍骨爲基底，龍骨是由底部龍骨(Rapan)、船首龍骨 (ipanogan-no-yamorogan)、船尾龍骨 (ipanogan-no-maoji) 三片接合而成[1]，在船的兩側龍骨之上，有三層拼接的船板，每層像龍骨一樣是由三塊板接合而成(參見插圖十四)[2]，第一層卽接龍骨之上的一層，船首尾兩端的拼板叫做 kabusan-no-patoun，中間的一塊叫做 pabakun-no-patoun，兩側共計六塊板；第二層卽第一層的上層，船首尾二端板叫做 kabusan-no-pabakun，中間的一塊叫做 pabakun 板，全船之兩側共計六塊板；第三層也就是最上的一層，船的首尾二端板，叫做 pakaraten，板向兩端突出，呈尖形，船之兩側首尾共計四塊；中間板叫做 pamakogan，船之兩側共有二塊。上以三層共計十八塊板，都是呈水平狀態的排列，僅靠近船首尾的四塊 pakaraten 板，呈三角形，一端尖銳的向上彎曲。船的接合處，以桑木製成的木釘，將船板一塊一塊的互相連接在一起，這種木釘長約 15公分，粗約 1.2 公分左右，因爲桑木材料粘着力很强，這種木釘用在大船上要超過 3,000 個，不過用於小船者大概僅爲其半。在兩塊不同船板不同的接觸面，大約每隔 5 公分左右，便用一種鐵鑽頭 pautt 打一孔，將桑木釘入，然後將上層的船板合上(見圖版拾柒C)[3]，爲了



插圖十四 小船的拼板構造圖

(1) 鹿野忠雄，1956, p. 306；1938, p. 9.
(2) 鹿野忠雄，1946, p. 58.
(3) 鹿野忠雄，1956, p. 313.

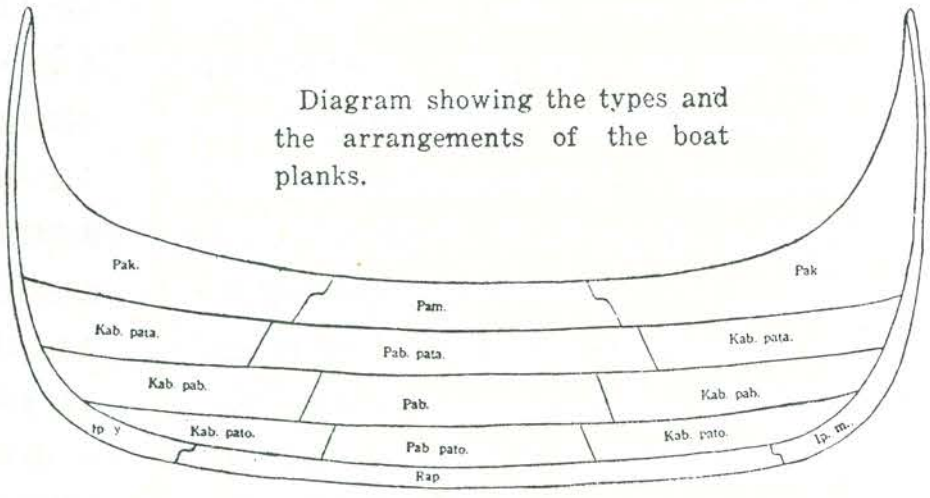
防止接觸處漏水，還必需做三樣事，首先要在船板的接觸部份的表面，抹上一層紅土（名叫 burirao），這種土是熱帶高溫多濕之地特有的一種紅土，就是在蘭嶼，產量是很有限的。抹紅土的用意，是爲了叫兩板接合處之板面細微不平的地方，使其平滑[1]，這一手續完成之後，其次便將蘭嶼山中所特產的一種 barok 樹（學名叫 Zanthoxylan integrifolium Merrill）的樹根，用小刀切成一公厘厚薄的薄片，將其插入兩板的接合處，這種 barok 樹根呈黃白色的纖維狀，狀似棉花，用來填塞船板接合處的縫隙，經久不會腐爛[2]，（參見圖版拾捌 A. B. C）[3]，最後將絲芭蕉（abaka）的麻絲（bukurirun）一根根的纏在桑木釘上，在纏麻絲的同時，將 barok 根棉緊按於船板的接觸面上，然後將上面的船板合上，在上面的船板接觸面上，挖有一條順著板面的淺溝（konkagan），此溝和根棉對準湊合，便一點空隙也沒有了，可以充分發揮 barok 根棉防水的功能了[4]。

爲了要使船體牢固，往往在削製船板時便在船板的內側，預留出一種突起的瘤狀扶手，在其上架起支骨，用以增加船體的牢固程度，通常支骨可分三種：第一種爲弓狀彎曲的支骨，一人乘之小船，僅在船中央有一條，（見圖版拾柒B下）[5]，二人乘之小船則在兩端各有一條；第二種爲一垂直插入的短棒，爲了增强 pakaraten 板與 kabusan-no-pabakun 板之間的强度（卽在第二層與第三層首尾兩端板之間插入）；第三種爲在船之首尾兩端水平放著的三角形板。這些負有加强船體牢固功能的支骨，都是用籐皮緊緊的縛著。小船內沒有任何坐位，出海捕魚時坐板都是由乘坐的人從家裏自己帶來，一人乘之小船有二支槳，二人乘則有四支槳。全船連龍骨在內共由二十一塊板拼成。

二、大船

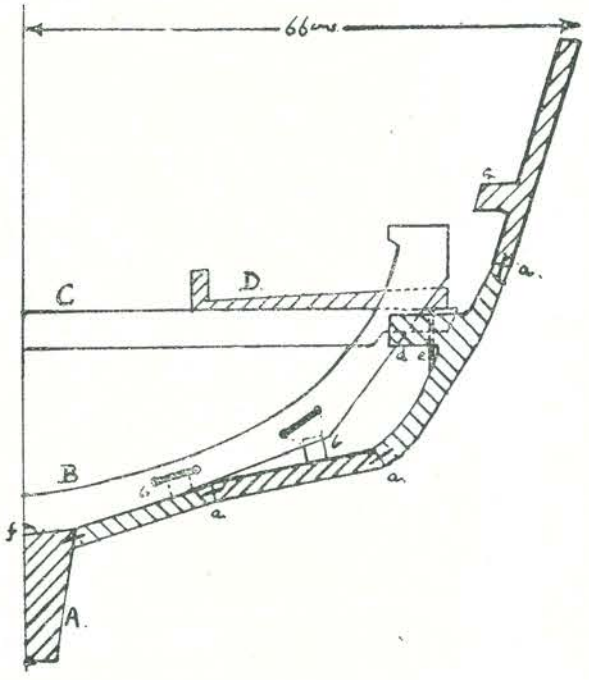
大船 chinurikuran 分六人、八人、十人乘用等三種，六人乘用者叫 atro，八人乘用者叫 apat，十人乘用者叫 lima[6]。大船與小船在構造的過程中，沒有什麼顯

（1） 鹿野忠雄，1938, p. 10.
（2） 上引書 p. 11.
（3） 鹿野忠雄，1956, p. 317.
（4） 鹿野忠雄，1938, p. 11.
（5） Hornell, 1936, plate L.
（6） 衞惠林，1962, p. 128.



插圖十五 大船的拼板排列圖

著的差別，唯一顯著不同之處卽船體除底基龍骨外，是由四層板所接合而成的，比小船多出一層板，大船的第三層板，在小船是沒有的，卽爲多出之一層，（參見插圖十五）[1]，每層乃以塊板接合而成，第一層、第二層與最上一層，各部份板之名稱與小船相似，在此不再重複說明，現僅將小船中所沒有的這一層板的名稱，簡單說明如後：第三層下接第二層，上接第四層卽最上層，在船首尾兩端的板叫做 kabusan-no-patakaran 板，在船的兩側共有四塊。第三層的中間板名叫 pabakun-no-patakaran，二側共計二塊。大船連龍骨三塊在內總共由二十七塊板所拼成，（參見插圖十六）大船與小船之橫切面對照圖[2]。大船的長度大約在7～8米

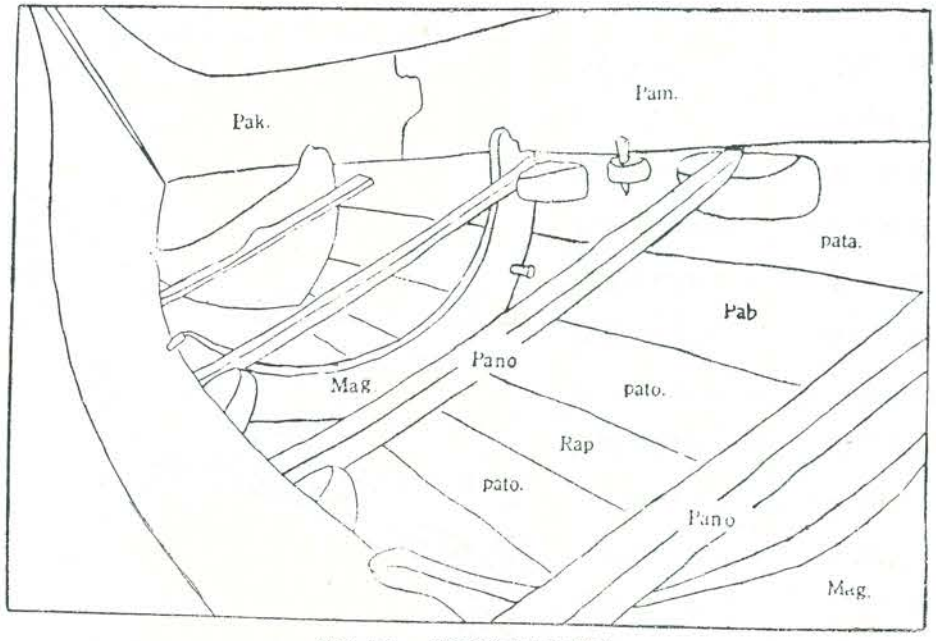


插圖十六 大船與小船的橫切面圖

（1） 鹿野忠雄，1956, p. 36.

（2） Leach, 1937, p. 186.

之間，船身的寬度約在1.3米左右，船身也很高，船之首尾尖端至龍骨處高達二米餘，船的中央部份（即船腹）高約 0.75米左右(1)。大船船體之支骨較小船更爲强固，通常小船在中央有一至二根爲弓形支骨，大船的弓形支骨則有二根，這兩根弓形支骨並不附着在最上一層的船緣板上，而是彎曲的附着在由船體二端算起的各三分之一處的各層拼板上，除此而外，還有橫支骨五根，對於第三層的 patakaran 拼板有增强牢固的作用（見插圖十七）(2)，大船在五支橫支骨上搭有兩列長板，用來當作坐位（見圖版拾柒D）(3)，在大船的船首，通常要在造船時便預留出一插帆的桅杆圓孔，這種掛帆的裝置，小船可省略，帆的長度隨船的大小而有不同，大船的帆大約在1.7米左右，呈⊻形(4)，這種形狀爲蘭嶼的雅美族人用於裝飾上，最喜愛的一種造形。一般來說，帆是由四塊類似麻布質料的布接合而成，上端和下端都固定在橫竿上，在船尾當作坐位用的地方，舖有一種蓆子，在蓆子上開有圓形的孔，孔之上又有蓋子的設計，可將此圓孔完全遮蓋此圓孔即爲預備往裏放魚的船艙入口。在此部份之後，又有打飛魚時



插圖十七　大船內的支骨結構圖

（1）鹿野忠雄，1946, p. 60.
（2）鹿野忠雄，1956, p. 320.
（3）Leach, 1937, plate M.
（4）鹿野忠雄，1946, p. 61.

抱持火把者的位置[1]，這些特殊的設計都是小船所沒有的。小船每人用二支槳划行，大船每人則用一支槳，祇有坐在船首位置的人才用二支槳。在船緣內側，一水平突出的長條形棚狀板上(此板與第四層板爲一整體)，開有許多小孔，將一種名 Irasan 的木棒二根插入孔中，成三角交叉形，然後此二棒之頂端捲纏上繩索，並固定縛牢於突出的棚狀板上，於捲纏的繩索下方所預留的繩圈內，套入船槳。在大船的船尾左側，附插一圓圜形的舵圈，將一種刀狀的木槳 (savira) 套入其內，可當作舵用。通常具有船長身份的人，才能操縱此舵。

無論大小船，當其拼湊完成後，如果預備使其裝飾成有花紋的雕刻船(Ipanitika)，必須經過一次加工的手續，而這種加工的雕刻的裝飾工作，是由全體參加拼船的人，分工雕刻而成。裝飾的部位以船體的外觀爲主（圖版拾柒B上），其次於船的首尾突出的尖端上，加裝船的頭尾飾，最後才在船體的內部邊緣刻上簡單的花紋，裝飾的目的，一方面是爲了船的美觀，另一方面是爲了容易識別，因爲齒噢雅美族的每一個家族，都有一個代表家族的圖案，他們常把這些圖案刻在船身，用以識別船的所屬。在雕刻之初先用黑墨將所欲雕刻的花紋輪廓描出，花紋都描畫於第二層板 (pabakun, kabusan-no-pabakun)的上半部至最上一層板的邊緣，恰將此一部份環繞一周。然後大家用刻刀，將花紋分工雕刻在船腹的四周；三角形的波浪狀曲線紋，上下左右對稱的排列著，非常整齊。每艘船的首尾，還刻著有一個齒輪狀的圓圈(每艘船計四個)，齒輪有好幾層，雅美族人稱之爲"船眼"，他們認爲當這艘船出海捕魚的時候，船眼可以讓這艘船避免災難。船腹的中間，亦刻有一種引人注目的人體雕像，一個個相連的排在一起，間或有波浪紋將其從中插開，雅美族人認爲這個人像是海上的英雄神，裝飾在船上，亦有祈福禳災之意，因之加裝於船之頭尾的飾物亦多採用此一人像。雕刻的技法大致可分爲四種：(1) 凹入雕，即物像輪廓線內大部或全部下凹（船腹的邊緣多用此法）。(2) 高浮雕，物像輪廓線外減地，有的雖不減地，但物像呈弧面凸起很顯著，近似眞正的浮雕（船腹中間多用此法）。(3) 陰線刻，物像的輪廓線和細部都成陰線，物像和板面爲一平面（船之內側邊緣多用此法）。(4) 透雕，物像的某些部份採用鏤空的雕刻法（船之首尾飾物多用此法）。

（1） 鹿野忠雄，1946, p. 62.

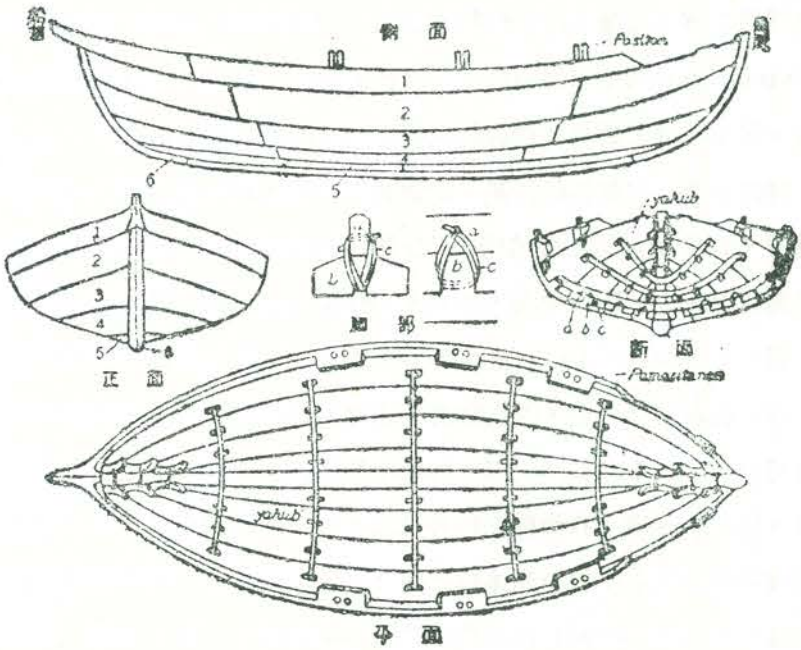
雕刻完畢之後，並塗以紅、白、黑三種顏色；紅色卽蘭嶼特產的紅土(burirao)，黑色則取之於壺底或鍋底之煤烟，白色則爲燒夜光貝所得的白灰粉抹。在第二層板之下端至底部龍骨塗紅色，凹入的部份則塗白色，凸出的部份則以黑色爲主，間或以紅色加入塗之。顏色塗畢，船要舉行下水的禮儀，全船始算拼造完成。

在東亞及西南太平洋上，蘭嶼的拼板船是值得注意的，Hornell 氏認爲蘭嶼的刳木拼板船是由獨木舟演變而來，鹿野忠雄氏很同意他的見解(1)，作者現更進一步的引恒春縣誌(2)中的一段記載，或可說明 Hornell 氏的見解似有可能：

……海之中距岸八十里爲紅頭嶼……其地無船，以老樹之中朽者，鑿爲艇。又多漆，或以漆膠木爲舟。

以老樹之中朽者，鑿爲艇，是明言獨木舟無誤，然蘭嶼目前並不存有獨木舟，僅有小型的雕刻玩具獨木舟之存在，而此玩具獨木舟，亦不具實用的價值。雕製玩具舟的風俗是否卽前人製作獨木舟之遺風，是很值得注意的事。

距蘭嶼南四十餘海浬的巴丹島，有一種拼板船，名叫tataya，與蘭嶼的小船tatara



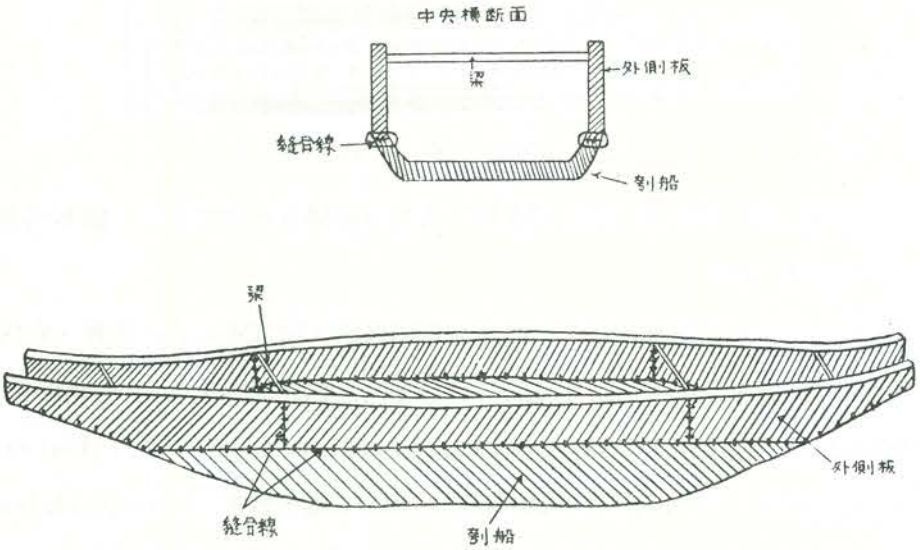
插圖十八　巴丹島的拼板船 Tataya

(1)　鹿野忠雄，1946, p. 77.

(2)　屠繼善，1894, Vol. I.

在語彙上是相似的，在構造上也可以說是相同的（見插圖十八）[1]。Fraser 氏說：在所羅門羣島，也有一種特殊裝飾的戰船，也是用木板拼建而成的，這種不帶邊架的船，值得注意的是，無論就其建造技術和裝飾技術上看，都與蘭嶼的拼板船有極其相似的地方[2]。

東亞除中國和東南亞外，在東北亞亦尙有縫合船的存在。日本北海道和庫頁島的蝦夷人至今尙用縫合的漁船，船底就是很淺的獨木舟，而將木板縫合於兩舷，便成深底的船隻（插圖十九）。琉球自古就無巨樹大木，爲節省造船材料，很早就用縫合船，謂之 sabami。

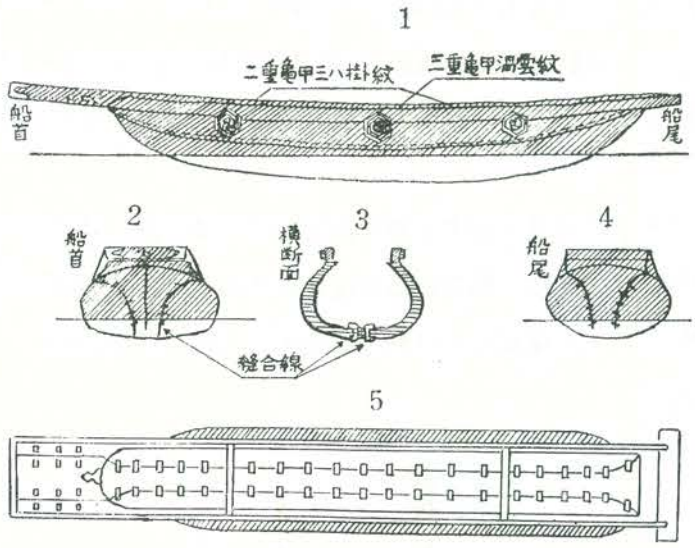


插圖十九　蝦夷人的縫合漁船

日本島根縣的美保關神社，至今仍存一隻，叫做‘諸手船’，如插圖二十所示，據傳說稻背脛尊神所搭來此地之物。這是用數塊木板縫合而成之船，與現在該地漁民所用叫做 sariks 的漁船，形制幾乎相同，可見該地自古代就用縫合船。

這種縫合船，正表示由獨木舟進化到‘構造船’中間的一種船，非常重要[3]。日本、琉球、臺灣和越南[4]的縫合船都與南美智利的 dalca 有關[5]，中國湖南的毛板

（1） 鹿野忠雄，1946, p. 69.
（2） Fraser, 1962, p. 190.
（3） 上野，1943, pp. 19. 67.
（4） Paris; 1942, pp. 22-29.
（5） Edwards, 1965, pp. 21-34.



插圖二十　諸手船

船，亦屬於同一類，不過進步到已用鐵搭，臺灣蘭嶼縫合船的縫合法，雖不用金屬，但又是較進步的一種。

南美洲太平洋沿岸的水運工具，從事此項研究的人除 Edwards 氏外，在1932年已有 Lothrop 發表過南美西海岸土著的航運一文，他列舉南美西海岸的水運工具有下面數種：三種式樣的獨木舟 (Dug-out canoes of three types)；木栰 (Log rafts)；葦筏 (Reed rafts)；海豹皮浮囊 (Seal-hide floats)；縫木板船 (Sewn plank boats)；縫樹皮舟 (Sewn bark canoes)(1)。Edwards 和 Lothrop 兩氏僅對南美西岸的水運工具列舉數種而已，並沒有考慮到各種水運工具起源和發展的問題。西村眞次氏著先史時代及原史時代水上運搬具一文，他分原始工具發展階段爲六：第一階段——浮物，第二階段——桴筏，第三階段——刳舟，第四階段——皮船，第五階段——縫合船，第六階段——構造船(2)。上述三氏的分類，當以西村氏的分法，兼顧了水運工具發展的階段，較爲合理。且適合於東亞和中國水運工具發展的情形。在中國水運工具的發展，據歷史或傳說的記載：羅欣物原曰："燧人以匏濟水，伏羲始乘桴，軒轅作舟。"除匏、桴、舟三者外，其他浮物如葦蒲、獸皮、樹皮也都可以造船，縫合船用

(1) Lothrop, 1932, p. 229.

(2) 西村眞次，1938, pp. 1-22.

獸皮和樹皮造成，最後用木板製造即南美的 dalca，至於臺灣蘭嶼雅美族用縫釘接合的拼板船，則已到西村氏的第六階段的構造船了。

參 考 書 目

(1) 中 日 文

六十七
　清 番社采風圖考
王元翰、王思義
　1609 三才圖會器用卷四，明萬曆三十七年。
王錫祺
　1897 小方齋輿地叢鈔，光緒三年（丁丑）至廿三年（丁酉）刊。
包遵彭
　1966 漢代樓船考，民族學研究所集刊第二十二期，民國五十五年。
西村眞次
　1938 先史和原始時代的水上搬運具，人類學先史學講座第六卷。
呂思勉
　1934 中國民族史，民國二十三年，世界書局，上海。
屈萬里
　1956 說易散稿，臺大文史哲學報，第七期，民國四十五年。
林惠祥
　1930 臺灣番族之原始文化，民國十九年，上海。
金祥恒
　1959 續甲骨文編，民國四十八年。
郁永河
　1698 稗海紀遊，康熙三十七年。
周鍾瑄
　1717 諸羅縣志，康熙五十六年。
周去非
　1178 嶺外代答，宋孝宗淳熙五年。
茅坤（胡宗憲）
　1562 籌海圖編，明嘉靖四十一年。
茅元儀
　1621 武備志，明天啓元年。
凌純聲
　1934 松花江下游的赫哲族，民國二十三年，上海。
　1956 臺灣的航海帆筏及其起源，民族學研究所集刊第一期。
陳淑均
　1832 噶瑪蘭廳志，清道光十二年。
徐炳昶
　1943 中國古史的傳說時代，民國三十二年，重慶。

鹿野忠雄

1938 紅頭嶼雅美族的大船建造與船祭，人類學雜誌第五十三卷，第四號。

1946 西南太平洋的以挖製木板拼成的船，東南亞細亞民族學先史學研究第一卷。

袁　康

52 A. D. 越絕書，後漢光武廿七年。

黃得時

1961 臺北市志稿卷一沿革志，民國五十年。

黃叔璥

1736 臺海使槎錄，乾隆元年。

屠繼善

1894 恒春縣志，光緒二十年。

傅　恒

1751 皇清職貢圖，卷三，乾隆十六年。

劉　節

1948 中國古代宗族移殖史論，上海。

劉枝萬

1954 南投縣名勝古蹟，民國四十三年。

羅香林

1955 百越源流與文化，中華叢書本，臺北，民國四十四年。

衛惠林、劉斌雄

1962 蘭嶼雅美族的社會組織，民族學研究所專刊之一，民國五十一年。

（2）西　文　書　目

ACOSTA

1894 Historie Natural y Moral de las Indias.

AUDEMARD, L.

1957 Les Jonques Chinoises: Histoire de la Jonque.

1965 Les Jonques Chinoises: Bas Yang Tse Kiang Rotterdam.

BEST, E.

1925 The Maori Canoe Wellington.

BRINDLEY, H. H.

1931 The Sailing Balsa of Lake Titicaca and other Reed-Bundle Craft, The Mariner's Mirror, XVII (1931) The Mariner's Mirror XXVI (1940) 333-338.

CARTER,

1961 Movement of People and Ideas Across the Pacific, Honolulu, Hawaii.

EDWARDS, C. R.

1965 Aboriginal Watercraft on the Pacific Coast of South America, Ibero-Americana: 47.

ESTRADA, E. and MEGGERS, B. J.

1961 A Complex of Traits of Probable Transpacific Origion on the Coast of Ecuador, American Anthropologist, LXIII.

FRASER. D.

1962 Primitive Art.

FRASER, D.

1965 Theoretical Issues in the Transpacific Diffusion Controversy, Social Research, Vol. 32 No. 4.

1967 Early Chinese Art and the Pacific Basin, Columbia University.

GOLSON, J.

1963 Polynesian Navigation: A Symposium on Andrew Sharp's Theory of Accidental Voyages, Wellington.

HADDON, A.C.

1920 The Outrigger of Indonesian Canoes, Journal of the Royal Anthropological Institute, Vol. 50.

HADDON and HORNELL,

1936 Canoes of Oceania, 3 Vols.

HEINE-GELDERN, R.

1952 Some Problems of Migration in the Pacific,

HEYERDOHL,

1953 American Indians in the Pacific.

HORNELL, JAMES

1936 Boat Construction in Scandinavia and Oceania; Another Parallel in Botel Tobago, Man, Vol. XXXVI, Nos. 200-232, 1936.

1943 Outrigger devices: Distribntion and Origin, Jousnal Polynesian Soc., Vol. 52, pp. 91-100.

KANO, TADAO and SEGAWA, KOKICHI

1956 An Illustrated Ethnography of Formosan Aborigines, Vol. 1, The Yami, (Revised Edition) 456 pp. Tokyo

HORNELL, J.

1946 Water Transport: Origins and Early Evolution, Combridge, England.

LEACH, E.R.

1937 Boat Construction in Botel Tobago, Man, Vol. XXXVII, Nos. 200-237.

LOPATIN, I.A.

1925 The Orochee Tribe-Congeners of the Manchus, Harbin.

LOTHROP, S.K.

1932 Aboriginal Navigation off the West Coast of South America, The Journal of the Royal Anthropological Institute Vol. LXII.

MALO, D.

1951 Hawaiian Antiquities. B.P. Bishop Museum Special Publication, 1951, pp. 126-135.

PARIS, P.

1946 Esquisse d'Une Ethnographie Navale des Peuples Annamites, (Deuxiéme Edition 1955) Rotterdam

PARIS, F.E.

1841-1843 Essai sur la construction Navale des peules Extra-Européens, Paris.

SHAPIRO, H.L.

1964 The Peopling of the Pacific Rim, American Museum of Natural History.

SHARP, A.

1957 Ancient Voyagers in the Pacific, Harmonds Worth, England, Peugin Books, Ltd., 1957.

SHINJI NISHIMURA,

1920 The Many-Padde-Shipsof Kumano, Tokys.

1925a The Reed-Caroe, Tokyo.

1925b Ancient Rafts of Japan, Tokyo.

1931 Skin Boat, Tokyo.

1934 Colabash Boat, Tokyo.

1936a Clay Boat, Tokyo.

1936b Deer-Skin, Tokyo.

SHIROKOGOROFF, S.M.

1926 Northern Tungus Migration in the Far East. Journal of the North China Branch of the Royal Asiatic Society, Vol. LVII, pp. 123-183.

SPECK, FRENK G.

1931 Birch-Bark in the Ancestry of Pottery Forms. Anthropos, Tom, XXVI, 3, 4, pp. 407-411.

SUGGS, R.C.

1960 The Island Civilization of Polynesia, New York.

A COMPARATIVE STUDY OF THE WATERCRAFT OF ANCIENT CHINA AND SOUTH AMERICA

(English Abridgement)

FOREWORD

Ever since the author published his paper titled "Formosan Sea-going Raft and Its Origin in Ancient China" in the first edition of the Bulletin of the Institute of Ethnology 14 years ago in the spring of 1956, he has felt all the time that some of his fellow scholars in the study of the cultural relations between Asia and America should direct their efforts to the problems of ancient sea-going activities along the Asian coasts. One gratifying phenomenon during the past more than 10 years that merits notice is that quite a few scholars have begun to be engaged in the discussion of ancient sea-faring problems over the Pacific Ocean. However, most of them gave their attention merely to subjects concerning Trans-Pacific travels, and only in Edwards' "Aboriginal Watercraft on the Pacific Coast of South America, Ibero-Americana" (47) (1965) and Pao, Tsun-peng's "The Lou-Chuan of Han Dynasts" (1966) the ancient watercraft of Asia and America was dwelt on for the first time.

Based on Edwards' investigation, the native watercraft along the Pacific coast of South America includes seven types, namely: (1) Reed Bundle Float; (2) Hide Float; (3) Bark Canoe; (4) Dalca; (5) Dugout Canoe; (6) Gourd Raft; and (7) Log Raft. In addition, there were, in accordance with the author's research, another three types of vessels used over the Pacific Ocean in the old days, i.e., (8) Outrigger Canoe, (9) Double Canoe. and (10) Deck Canoe. The first seven types of watercraft were formerly used by the present native people of South America, while the last three types were vessels later seen on the Indian and Pacific Oceans. Records of water transport similar to the seven types of South American watercraft can be found in available Chinese literary, ethnological and folklore materials. Although we dare not say that all South American watercraft were originated from ancient China, yet the distinct similarities between the watercraft of the aboriginal people of South America and the sea-going vessels of ancient China really deserve much of our attention.

The above mentioned seven types of watercraft are described below in some detail based on the stages in which they were developed in East Asia and China; namely; (1) gourd raft; (2) reed bundle raft; (3) hide float; (4) log raft; (5) dugout canoe; (6) bark canoe; and (7) sewn plank boat or dalca.

1. Gourd Rafts

In the western part of South America, gourd rafts were used as a ferry-craft. It was made by fastening big gourds together into a raft, like a large round shield in appearance, about 1 1/2 square yards in size; sometimes wooden bars or strips were placed on its top for carrying goods or things, with a leather or hide rope in the form of a saddle attached to its front end. A man just put his head in this rope strap and swam across the river; when necessary, another man or two could push it from behind. In the early records or documents, such gourd rafts were found only in North Peru (Edwards, 1965: 59–60). In addition to the many other devices they had, the aboriginal Indians used a kind of large net-shaped gourd raft for ferrying purposes. Such gourd raft was used to ferry people or baggages. It was towed by a man swimming in front of it, holding a rope which was attached to the front end of the raft, in the same manner as a horse draws a wheeled vehicle; and, in some cases, it was also pushed from behind by someone swimming behind it. It was not too heavy that one could carry it along on the shoulder during his travel on land and used it when he had to cross a river or stream. This kind of gourd raft was widely used at Stanta, Peru (Acosta, 1894: 247). Such gourd rafts were still in use along the west coast of South America as late as the middle part of the 17th century. As indicated by legendary sources, the gourd rafts were used for ferrying purposes in China during much earlier ages. Quoted for evidence is a passage from Loh, Hsin's 羅欣 *Wu Yuan* 物原: "Shui Jen 燧人 crossed the river with gourds; Fu Hsi 伏羲 began the use of rafts; and Hsuan Yuan 軒轅 began to build the boat." In addition, records can also be found in *Shih Ching* 詩經 and *Yi Ching* 易經, which indicate that gourd rafts were used for ferrying purposes in ancient China. Both of the above books were completed in Early Chow period and are reliable works. Besides, records concerning the use of gourd rafts as ferry-device are also contained in *Chuang-Tzu* 莊子 and *Mao Chuan* 毛傳.

At present, the children of the boat-people still attach a gourd to their back when they swim in the river as a device to keep them from drowning..This really can be described as an old practice well preserved (Chu, Wan-li 屈萬里, 1965: 33). Passing through Kwangtung Province during one of his trips more than 30 years ago, the author himself saw several boys of the boat-people or Tanka of Canton swim in a river each with a sealed aluminum can, in lieu of a gourd, to their back to protect them from drowning.

Tai Hai Shih Cha Lu 臺海使槎錄 states: "Containers were also made with gourds (Plate I) for use in travelling. The large ones of which had a capacity of several Tou (pecks). These gourd-containers were used by travelers to carry blankets, clothing and other articles. They not only could protect what they contained from getting wet in rainy weather, but could also float when placed on water

(Plate II)." Also, *Fan She Tsai Feng Tu Kao* 番社采風圖考 says: "The aborigines live beyond the mountains. When the river or stream is rising, they drift across it easily with gourds either held or fastened around their waist." Moreover, the Li people (黎 aborigines) of Hainan Island also used gourds for ferrying purposes, as so recorded in *Li Chi Chi Wen* 黎岐紀聞 as follows: "The Li people travel in the midst of mountains, often carrying with them large gourds which are used when crossing creeks or rivers." The use of gourds as a contrivance for crossing rivers was not only seen in China, it was also found in Korea (Plate IIIA) and Japan. Thus, it appears clearly that materials or data relative to the use of gourds as a sort of watercraft are not rarely seen in ancient literary writings and ethnological and folklore books.

Furthermore, as noted in *San Tsai Tu Hui* 三才圖會, rafts were made with a kind of wooden jars instead of gourds (Fig. 1). Records of wooden jars can be found in ancient Chinese historical books written in as early as the 3rd century, B. C., Quoted here for proof is a passage from the *Huai Yin Ho Lie Chuan* 淮陰侯列傳, *Shih Chi* 史記: "To ferry the troops with wooden jars, and attack An Yi 安邑." The author believes that the wooden jars mentioned above must have been a kind of jars or bottles made with wood. Even today, such wooden jars are still in use among some of the aborigines of Taiwan. The Institute of Ethnology has four such wooden jars in its collection, as shown in Plate III B. Besides, there are rafts made with earthen jars in use on the Ya Lu River 鴨綠江 (Nishimura, 1938: 37) (Plate IV C). Available records reveal that there were Tu Chuan 土船 (clay boat) and Ni Chuan (泥船 clay boat) in ancient China. The author imagines that they were a kind of raft or boat made with clay-baked jars. At the present, a kind of clay boat with its hull built with bamboo strips is still in use in Viatnam (Plate IV A, B, C, D).

2. Reed Bundle Floats

Many typical reed bundle floats have been discovered along the west coast of South America from the remains of pre-historic Inca. This points out that the Inca people had begun building reed bundle floats during the pre-historic periods. The present reed bundle floats of South America, although different in many respects from the original shape and style, still preserve some of the ancient features. The reed bundle floats, presently seen in South America, are made with bundles of dry reeds or calami (or sweet flags). The smallest of them, measuring 6 feet long, is big enough for two people to ride on it, and the larger ones are 15 to 20 feet long, 10 to 12 feet wide. Generally, these reed bundle floats can not be used for long voyages, because they are too light and apt to capsize in big wind.

The distribution of the South American reed bundle floats is very wide, which includes the coasts of Peru, the coasts of Chili, the high land of Ecuador, the high

land of Peru, the central west of Argentina, the Majo area of Bolivia and the mouth of Sao Francisco of Brazil. The reed bundle floats on Lake Titicaca, Peru are especially well-known, which are mostly double headed..the old shape as described in ancient books and writings (Plate V A, B, C, D). In order to maintain the correct course when sailing in big wind, the Peruvian reed bundle floats are equipped with a center board, as are the bamboo rafts of Taiwan (Nishimura, 1925: 151).

The reed floats were in existence in China during the very ancient times given for evidence below are only a few of the many accounts of reed floats contained in Chinese classic works and historical books. *Ho Kwang* 河廣, *Wei Feng* 衞風, *Shih Ching* 詩經 says: "Who said the river is wide, it can be crossed with one reed." *Shu* 疏 explains: "One reed means a bundle of reeds which can float on the river as a raft, and it certainly did not mean just one reed." It seems apparent that reeds were used for ferrying purposes in ancient China. Again, *Wu Lu* 吳錄 *Tai Ping Yu Lan* 太平御覽 relates: "To out reeds to make rafts to assist the boats in ferrying people." All of the above indicate that reeds were used as a type of watercraft in ancient China. Moreover, *San Tsai Tu Hui* 三才圖會 contains an account of the use of rush-rafts (Fig. 2) as follows: "The rush-rafts are made by fastening nine large bundles of rushes together and reeds can be used to replace the rushes when the latter are not available."

Today, reed-floats are still in use on the Tu-Men 圖們 River of Northeast China (Nishimura, 1925: 119–121). They are made usually with five large bundles of reeds, with three bundles at the bottom and two on top, each bundle consisting of about one hundred reeds. Generally, they are 6 feet long and 3 feet wide, representative of the proto-type of reed float in shape and construction. From what has been described above, it may be derived that the reed floats of ancient Asia correspond to a great measure with those of South America in shape, characteristics as well as in building materials. The reed-floats of ancient Asia have now survived merely on Lake Hamun in the western part of Asia on Formosan Straits in the east. Nevertheless, there is no denying that the reed-bundle floats of Peru represent a cultural survival of ancient Asia (Nishimura, 1925: 153–154).

3. Hide Floats

The earliest historical record of hide floats along the west coast of South America was made by Cieza da Leon (1553), who said balsas made of seal or sea-leopard hides were used for fishing by the Indians in the valley of Tarapaca and by the aborigines on the coasts of all desert areas of Chili. Later, Padre Acosta (1590) recounted that reed-floats were used by the fishermen along the Peruvian coasts and that seal-hide floats were used by the Indians in the Ica valley. He also

said that during the old days the Indians of Ica and Arica had rafted on the seal-hide floats to several islands to the west and maybe even farther.

Based on records made by Amaty Junient, hide-floats were used during the 18th century in Maipo, Rapel, Mataquito and Maule of Central Chili for transporting travellers and their luggages across rivers. In making the hide float, the first step was to strip the hide from the carcass of the seal, then to rip it into two halves, about 8 feet 4 inches to 11 feet 2 inches long, next was to stitch them together and inflate it. A wooden strip was attached at both ends of the float to keep its balance and two oars were used for propelling it forward.

The skin-bags (Fig. 3) of ancient China were similar to the hide floate of South America. *Wu Pei Chih* 武備志 contains the following record: "A skinbag was a bag made of the whole skin of a sheep. One could float across a river by filling it with air and attaching it under the arms." Again, Wang, Yen-cheng 王延徵 of Sung Dynasty said in his *Kao Chang Hsing Chi* 高昌行紀: "The people of the Ti Nu Wo Tzu tribe 弟女媧子族 made bags with sheep-skins, then blew them up and used them to float across the Yellow River."

The Goldi 赫哲 people of the lower Songari Valley used willow twigs to make the frame of a boat and then covered it with ox-hides. It was waterproof and man could ride in it (Ling, 1934: 433). *He Lung Chiang Wai Chi* 黑龍江外紀 states: "The small hide-float, called '*Cha Ha*' 扎哈 is lighter and swifter than the dugout canoe, called '*Wei Hu*', 威呼 and is large enough for two or three people to ride in it." The hide-floats (Fig 4) as contained in *San Tsai Tu Hui* were also made of the raw-hides of oxen or horses. Once during his trips in Hsikang 西康 Province, the present author had an opportunity to cross the Chin Sa 金沙江 River in a hide-float (Plate VI).

In China, the hide-floats had once been very popular along the 2500-mile valley of the Yellow River, especially in the 700-mile section between Hsi Ning 西寧 and Pao Tou 包頭. The hide-floats of the Yellow River area included two kinds; one was the hide-raft made with inflated sheep-skin bag, and the other was made with ox-skin bag stuffed with sheep's wool. Usually, from 12 to 15 sheep's skins were used to make a small hide-raft and as many as 500 sheep's skins were required to make a large cargo-carrying raft. As for the ox-skin rafts, generally as many as 120 oxen's skins were needed for building one such raft. (Plates VII and VIII).

4. Log Rafts

The rafts of the western part of South America, made by fastening or nailing light logs together, may trace their origin to a very ancient time. They are called '*balsa*' by the Spaniard. The word '*balsa*' represents a watercraft and may not only apply to the log rafts, but also to the reed-bundle floats and gourd rafts. As revealed by Edwards' investigation, balsas are still being used along the west coast of South America (plates IX & X).

The South American log rafts may be divided into four types as follows: (1) River rafts; (2) non-sailing coastal rafts; (3) sailing rafts (sea-going rafts); and (4) lake rafts.

In accordance with legendry, in ancient China, Fu Hsi began to use rafts about 33rd century, B. C. Later Hsuan Yuan 軒轅, the Yellow Emperor (2697 B. C.) created the canoe from the raft, and Shao Hao 少昊 (2597 B. C.) floated on the sea aboard a raft. Then during the 5th century B. C., Kou Chien 勾踐, the King of Yueh 越, ordered his troops to cut down trees to build rafts; and subsequently Confucius (551–479 B. C.) set out on a journey into the sea, wishing to go to the Chiu Yi 九夷 (nine alien tribes). In light of the above, it may reasonably be said that this raft culture has a very long history in China. What is more, it is still a living culture today and is widely scattered over the coastal areas, rivers, lakes, streams and creeks of China. The earliest written records with illustrations concerning the log rafts of ancient China are found in San Tsai Tu Hui (Fig. 5 and Fig. 6).

Described here as an example of the many log rafts of China are the rafts of the Yangtze River and Taiwan. The log rafts of the Yangtze River are famous in the world. They are in fact floating villages. Each of which, accommodating from 100 to 150 people, is made by connecting together from ten to fifteen thousand logs, measuring 2–3 hundred meters long and 30 meters wide (See Plate XI A, B. C. D.)., The-sea-going bamboo rafts of Taiwan occupy a very important position in Maritime Ethnology. They are equipped with the center-boards. In fact, Taiwan and Vietnam are the only areas in Asia where the bamboo rafts are equipped with center-boards (Heine-Geldern, 1952: 332). It is possible that the centerboards of Taiwan and Vietnamese bamboo rafts and those of the Peruvian balsas and the Brazilian jangadas may originally came from one source. This may be one of the reasons why quite a few scholars maintain that the South American sailing rafts originally came from Asia (Ling, 1956: 21–22). The bamboo rafts of Taiwan may be classified into four kinds, i. e., (1) river bamboo rafts (Plate XII A); (2) lake bamboo rafte (XII B); (3) coastal rafts (Plate XII C); and (4) sea-faring sailing rafts (Plate XII D).

As of this date, few scholars have made extensive studies in the area of Chinese maritime ethnology, and the materials collected have been inadequate. Fig. 7a shows the making process of the Manchurian rafts on the Yalu 鴨綠 River and Fig. 7b exhibits the bamboo rafts of Ya Ho 雅河, Szuchuan.

5. Dugout Canoes

Robert West once said that little data and materials are available about the style and building of the aboriginal dugout canoes of early Columbian Period. This situation is also true of the primitive dugout canoes of the entire west coast of South America. In fact, it was only after the aborigines having come in contact with the Spaniards, that the dugout canoes of the Indians of Darien were first

mentioned in a letter Nunes de Balboa submitted to the King of Spain in January 1513. Besides, Oviedo said there were also dugout canoes equipped with sails.

At present, the dugout canoes of South America are mainly distributed in the Gulf of Darien, Panama, Columbia and Ecuador (Plate XIII A, B, C, D,). Their prows may be divided into four different forms as shown by Fig. 8. There are only a small number of dugout canoes now still in existence in Peru and Chili, and this number is gradually reducing, because no new ones are to be made.

The dugout canoe was originated in the remotest times in China, as so demonstrated by the following account in Loh Hsin's 羅欣 *Wu Yuan* 物原: "Sui Jen 燧人 began using the gourds to help cross the river; Fu Hsi 伏羲 began to use the raft; and Hsuan Yuan 軒轅 invented the canoe." In view of the above, it is deduced that the ancient watercraft of China had been developed in the following sequence; first appeared the gourds, followed by the bamboo and log rafts, and then came the canoes. Long before the invention of canoes in China, the Chinese people had known how to cross the river with rafts. The invention of the canoe had actually resulted from observations of the natural phenomena, as so indicated in the ancient *Shih Pen* 世本 as follows: "Inspired by the view of leaves drifting on the water, the ancient created the canoe." Again, *Huai-Nan-Tzu* 淮南子 states: "Seeing that a hollow log can float on the water, the ancient began to make the canoe." The canoe was invented in China about the 27th century B.C. prior to the time of the Yellow Emperor. The word 'Yu' 俞 in Oracle Bone inscriptions, as annotated by *Shou Wen* 說文 meant just 'to make a canoe by scooping out a log' as shown in Fig. 9.

In addition, the data and materials listed below are found in available ethnological books and writings. With respect to the canoes in Hu Nan during the Sung Time, *Hsi Man Tsung Hsiao* 溪蠻叢笑 describes: "Dugout canoes....there are many Nan trees (楠 a kind of cedar) in the barbarian area and the barbarians there use the large ones of such trees to make canoes simply by scooping them out." *Ling Wai Tai Ta* 嶺外代答 states: "The canoes seen on the rivers in Kwanghsi are all made by hollowing out pieces of logs or wood blocks. The animal-shaped canoes used in the canoe race at Chin Chow 欽州 are also made by carving and hollowing out a complete block of wood. Besides, many of the canoes used by the barbarians beyond the sea are also made in the same manner." Again, *He Lung Chiang Wai Chi* says: "*Wei Hu*, the dugout canoe, over 20 feet long, pointed at both ends, can carry several people."

At the present time, the dugout canoes still remain in existence in Taiwan. This Chinese canos culture has a history of 5000 years and, from the ethnological point of view, is still a living culture. For evidence, the *Hengchun Hsien Chih* 恒春縣志, published in 1849, carries the following account: "On Hung Tou Yu 紅頭嶼, the decayed ones of the old trees are hollowed out into canoes." Apparently, the

primitive method of making canoes was then still preserved, which corresponds perfectly with that record in *Shou Wen*, i.e., '*Yu*,' to make a canoe by hollowing out a log."

As a matter of fact, dugout canoes are still in use at some places on the Island of Taiwan. *Fan She Tsai Feng Tu Kao* 番社采風圖考 relates: "The Chinese brought goods and merchandise to the aboriginal village for trade. The aborigines made canoes by hollowing out single blocks of wood, called '*Meng Cha* 艋舺'." Further, the "Primitive Culture of the Aborigines of Taiwan 臺灣番族之原始文化, a book written by Lin, Hui-hsiang 林惠祥, contains pictures of dugout canoes, some of which are extracted here in Plate XIV A. Plate XIV B displays the Taiwan dugout canoe kept at the Department of Archaeology and Authropology, Taiwan University. During his trip to the Sun-Moon Lake in 1955, this author saw personally several dugout canoes on the shore of the lake (Plate XII C). The dugout canoe, illustrated by Plate XII D, was seen on Sun-Moon Lake, which seemed at that time to be a newly made one.

6. Bark Canoes

The Yahgan and Alacaluf tribes of the west coast of South America, not interested in farming, live primarily by fishing and hunting sea animals; they wandered in a nomadic manner amid the islands between the Taitas Paninsula and the Horn Island, Chili. Smuel Wallis recounted about the bark canoes he observed at Cape Upright in 1767 as follows: "Their canoes measured 15 feet long, 3 feet wide, and almost 3 feet in depth. They were made with barks sewn together with animal tendons or hide-strips. The fissures of cracks along the seams in the bark were filled with a kind of soft grass and the outer surface of the bark was varnished with a kind of resinous sap to make it waterproof" (Edwards, 1965: 21–22).

Bark canoes were still in use in China during the early days of this century, and the Goldi 赫哲 tribesmen in Northeast China even made new ones in that period (Fig. 10). Fig. 11 shows both the long and short oars used on the birch-bark canoes.

In his former monographs, "The Goldi Tribe of the Lower Songari 松花江下游的赫哲族, the present author noted: "In summer, the *Goldi* people used birch-bark canoes as the primary water transportation." (Plate XV). The birch-bark canoe was made in the following processes: (1) to make the keel first; (2) then fabricate the frame of the hull with strips of poplar wood (Fig. 12); (3) then cover the frame with well-pressed birchen barks (Plate XV B, C, D); and (4) finally place on the poplar-wood carved prow and stern (Plate XV A). In fact, birch-bark ferry-canoes were used at many places in ancient China and at places where birch was not grown, woven sheets of bamboo strips were used instead the birchen bark to make such canoes.

7. Dalcas

In addition to the above-mentioned several kinds of watercraft seen along the Pacific coast of South America, there was another type of water transport, made by sewing several wooden planks together, called 'dalca' by the native people (Plate XVI). Nishimura called it 'stitched boat'. Watercraft similar to this also existed in ancient China, as *Pi Hai Chi Yu* 稗海紀遊 states: "There were the three-plank boats. However, except that they were built with three wooden planks, nothing was known as to the material used for and the method of their building." At present, there is a kind of coarse-board boat at Pao Ching 寶慶, Hu Nan 湖南, the construction material and and manufacturing method of which are believed to be similar to those of the dalca. As known from the record made by Audemard, such coarse-board boats were built of thin pine-boards which were joined together with metal fasteners and bamboo strips. Displayed in Fig. 13 is a specimen of such coarse-board boats, the marks of stitches on which are still very obvious.

In today's Vietnam, there also exists a sort of stitched boat (Bateaux a bordage consus sans membrures). It was basically made of three pieces of central beards, which might have been the origin of the name of 'sampan', and two pieces of side boards, altogether five boards (Plate XVI B, C, D) (Paris, 1942: 22).

The Yami aborigines of Lan Yu, an off-shore island of Taiwan, are famous for their plank-built boats, which include two types, the large plank boats and the small plank boats. The former are called *'Chinurikuran'* and the latter *'Tatara'*." Generally speaking, the two types are identical in construction (See Plate XVII, XVIII and Fig.'s 14, 15, 16). The planks of these boats are joined together with nails of mulberry wood.

Moreover, there is also a kind of plank-built boat, called *'tataya'* on Bataan, an island a little more than 40 knots from Lan Yu. The *'tataya'* is almost same as the Yami's *'tatara'* in sound, and they are alike in construction as well (Fig. 18). Besides, there is a kind of decorated plank-built war-boat on the Solomon Islands, which is also similar to the plank-built boats of Lan Yu in many aspects (Fraser, 1962: 190).

In East Asia, in addition to China and Southeast Asia, the plank-built boats also exist in Northeast Asia. The Ainos in Hokkaido, Japan and its adjacent islands still use plank-stitched boats for fishing even at the present time (Fig. 19). On the other hand, because big trees were hard to find on the Ryuku Islands, plank-built boats have long been used among these islands, which are called *'sabami'* by the indigenous people. Fig. 20 shows an old plank-built boat, named Morota Bure (諸手船, which is presently presently pesesrved at a temple in Shimane 島根縣 Japan. It is similar to the 'sariks', boats used by the local fishermen, in both shape and building. This indicates that plank-built boats have existed in that place since the

ancient time.

With respect to the study in the area of the water transport of the Pacific coast of South America, in addition to Edwards, Lothrop published in 1932 a paper, entitled "The Aboriginal Navigation off the West Coast of South America", in which he listed six types of watercraft as follows: (1) Dugout canoes of three types; (2) log rafts; (3) reed rafts; (4) seal-hide floats; (5) sewn plank boate; and (6) sewn bark canoes. Both Edwards and Lothrop only enumerated several types of the watercraft of the west coast of South America, and did not touch their origins and history of development. In his paper, 'Water Transport during the Pre-Historic Periods', Nishimura divided the evolution of the primitive water transport into six stages as follows: First stage—floats; second stage—rafts; third stage—dugout canoes; fourth stage—canoes; fifth stage—sewn boats; and sixth stage-built-boats. Of the above three classifications, the last one is considered the best as it not only takes into account both the types and the stages of evolution of the ancient watercraft, but can represent properly the general situation of the development to both the Chinese and East Asian water transport.

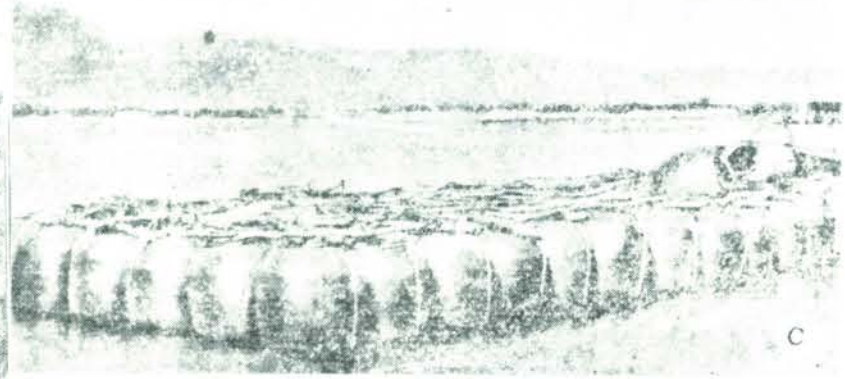
The development of the watercraft of ancient China is well described by Lo, Hsin in his Wu Yuan as follows: "Sui Jen crossed the river with gourds; Fu Hsi began the use of rafts; and Hsuan Yuan invented the boat." In addition to the gourds, rafts and boats, watercraft were also made in ancient China with reeds, rushes, animal hides and barks of tree. Sewn boats were first made with animal hides and tree-bark, and later with planks. The early sewn plank boats of China were identical with the dalca of South America, whereas the boats of the Yami of Lan Yu made by joining planks together with wooden nails, had reached the sixth stage, built-boats, under Nishimura's classification.

Above translation completed by
Francis Yen
25 Dec 1970

番俗六考插畫之一，以葫蘆爲行具，旨蓄，毯衣悉納其中。

圖版貳
Plate II

番俗六考插畫之二，以葫蘆爲行具，遇而不濡，遇水則浮。



A 韓國濟州島的海水亦挾鮑浮海。

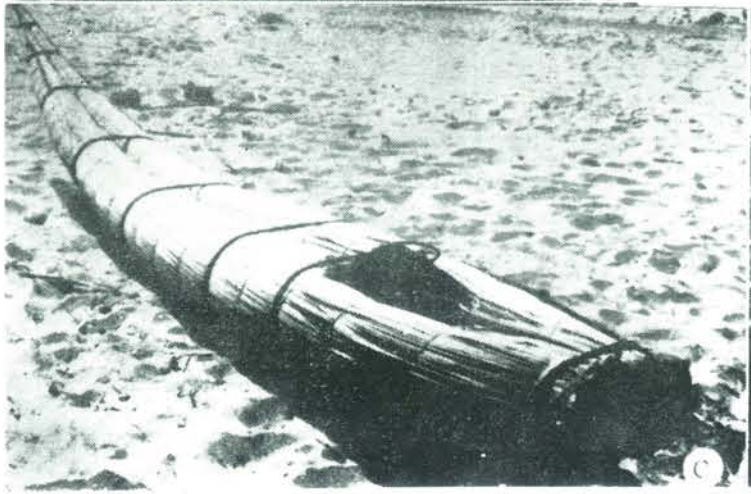
B 本所藏有四個木罌爲臺灣土著族所有物。

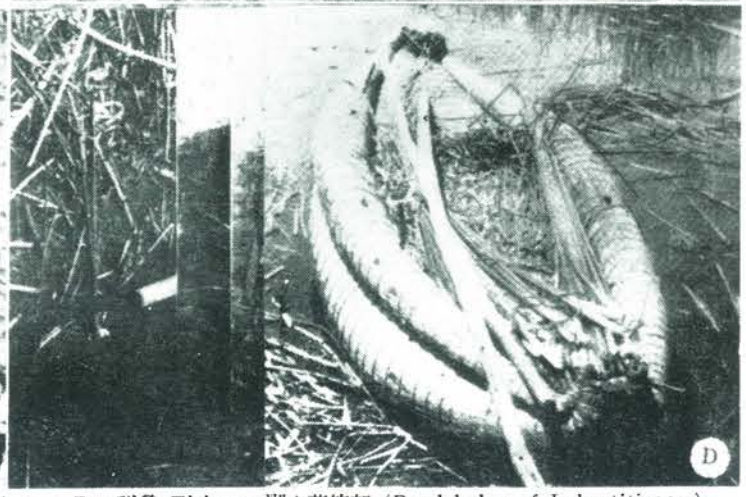
C 鴨綠江上浮了許多大甕。

圖 版 肆
Plate IV

A，B，C 在越南尚在使用的泥船，以竹篾編成船殼，塗以泥土和松脂，可不透水。

D 現藏臺大考古系陳列室中的一標本。





A. 秘魯製造葦舟使舟頭上蹺 (Forming the upward curve at the bow)

B. 秘魯南部三捆葦束紮成葦舟 (Three-part reed float of Southern Peru.)

C. 秘魯完成二捆葦束紮的葦舟 (Completed two-part reed float Peru.)

D. 秘魯 Titicaca 湖上葦筏架 (Reed balsa of Lake titicaca.)

圖版伍 Plate V

圖版陸
Plate VI

著者前在西康考察時，過大小金川時所乘之皮船，圖中左第二人戴禮帽者即爲著者。

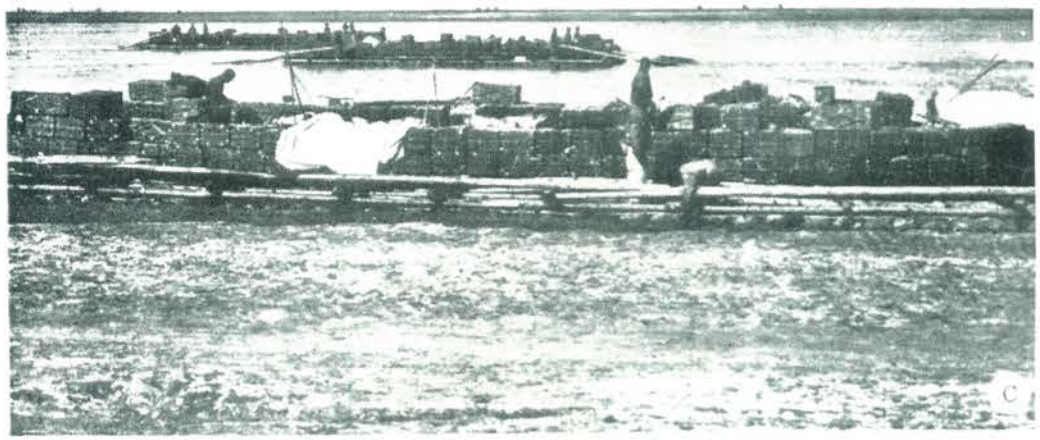
A　以羊皮作浮囊。

B　羊皮浮囊吹氣。

C　牛皮塞滿羊毛以作浮囊。

D　在蘭州附近，用皮筏運棗子。

圖版捌
Plate VIII



A　放氣皮桅便於揹帶。

B　個人划羊皮筏。

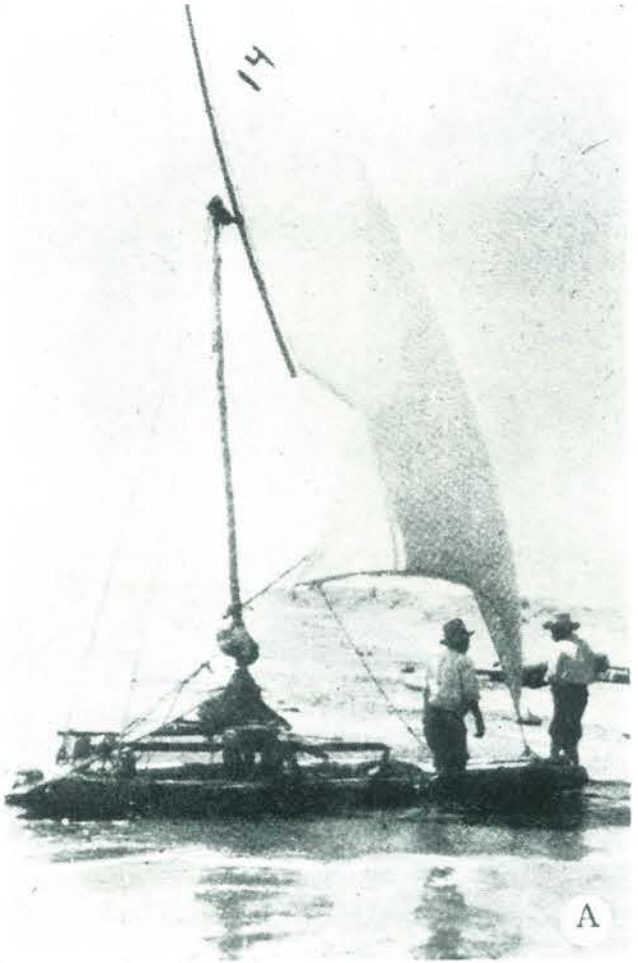
C　黃河上運貨的大皮筏。

A　秘魯北部之桅，有一槳亦用作舵。

B　Paita 半島一岩石海灣上的小桅。

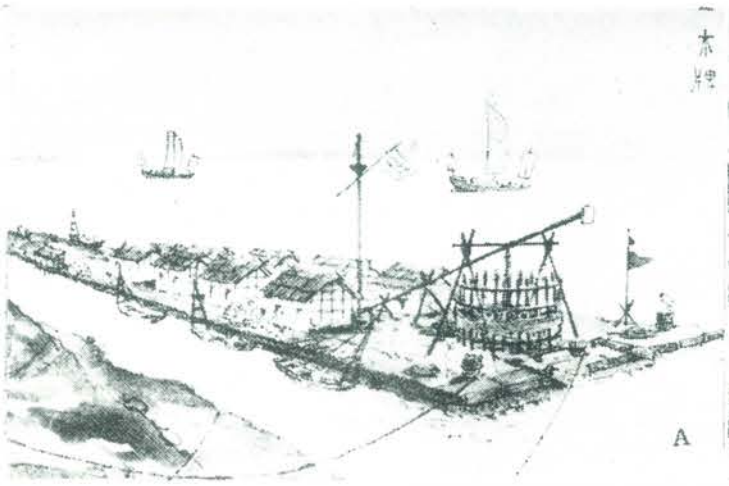
C　秘魯近 Sechura 海岸地方漁人表演中央板的位置，在桅尾右邊。

D　Sechura 沿岸航海桅尾，中央板的位置。

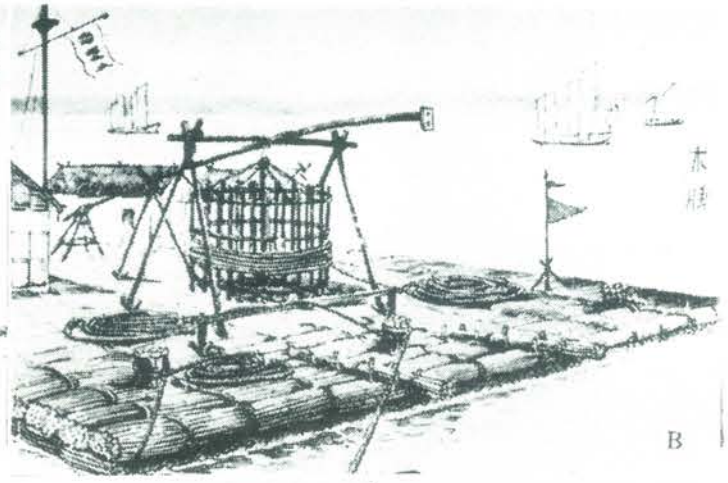


A　秘魯 Palo 地方 Sechura 沿岸的航海筏因浪擱淺。

B　Palo 地方 Sechura 沿岸，所謂 batalön 張帆用一簿木幹撐桅桿至縱帆前邊。

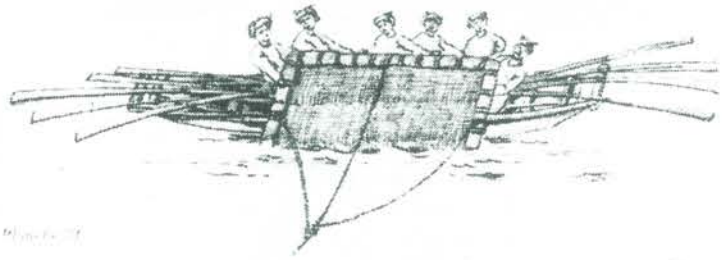


A



B

C



D

A　由一萬至一萬五千根木幹綁紮而成的木排。

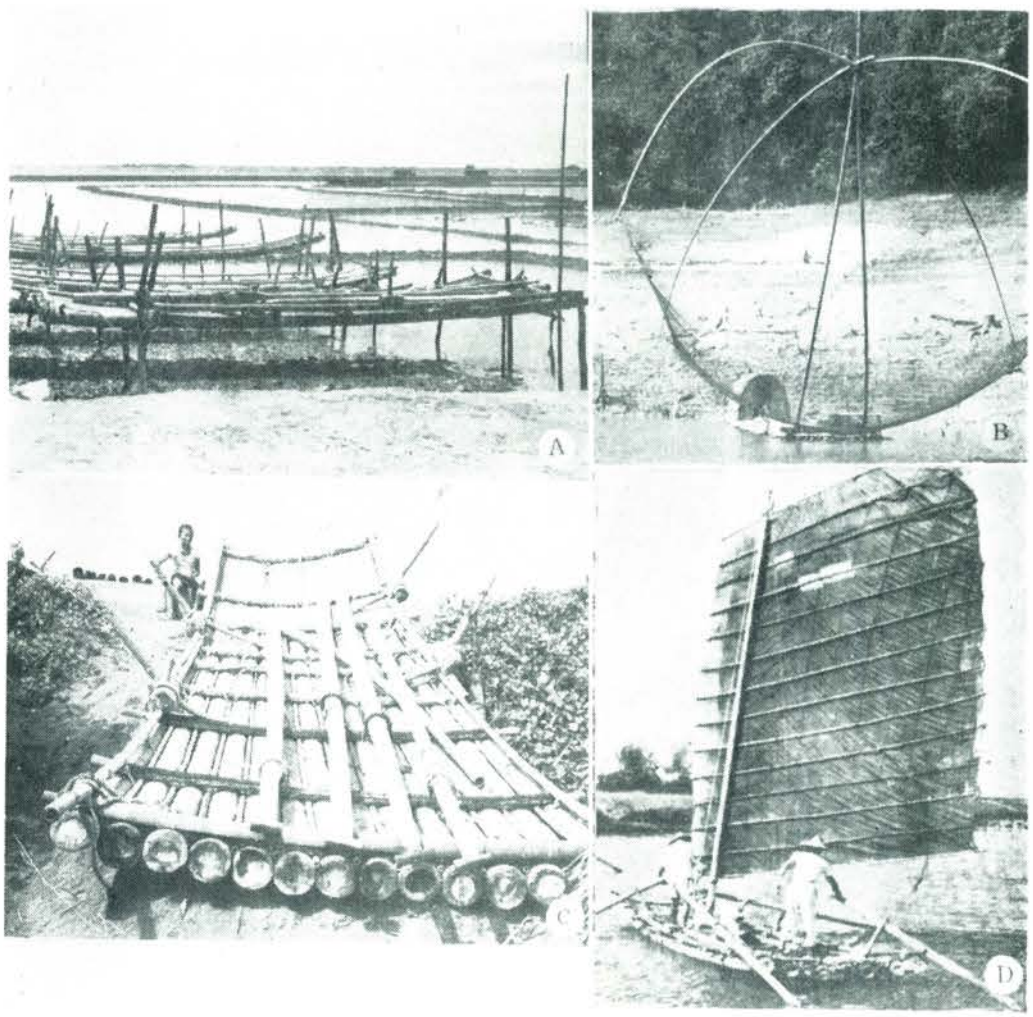
B　大排上主要航行工具有絞車一。

C　纜索和浮錨。

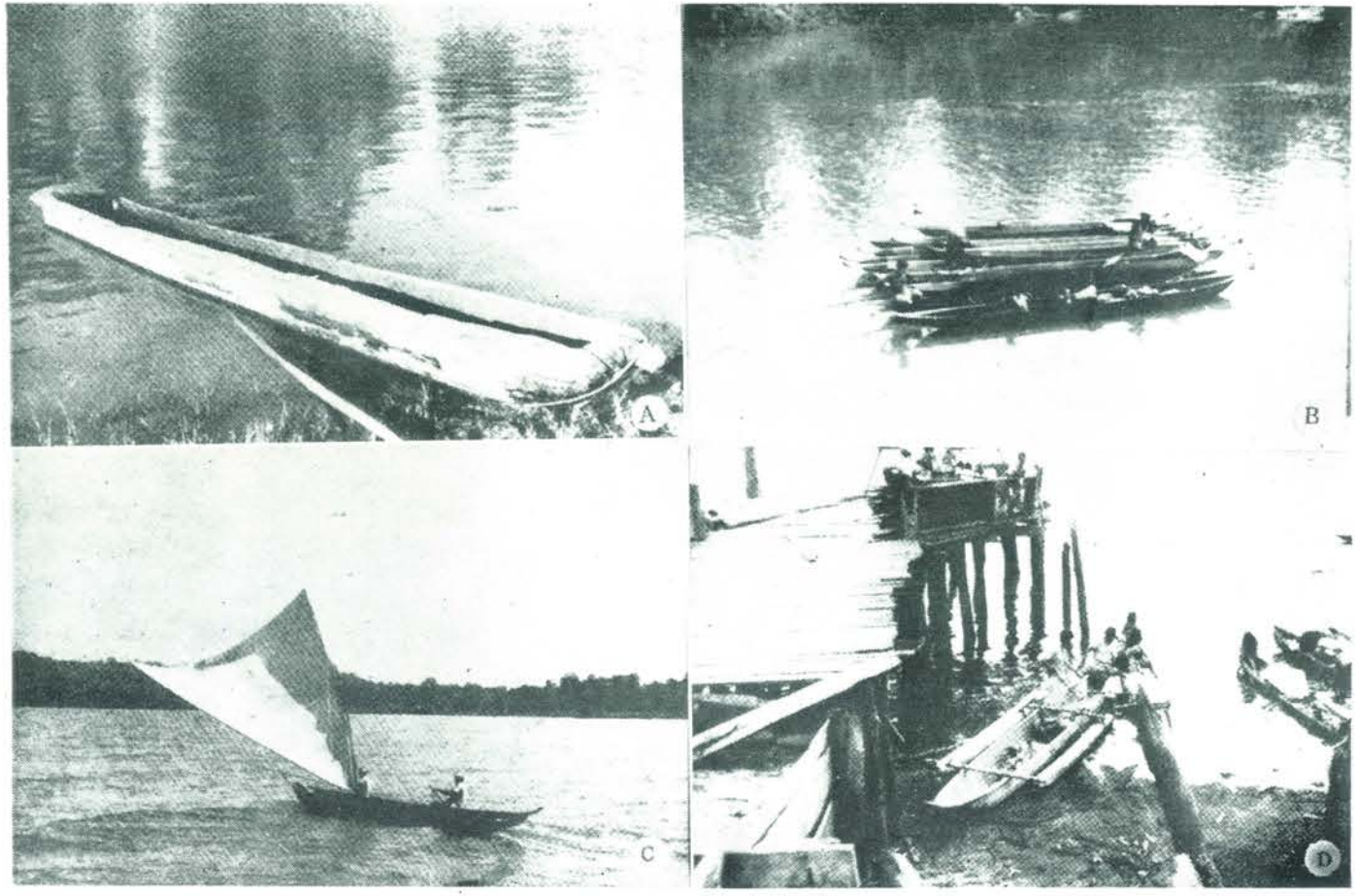
D　運錨的三板船。

圖版拾壹
Plate XI

圖版拾貳
Plate XII



A　河上竹筏。
B　湖潭竹筏。
C　沿海上划筏。
D　航海帆筏。

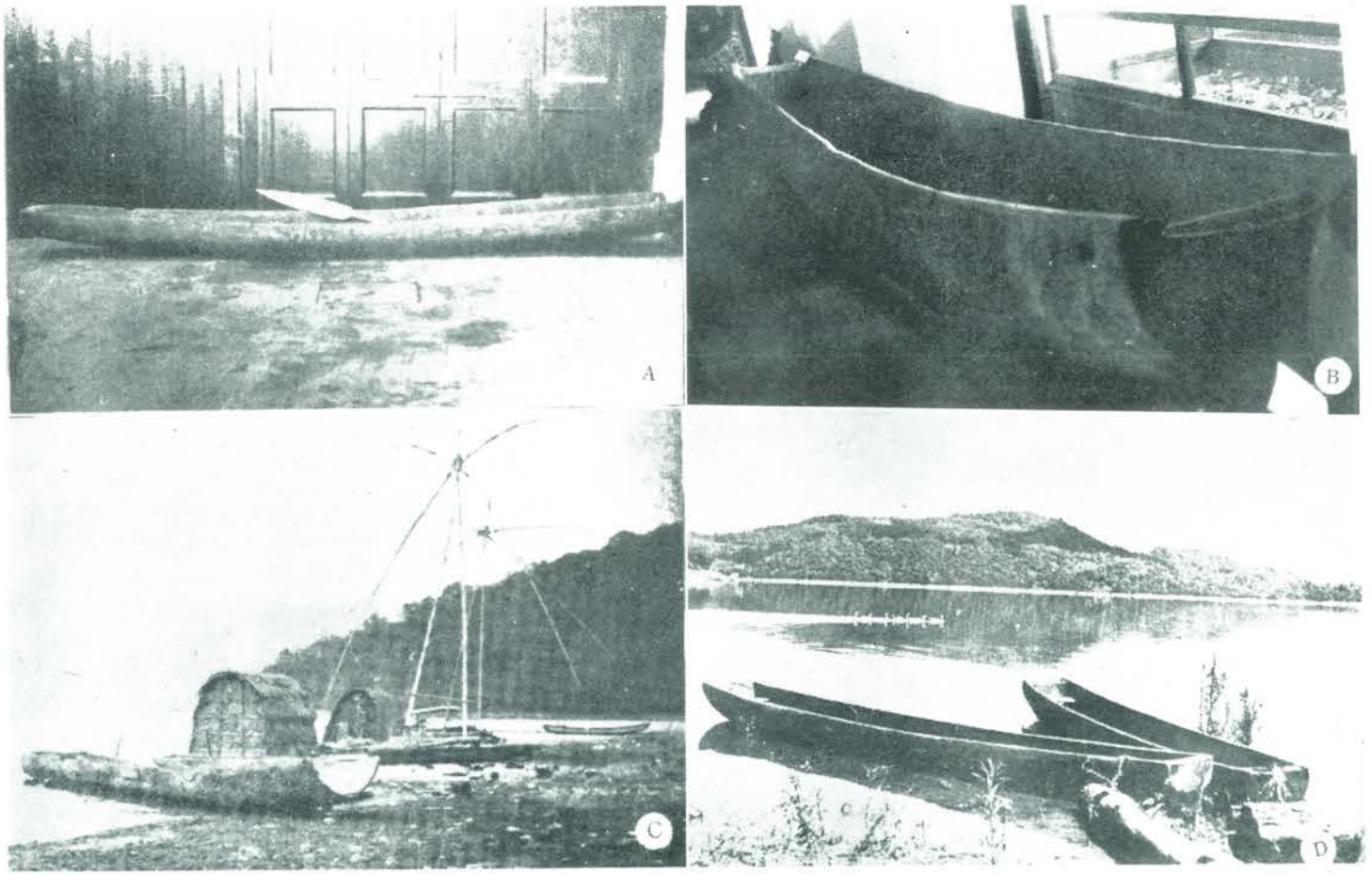


A　在 Chocó 沿岸平方頭式之獨木舟。

B　停置於水的獨木舟羣。

C　帶帆的獨木舟。

D　兩邊帶有浮木的獨木舟，是雙架艇的原始型式。

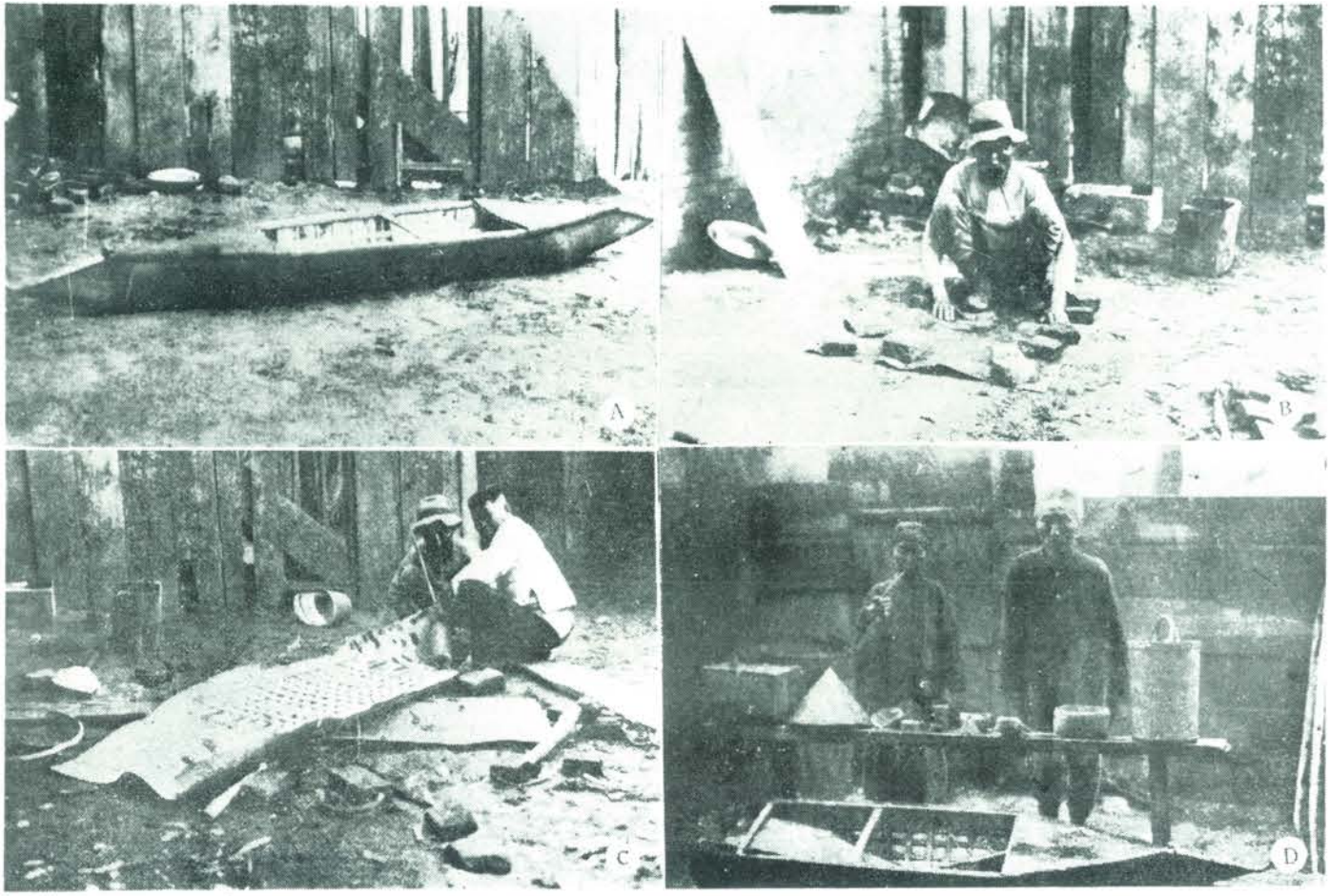


A　民國十九年林惠祥氏遊臺灣所搜集之獨木舟。

B　現藏於臺大考古人類學系之獨木舟。

C　民國四十四年著者遊日月潭尚見湖岸有獨木舟停置。

D　今日生活雜誌刊載之日月潭獨木舟似爲新刻製者。



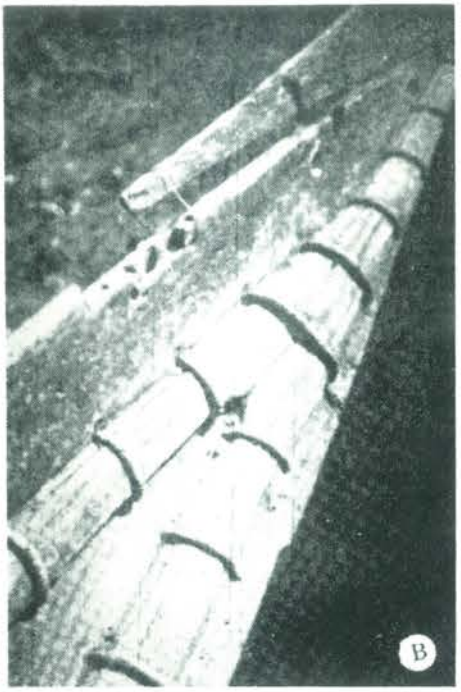
A　樺皮船。

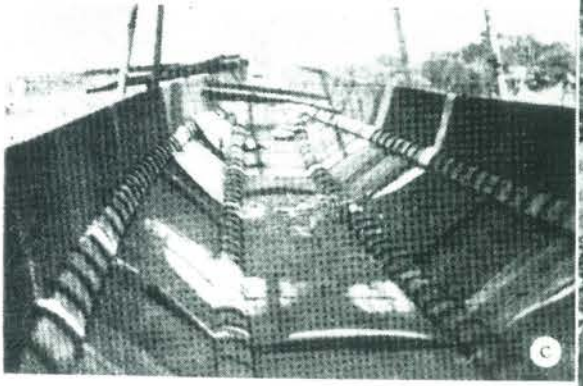
B　壓平樺皮。

C　樺皮船骨外包樺皮。

D　樺皮船身及船頭骨架。

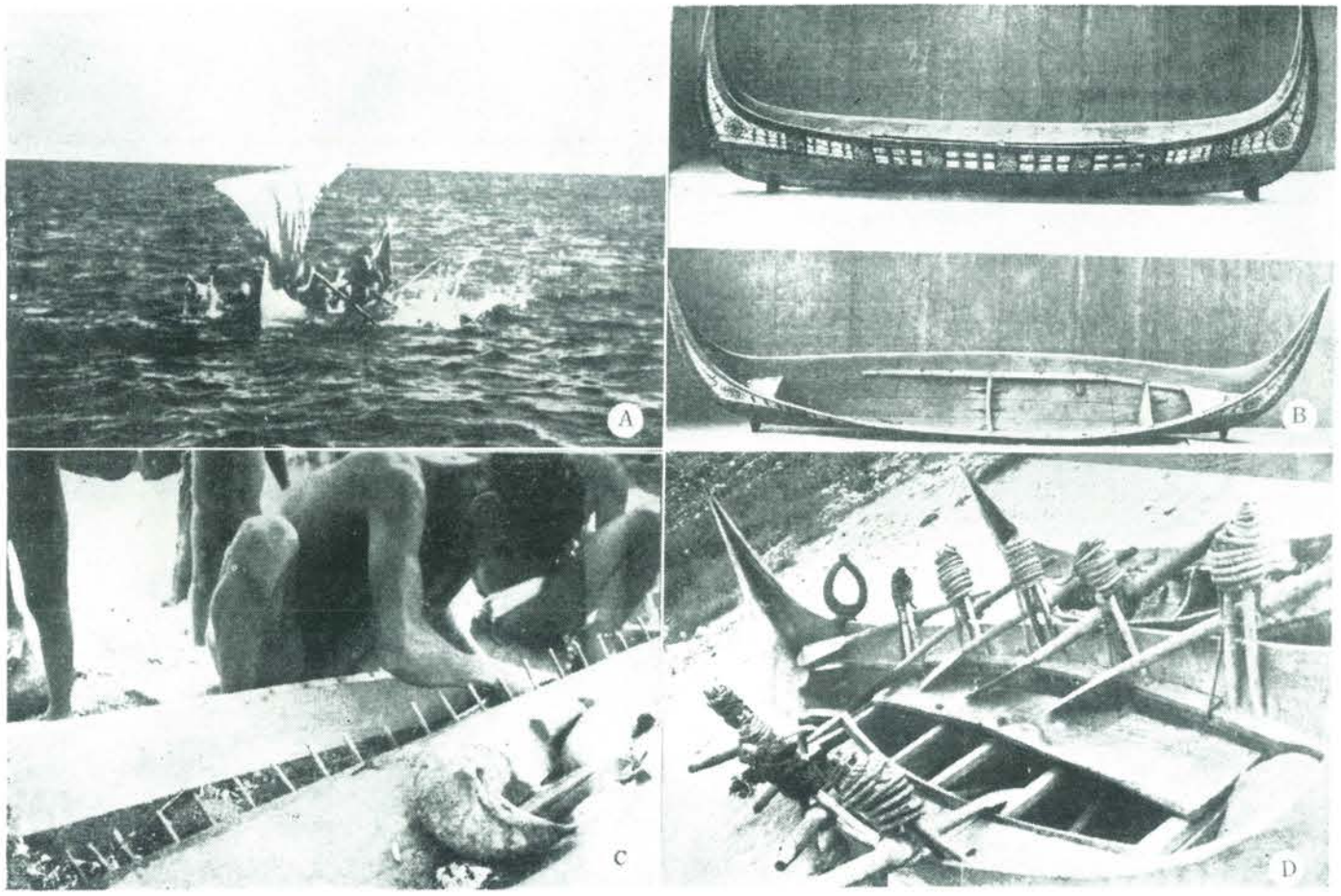
圖版拾陸
Plate XVI





A　縫合船。

B．C．D　三板船。



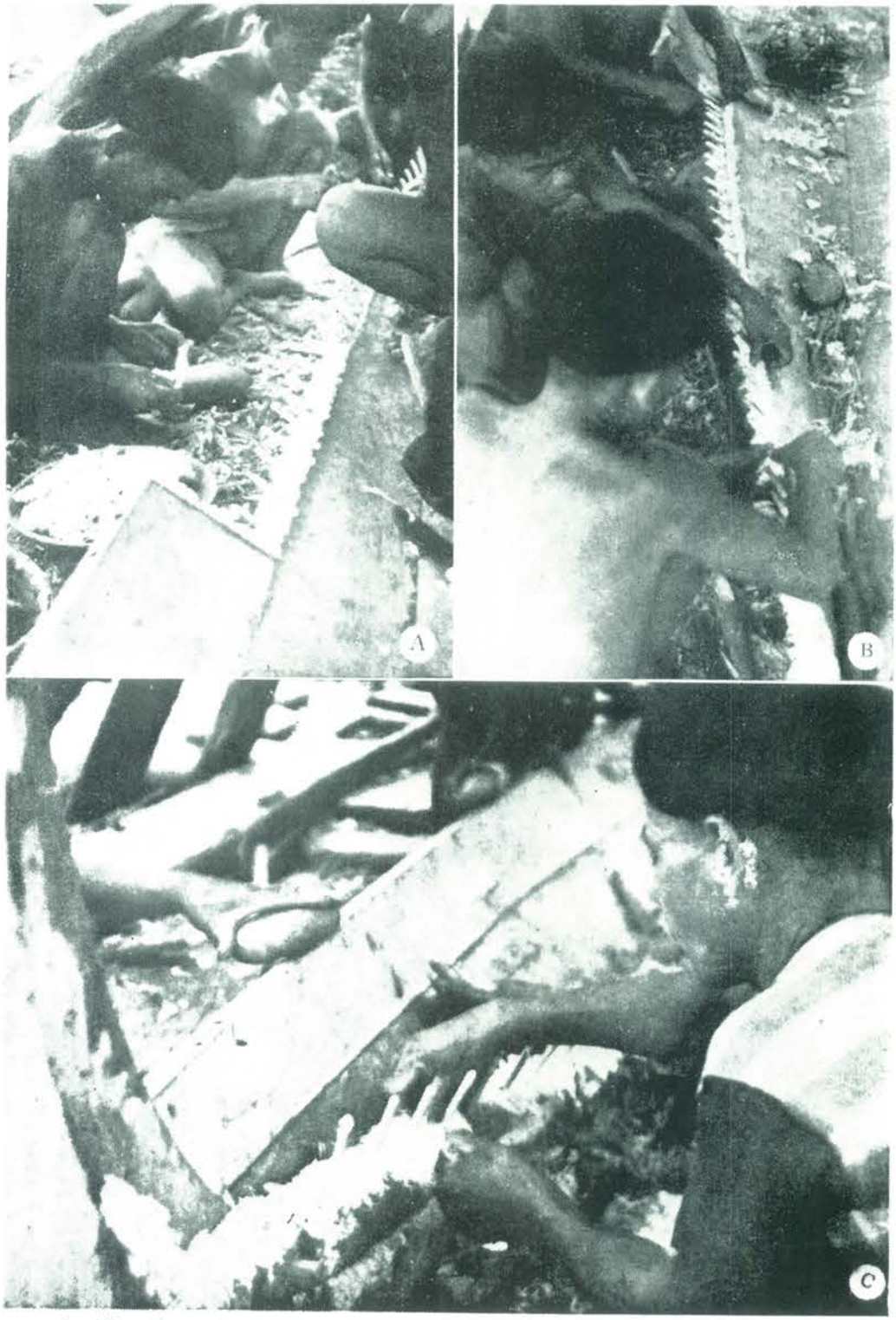
A 帶帆的小船（tatara）。

B 上圖爲外觀施以雕刻的小船。
下圖爲一人乘小船，船中央僅有一條弓狀支骨。

C 將桑木釘釘入，然後將上層板合上。

D 大船橫支骨上搭有兩列長板當作座。

圖版拾捌
Plate XVIII



A　用小刀將 barok 樹根切成一公分厚薄的薄片。
B　將黃白色纖維狀之根棉填入接合處。
C　然後上塊木板，打入桑釘之縫隙，使上下板緊密接合。

叁、臺灣的航海帆筏及其起源

近年以來研究人類學的美洲專家 (Americanist) 有一新的趨勢，他們對於各自專門研究地區的民族文化以外，而於文化史的基本問題，卽文化的起源與發展的過程亦發生興趣。如1949年國際美洲專家會議(The International Congress of Americanists)在紐約舉行會議時，提出有關亞美兩洲文化關係 (cultural connection between Asia and pre-Columbian America) 的論文十餘篇；又1951年美國科學促進會 (The American Association for the Advancement of Science) 在費城 (Philadelphia) 舉行第一一八次會議，人類學組討論三天關於亞洲與北美橫渡太平洋的文化接觸問題 (Asia and North America Trans-Pacific Contacts)，共提出論文十四篇。多數主張亞美兩洲文化的遷移不僅道經伯令海峽，亦有橫渡太平洋的。而且有許多舊世界文化的影響到達新世界在不同的時代和來自不同的地區。至於研究太平洋各島民族文化的海洋專家(Oceanist)，對於文化遷移亦有類似的問題，尤其在1948年，挪威人類學家 Heyerdahl 氏領導 Kon-Tiki木栰自南美秘魯到達太平洋 Tuamotu 羣島航行成功以後，更是引起興趣。Heyerdahl氏又將在一百五十年前，Joaquin Martinez de Zuñiga 所謂玻利尼西安、美克羅尼西安、菲列濱等民族文化起源於美洲(1)的舊說，重新提出，亦主張玻利尼西安民族文化，來自南北美洲。但 Heine-Geldern 氏則反對此說(2)。

直到目前，在美洲、太平洋、亞洲三區已找到很多顯著的相同文化特質，美洲文化源於亞洲至少受到其影響的理論，應該爲一般人所承認了，但是還有許多美洲專家直到現在，仍堅持他們的美洲文化獨立的觀點，一方面固由他們對亞美文化的關係，缺乏研究，同時在哥倫布之前，人類能橫渡世界最大的太平洋是件不易使人相信的事，例如 Merrill氏說："苦行的佛教信徒，當時海船既陋且小，要渡過太平洋，是一不可能的航行"(3)。

(1) Zuñiga, 1803, pp. 26-30.

(2) Heine-Geldern, 1952, pp. 314-362.

(3) Merrill, 1950.

作者對於太平洋文化遷移的理論亦感興趣，尤其我是中國人，美洲和海洋洲專家所列舉的文化特質，在中國的先史、原史、歷史、民族、民俗各方面，常能找到十之七八，根據事實，不得不使我贊同橫渡太平洋接觸一方面。我個人覺得凡我研究亞美兩洲文化關係的同道，應先多人來研究古代亞洲沿岸的航海問題，如能證明在紀元之前，亞洲人確已利用桴栰、戈船、方舟、樓船在海洋上航行，則整個太平洋成爲亞、美、海洋三洲處處可通的大路，如此或可使現持反對意見者不得不承認我們的理論。因此作者根據中國資料，擬寫臺灣的航海帆筏及其起源和紀元前中國方舟與樓船的航海考兩文，本篇是前者，意在拋磚引玉，希望海內外之人類學家，有多人來從事於此項研究。

一、臺灣的航海竹筏

臺灣的竹筏大別之有航行湖川與海洋兩類：前者僅在河川(圖版壹:A)或湖泊(圖版壹:B)上運輸捕魚作業，行筏使用划槳或撐篙，筏之構造較爲簡單，筏身多數是平底；後者則須出海作業，航行主要使帆，而以划槳爲副，筏身造形須前後彎曲，構造上故亦較爲繁雜。本文範圍祇限於航海竹筏。餘詳任先民君臺灣竹筏一文。

根據民國四十三年臺灣農業年報的統計，臺灣的無動力漁船 (fishing boat without mechanical power) 共計21,541艘，其中竹筏 (bamboo raft) 有13,808隻(set)，幾佔總數三分之二，餘三分之一爲木船，反比竹筏爲少。臺灣一島現已成爲世界上使用航海竹筏最多之地。

航海竹筏在臺灣又有近海與遠海之分，近海竹筏僅用槳划 (圖版壹:D)，遠海則槳帆兼使，故可簡稱帆筏(圖版壹:C)。著者民國四十四年冬和四十五年春調查臺東縣之新港、大武，屏東縣之枋寮、東港，高雄縣之紅毛港、茄萣，臺南市之安平等港的航海竹筏。中以茄萣港造筏技術和航行技巧最爲有名，因此本文以一茄萣帆筏爲例。

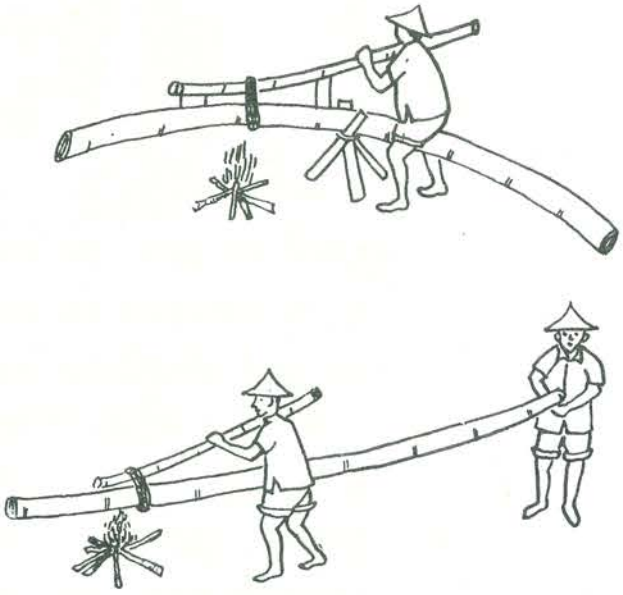
(一) 航海帆筏的構造

茄萣帆筏(圖版貳)的構造，可分筏身、桅帆、槳舵、插板、石錨五項來敍述。

1. 筏身　構成筏身的主要材料，爲麻竹及刺竹共九根或十一根，次爲其他木質部份所需之木材，除桅桿及槳舵以外，尙需木料二十才以上，再次爲綁紮所用之藤篾

（現已改用鐵絲），藤篾每條長約六公尺，寬約一公分，每筏所需五十條以上。蘆竹產在臺灣中部臺中、新竹、彰化等縣山地，運至海濱漁港出售，每根長七公尺以上，粗細以自竹根上數至第五節爲準，細者圍圓四十公分，粗者有至七十公分，售價每根自六十元至二百元不等；刺竹較廉，因其就近均有出產；藤條來自本省東部，每條一元左右。

麻竹及刺竹在製筏之前，均須削去竹青（圖版叁:A），其功用有四：a. 竹去青後，較輕易浮；b. 便於彎曲造形及紮筏綑綁牢固；c. 日晒受熱，不易開裂；d. 筏上載物人走，可免滑倒。去青之後卽須造形，所謂造形，卽將彎曲不直之蘆竹，在火上烤炙，用鋼絲環及槓桿之力上抬或下壓曲處（插圖一）[1]，使之矯直；並使每根竹前端彎曲成所需的弧度。刺竹肉厚質堅不易造形，所以造筏之前，卽須選擇其天然具有前端彎曲者，否則須於竹頭加接一段造形的蘆竹，使刺竹與蘆竹成一相同的弧度。

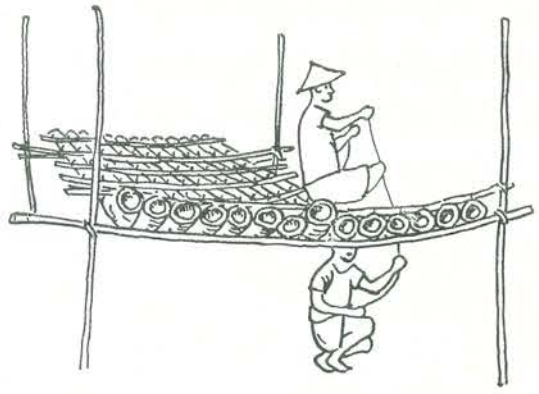


（插圖一）

造筏所需之竹，造形工作完成以後，將之排列於高約壹公尺的木架上，竹根取齊（圖版叁:B），竹頭長短參差不大者任之（圖版叁:C）。如有一二根過短時，以刺竹一段補足其長度，又筏頭之竹端恒有竹節，如遇有無節者須以木塞或帶節的刺竹插入，外用竹篾藤皮紮緊，接頭處嵌以油灰再塗桐油，以防海水灌入腐蝕竹肉。編排方式，帆筏多數用竹九根至十一根，中央一根選最粗者，左右兩側第一根亦須較粗者，左右第三或第四枝爲刺竹，編排既定，分別於各竹全身塗以魚油或桐油，近日代以重油爲防腐塗料。魚油爲漁民取沙魚油脂煉成，成本低而功效劣，桐油最佳而價昂。塗料乾

(1) 國分，1947, pp. 38-39.

後，再依次排列架上，由三人或二人開始編紮，二人或一人在上（插圖二），一人在下，自中央分向兩端紮綁，用橫木八根紮八綁節，成七間節，編紮完竣，然後二竹之間，嵌置一小竹枝，有時筏面有一部份，舖以篾墊。筏身製造至此告一段落。再開始筏上其他木工部份構造。



（插圖二）

2. 桅帆　桅桿多用杉木，取其直而修長，長度在五公尺以上六公尺以下。桅桿根圍約30至35公分，削成四方形，便於契合桅座。桅頂鑿一長條空槽，爲繩穿索繫滑輪之用，並懸一篾箍以約束升降帆時繩索的零亂。

桅桿座（圖版叁:D帶桅）爲構造竹筏的重要部份，用長 50 公分，寬30公分，高22公分之長方形硬木塊做成，重可達四五十公斤。中央上下開一十公分見方之洞（圖版叁:E無桅）以承受桅桿插入。左右側用二木條貫穿，木條長於桅座，用藤紮木條於筏上第三、四綁節橫木上，上兩橫木之距離，與桅座寬度相等。

帆爲白粗布所製，用寬60公分之布六條，直列縫合而成，全帆長約四公尺五十公分，寬約三公尺四十公分。用蔴線或棉線縫合，縫成後須用薯榔搗汁染爲咖啡色，乾後再染猪血，遂成暗紅咖啡色。每帆有緯桿十枝至十二枝（圖版陸:B），用光直之小竹枝爲之，最上一枝須用較粗竹桿，亦有用木桿者，爲用以繫繩懸帆之着力主桿，其餘九根，平均間隔排列，最下一根，亦須較粗者，各緯桿上每距十或廿公分，用線釘帆布結牢，使帆受風力，亦藉緯桿分擔其風力，而免帆布脹裂，同時操縱帆在左右的位置，也須藉緯桿之力。緯桿之長度依帆而定，上短而下長，每桿末端有一繩，互相接至最後，由一根總繩綜纜之，用以控制當帆迎風時的鬆緊。

3. 槳舵　每筏共有划槳四枝和舵槳二枝（圖版肆:B），用整根杉木做成。上圓下扁，頂端有橫圓木把手，全長三公尺半以上，底部最大寬二十公分。把手以下四十至六十公分處，環紮護槳（圖版叁:F），係長約二、三十公分，寬約一公分的小竹片若干，以竹篾或藤條繞槳身包紮，當划行時使槳身與槳柱間免致直接磨擦，而損蝕槳

身。至於舵槳的構造與划槳相同，惟其長度較短，而安置的部位近在筏尾。

槳座（圖版肆:D）通常用楠木或其他硬木爲之，長二十至三十公分，寬十公分，高十五公分，中央有二、三公分見方之洞，以插槳柱，柱長二十至三十公分，上端有槽溝，以掛槳繩。划槳槳座用藤紮於筏舷竹桿上，另以支柱一根，一端嵌入槳座，一端綁於筏身蔴竹上，增加其穩定。舵槳槳座則固定於筏尾第七節間兩側之蔴竹上。因划槳爲推進筏身，故槳座較高，支點升高，槳身入水深，划力和推進力均增大；舵槳雖槳舵兼用，然主要作舵，使航向的變換，爲求便於移動，故槳座較低。

4. 插板　航行遠海帆筏，插板（center-board）爲其最重要的部份，普通一筏有插板位置六處（圖版肆:A），可用插板六塊，爲前中後各二塊，分開命名，可有前左、前右、中前、中後、後左、後右之別。中前和中後均插在筏之中部，故又可稱中央板，而又以中後板爲最主要插板，但六塊插板，可省去其三，而以三板施用於六個位置，即前左、前右、中前共用一板，中後獨用一板，後左、後右共一板。

插板的構造，取樟木整塊，中央之中後板長70至90公分，寬50至80公分，截爲長方矩形，上緣夾二小條板，以爲握手之處，下緣略削薄以便利插取。前後板大小約爲中板二分之一弱，但無嚴格的規定，有時因湊材料，而大小不一（圖版肆:C），其構造多相同。中央板在桅座的前後，用竹桿挖一長空槽，可容插板的寬度，爲插板槽，槽置於二蔴竹之間，綁於第二至第五節桿之上（圖版肆:E）。前後插版因較薄而小，無插板槽，在筏頭和尾的兩側，即插於二蔴竹的隙縫間，插入取出以及升降較爲便易。

5. 石錨　竹筏之錨（圖版伍:F），以木質幹條紮成單鈎狀，於幹上綁以相當重量的卵石，錨因石之重量下沉，而入海岸泥沙之內，越沉錨鈎越深，使竹筏穩定不易飄動。

6. 其他　筏上除上述之航行工具外，尚有常帶的用具四種：水桶或有蓋水盆，係一圓盆，有釘牢之蓋，在蓋緣的一角，開一半月形之口，以便取水（圖版伍:B）。沉網石（圖版伍:A），係取卵石若干，在石腰鑿槽，再繫繩而成。墊網蓆以竹篾編製，成長方形，常置筏頭（圖版伍:C），用墊漁網。海燈（圖版伍:D）用竹篾扎燈，外罩黑色紗布，上下透氣，再綁於平行之二蔴竹上，以長繩繫之，漂浮海上，以爲號誌。

（二）帆筏航海的技術

臺灣帆筏多數航行遠海，本節所述的技術，偏於遠程航行，如何使用划槳、風帆、舵槳、插板四者巧妙配合。雖遇頂風，亦可使帆航行。如遇颶風四至，不能張帆，則用划槳推進。海上波濤洶湧，不致漂流迷失航途。即在驚風駭浪之中，要能避免筏身傾覆。故筏在海洋航行，速度雖遜於舟，而安全則遠過之。

1. 划行　筏在近海或短程航行，多用划槳推進，如駛帆海上中途風息，筏行停止，亦須划行。又在海上突遇暴風雨，無法扯帆時，勢必划槳推進，繼續航行，或加速逃避風暴。所以筏後舵槳槳座，亦爲划槳而設，因每一筏尾第三和第四、第八和第九蔴竹之間，各扣一繩圈以繫舵槳（圖版伍:E）。故遠航竹筏，雖主要駛帆、而划行亦甚重要。

2. 使帆　臺灣竹筏出海，所謂開筏，意即掛帆。就要注意風向和風級。

（1）風向　帆筏航行海上，可能遭遇的風向甚多；然竹筏本身，均可改變其方位，以迎風向。使風向作用於帆之力的方向，與航向平行或相似，終能達到目的。因此無論海上風向如何，作用於帆之風向只有二種，換言之帆筏航海，只藉兩種風向前進，就是：a順風，b偏風，而偏風又有左右之別，亦可說有三風向，逆風因筏位改變而成偏風，故亦可航行。

a. 順風　風向與航向相同，風自筏身後方，直接推帆前進，爲航筏時最理想的風向(圖版柒:a)。

b. 偏風　又名斜風，風向與航向在筏身或左或右兩側成45度的偏差，如在左右後方，仍爲理想的風向（圖版柒:b)。如在左右側風向與筏身成90度時，仍可放鬆帆索行駛(圖版柒:c)。

c. 逆風　如遇逆風，只需將筏身方位改變，使與風向成45度，或90度的角度，航行S形路線，仍可達到目的地(圖版柒:d.1.2.3)。

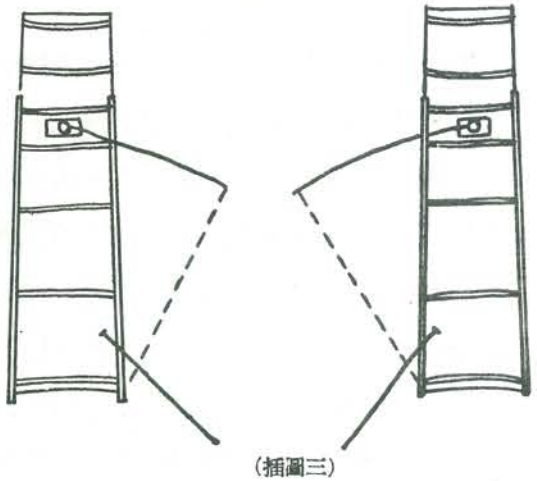
d. 帆位　風向與帆位的關係，順風帆在原位扯起，如遇偏風與逆風，帆位時常改變。風來自筏左，則帆必在右；風來自筏右，則帆必在左。因風向作用於帆之力，與帆作用於風之反作用力，二者之合力即爲賦予航行方向之力(圖版柒:e)。

（2）風級　風向決定帆位之後，就要注意風級。竹筏航海感應的風級，不如一般船隻之多。竹筏本身重量較輕，不能負荷太大的風力，否則易致翻覆。臺灣使用帆

筏航海的漁民，只行五分風至八分風，五分風以上，可張滿帆，八分風以上，風力太强，竹筏不勝負荷，多不能扯滿帆。但其所指五分風、八分風，並無明確風級的概念。僅憑其經驗行之。海上無風時極少，駛帆的機會甚多，除强烈風暴外，均得揚帆航行，即八分風時，亦可扯半帆或三分之一帆行駛。

半帆在風力過强時、航海歸來進港或靠岸時、中途須減低航速時行之。滿帆在風力適中時、出海航行離岸時，均可掛滿帆。行駛滿帆，因張風力較大，筏身常易傾斜，竹筏爲一平面，筏舷甚低，又無筏艙，若傾斜太大，筏上所載之物，易於倒傾入海，故駛滿帆，應隨時注意風力的强弱。又在海上航行，無論半帆或滿帆，其張風力的大小，控制帆之角度，均極重要。其操縱在於帆索的放鬆與收緊。帆索收緊時，受風之張力大；帆索放鬆時，受風之張力小，故當海上風力驟强時，多放鬆帆索至最大限度，任帆隨風飄展，使帆受力減少而免致筏身顛覆。

3. 槳舵　操縱筏身的方向以定航線用槳舵。槳舵安置方法有三種：通常掛在筏尾左右二側的槳座上（圖版陸:A）；或穿入筏尾左右的繫槳繩圈內；亦有只置一槳舵於筏尾中央者（圖版陸:C）。在左右二側者，當其變換方向時，亦只用其一槳，帆面在左則用左槳舵，帆面在右則用右槳舵（插圖三）。轉向時槳舵與筏頭爲同向，即當筏身要改右向航行時，將槳舵亦扳向右方，反之則左(圖版柒:f.1.2.3.4)。用左槳舵時，右槳舵可以收起不用，以減少其在水中的阻力，若風勢不强，波浪不大時，亦可不必收起，則使用時增加便利。


（插圖三）

4. 插板　桴筏揚帆海上，插板是最重要的航行工具。其功用可以平衡筏身，穩定航向，減少傾斜度，避免筏身左右漂擺。

筏身是一平面，浮在海平面上，其重心即在筏身平面之上，加上桅桿及帆行駛時，筏身以上所負荷桅、帆及風力，大於筏之本身重量頗多，因而形成頭重脚輕的現

象，易遭傾覆，故必須於桅座的前後，及筏頭尾左右方加置插板，以降低筏身的重心，而使筏身平衡(圖版捌:b)。

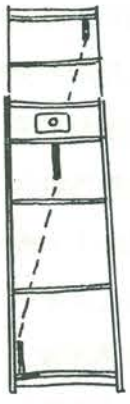
又因帆筏航行海上，係漂浮海面，易爲海浪或海流所漂動，無法控制航向，如加插插板之後，因插板深入筏底海水中，除可破水減水阻力易於前進外，並因藉海水兩側的壓力，使筏身不因水流而失其航向(圖版捌:d)。

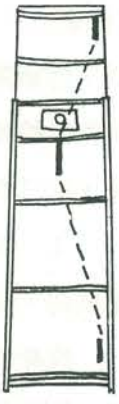
海上航行滿帆，或風力强大行半帆時，因帆受風力大，筏身常易傾斜於下風受力的一面。平面竹筏，稍受傾斜，卽難維持重心的平衡，加插插板以後，其重心降低，同時插板在水中所受的阻力，適可抵消大部桅帆所受風的壓力，藉使筏身傾斜度減少(圖版捌:a)，而免傾覆的危險。

大洋之中，波濤洶湧，常易使漂浮海面之物，左右漂擺，竹筏旣輕且浮，當亦難免漂擺，如有插板插下，則波濤作用於插板左右之力互相消長，可以減少漂擺過甚之苦(圖版捌:c)。

臺灣航海帆筏插板計有三至六塊，前板中板後板各二塊，而以中後板爲主，已如前述。帆筏離岸升帆時，卽須將中後板插上，入海較深時，插板插下亦較深，遇滿帆時，或風浪較大，整板均須插下，半帆或緩行，風浪較平靜時可只插半板；總之海上風浪千變萬化，中後板深淺的程度，亦須臨機升降。大筏、小筏遇强風時，除中後板外，多加插中前板，其法與中後板相同。當筏身轉變方向時，中後中前板須上升三分之二，以免在水下阻力太大，轉向之後，仍須插下。

後板可分插於筏尾左右二邊，其功用與中板相似，插法則略異，帆在左時插左後板，帆在右時插右後板。蓋左帆因風力使筏身傾向左方，須加插一板，自水中取其對消的反作用力(圖版捌:e)；帆在右時，其理相同。當筏身變換方向時，亦須同時取出。


(插圖四)


(插圖五)

前插板在筏前端左右二側，平時航行用者很少，在遇逆風，或風浪過大時則加插之，因其逆風航行，帆受風力所賦予筏傾斜的一面入水深，前插板應插於筏身斜入海水的一側(圖

版捌:f)，藉插板在水中之反作用力量，以平衡筏身。航行時帆或左或右受風力，則筏身任一側傾斜入水時，前插板卽應插下，同時也可以藉插板破浪，而增加航行時速率。此時前中後三插板在同側成一等邊三角形(插圖五)。又當在海上遇到風浪過大時，則前插板應插在與後插板相反之一側，因風浪大時筏身傾斜亦大，前後插板置於相反之位置，使插板受海水反作用力之面積加大，而穩定筏身，同時插板分散，受水阻力亦大，可以降低航速，以求航行之安全，此時前中後三插板，排列成一斜直線形(插圖四)。

航海帆筏，多用兩人駕駛，一人負責桅帆及中央板：司帆的升降、繩索的整理、中央板的插放；一人負責槳舵帆索及後板：司筏身方位的變更、航向的確定、以及帆索的鬆緊、受風力的大小、帆在筏左筏右的調度、後板的插放。航行海上，二人必須通力合作，方能獲得航行良好的效果。又西洋學者常稱臺灣帆筏爲三人竹筏(the three men raft of Formosa)其餘一人在筏前專管捕魚，然遇緊急必要時亦划槳司插前板加入駕駛。

二、太平洋及其沿岸帆筏的比較

前節所述爲臺灣帆筏普通所用和最多的一種，現在要作比較研究，應將臺灣的較早和較少有關帆筏資料，簡略敍述，藉作比較之資。臺灣帆筏遠程航行的紀錄最早見於宋史卷二百五十流求傳：

> 流求國在泉州之東，有海島曰澎湖，烟火相望。……淳熙間(1174—1189)國之酋豪嘗率數百輩，猝至泉之水澳、圍頭等村肆行殺掠，……不駕舟楫，惟縛竹爲筏，急則羣舁之，泅水而遁。

至清康熙五十六年(1720)諸羅縣志卷八引馬貴與紀流求云：

> 不駕舟楫，惟以竹筏從事，可摺疊如屛風。

上錄祇有文字紀載，僅知筏形如屛風，其他資料甚少。在1803年日人秦貞廉所記臺東秀姑巒帆筏(圖版玖:b)始有圖錄，他說：

> 竹舟長凡四尋餘，幅大抵七尺許。左、右、後三側剖竹編製爲舷，以竹篾編織成帆。舟尾部，設竹枱，爲用餐與休息處。乘二、三人操作漁事(1)。

(1) 秦貞廉，1803, p. 52.

上圖在竹筏上加上較高之舷，除筏頭外，驟視如舟形，故名竹舟，實則透水(wash-through)的原則同於竹筏。筏尾有一較高的平臺，帆用蘆葦或竹篾編成，異於今日臺灣西部之筏。

臺灣西部高雄縣紅毛港等地尚有一種小型的帆筏(圖版陸:D)，航行於近海與內海。筏身僅用刺竹、麻竹五根構成，划槳一對。最引人注意的，爲此種筏的桅帆，似斜杠帆(sprit sail)。先以一較粗之竹爲桅桿，再以較細竹桿，一端紮在桅桿三分之一高處，成一倒三角形(apex downward)，以長方形帆布一塊，一邊繫紮桅桿上，帆上面一端繫結斜竹的上梢成三角形的底邊，帆之外邊上下角各繫一帆索，使滿帆時成長方形，半帆則爲三角形帆。

東亞除臺灣外，越南亦有航海帆筏[1]，筏身用竹構成，筏上且有前後兩帆，多至三帆，插板有前、中、後三塊，筏形亦近似臺灣竹筏(圖版玖:a)。

在太平洋中，Friederici 氏雖說："在遠古之時，馬來玻利尼西安人的遷移是航行一種式樣完備的大筏"[2]。但早期的航海家和人類學家或多注意太平洋的邊架艇(outrigger canoes)，關於帆筏記載較少，現在祇有Mangareva島的木桅，Beechey氏繪有簡圖，尚可作比較之資。Beechey 氏說："在 Gambier 島不見木舟，代用以筏，筏長四十至五十英尺，可載二十人。用樹幹，加橫木，以繩紮成。有三角形帆，用兩桿支起帆之兩端，但祇風順可使帆，如其時二三隻筏同一航向可以繫結起來同航。遇風不順，則用光黑硬木大槳划行"[3]。

關於南美沿太平洋岸的帆筏，保存下來了圖畫和紀錄，資料最多。本文所收，最早的爲 Benzoni 所繪之桅(圖版拾壹:A)。氏意大利人，於 1540 至 1556 年間，旅行南美西班牙屬地包括秘魯，1565 年出版新世界史 (History of the New World) 附此桅圖，由七木桿構成，桅上水手七人，桅頭有簡陋之帆[4]。其次爲上文已引的 Spilbergen 氏於 1614 至 1617 年，環航世界時，在秘魯的 Payta 港遇到的帆桅，繪有簡圖(圖版拾壹:B)。筏上有水手五名，二人管帆，三人坐在甲板司中央板的升

(1) Claeys, 1942, pp. 17-28.
(2) Friederici, 1928, p. 29.
(3) Beechey, 1831, p. 143.
(4) Benzoni, 1857, p. 242; Heyerdahl, 1952, p. 528.

降。甲板上置水甕四個，似石磨物三件，可能是石錨。筏上前後兩帆，帆爲三角形。此筏出海捕魚兩月其時正在歸航(1)。

至十八世紀初葉，南美自厄瓜多經秘魯至南緯八度一帶海岸， balsa 桅仍甚常見。西班牙的海軍軍官 Juan 和 Ulloa 兩氏對 balsa 的構造和航行的技術有詳細的研究，如圖所示(圖版拾壹:C)，筏用 Paris 木九根紮成，長 75 或 90 呎，濶約 20 至 24呎(2)。

一百年前，研究木桅構造最詳盡者，當推 Paris 氏，氏在 Guayaguil 港，實地調查，繪有詳圖(圖版拾壹:D，筏長80至90呎，濶23至30呎。

在南美東部巴西尙有一種帆筏，其帆爲三角形(圖版拾:a)，其航行亦用插板。又近代巴西木桅所用之帆，很像玻利尼西亞的倒三角形帆(3)。

以上起自東亞橫渡太平洋而抵南美，在此廣大的區域中，我們祇收到八張航海帆筏圖，材料雖不能算多，然亦勉强可作比較研究。

筏形　造筏所用的材料不同，筏形因之而異。南美木桅中央木桿最長，向兩邊漸短，成兩頭尖的筏形。東亞竹筏，因竹有彈性可以造形，多成筏尾平齊，筏頭上是近似舟形。如爲葦筏，造形更易。上面 Benzoni 氏圖木桅亦是頭高尾平，近似臺灣筏形，這值得注意之點。木桅或竹筏的大小，須視造筏所用木桿或竹竿的多少，帆桅至少自五，而七、九、十一、十三根木或竹桿。七、九較多，而九桿爲最多。

桅帆　南美帆筏的桅桿有兩種：一爲單桅(pole-mast)另一爲剪桅(sheer-mast)，卽以兩桿頂端相交，成一倒Ｖ字形。大筏多用剪桅，如用單桅，則常前後各一，多至三桅；小筏用單桅。亞洲臺灣和安南多用單桅，而較大之筏，則加多一二桅。長江以南的河川中，較長的木排運輸，多用剪桅(圖版拾:c)。竹排排數較少而較短，則用單桅(圖版拾:b)。

帆形共有方形(包括長方形和梯形)、正三角、倒三角三種，南美三者均有，臺灣可說有一、三兩種，太平洋祇見倒三角形帆。方形、長方形和梯形之帆式樣較古，因臺灣以竹篾，江南用蘆蓆做成之帆，多成方形或長方形。

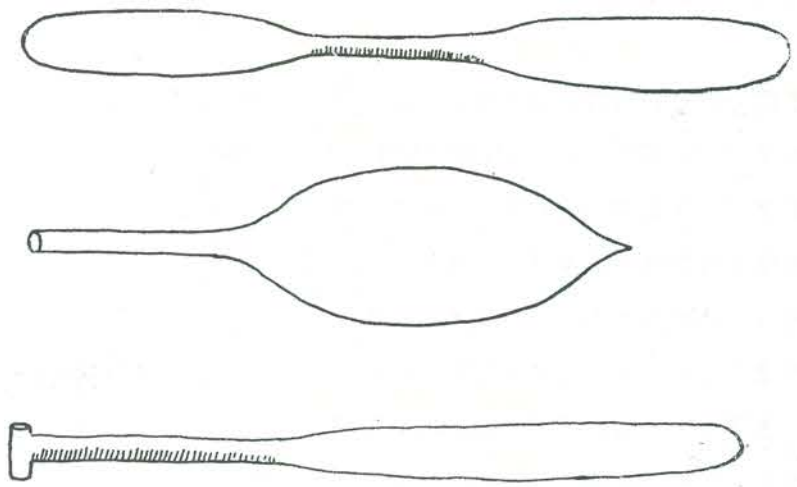
---

(1) Spilbergen, 1619, p. 83; Heyerdahl, 1952, pp. 530-531.

(2) Juan and Ulloa, 1760, p. 186.

(3) Hornell, 1946, p. 82; Heyerdahl, 1952, p. 591.

槳舵　栰底成一平面，不易裝舵，因此以槳代舵。槳因栰之大小而有三種：大栰用單槳，兩邊划行；中筏用雙槳，人在筏中推划；小筏用兩頭槳，人坐筏中兩面划。南美曾有一三兩者，臺灣現有二三兩種，臺灣東部花蓮臺東兩縣的阿美族，至今多划兩頭槳，乘小筏出海捕魚。栰槳型式大同小異，如(插圖六)所示：

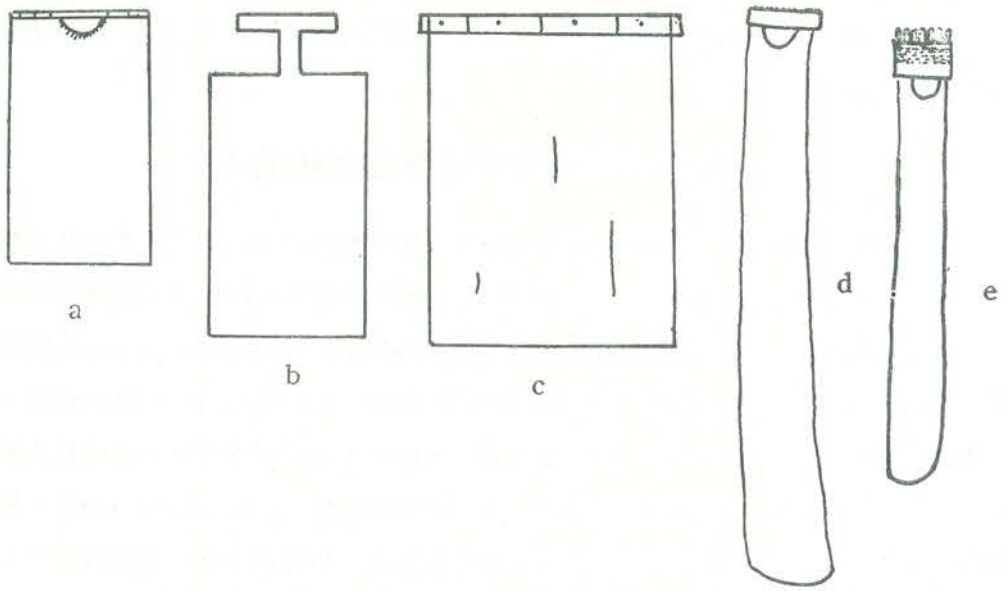


(插圖六)

插板　南美插板土名quara，臺灣土語 tʃ'iam，英文譯名中央板(center-board)，作者因爲quara不僅插在筏之中央，前後左右均插，臺灣舊名舵仔，又恐誤以爲舵，不如叫做插板，名實相符。現在已知東亞的臺灣、安南、南美的秘魯、巴西四地的航海帆筏均用插板，如插圖七所示：插板用於筏之大小，而有長短寬狹之別；大筏常有三層圓木（圖版拾壹:D），甲板離水較高，插板須長而狹，板數要多，插取升降較爲便捷。臺灣竹筏僅有筏身，插取甚易，插板可大而寬。

上文所收帆筏之中，祇有 Beechey氏和 Benzoni氏的兩栰圖上沒有插版，筏在岸上插板多是取出，至在水中更不易看出，太平洋中之栰，迄今雖尚未有插板發見，然我們不能斷言無插板存在，因 Mangareva 栰能至 Rarotonga 往還航行，帆筏如無插板，遠程航海幾爲不可能之事(1)。Benzoni 氏之栰，圖上雖無插板，但1857年，英國海軍少將 W. H. Smyth 氏翻譯 Benzoni 氏著新世界史，註釋 Benzoni 氏的栰說：

(1) Heyerdahl, 1952, p. 593.



（插圖七） a, b. 安南筏插板。 c. 臺灣竹筏插板。 d, e. 南美 balsa 筏插板。

"這種大的balsa桅掛帆在剪形的桅上。航行時如有需要，常升降插在筏之兩端木幹間隙的木板"(1)。可見帆桅航海不能不用插板，再證之臺灣帆筏，開航掛帆，同時卽插插板，甚至臺東划筏，出海稍遠，亦用插板。

至於桅之航海技術，Juan 和 Ulloa 二氏說：

> 桴桅最大的特點是能在逆風中，使帆、搶風、航行一如有龍骨之船。這是由於除舵外另用一種航行方法。就是利用幾塊木板，長三四碼，寬半碼，叫做guaras，插在筏之前後木桿間隙，將板升降，離開(bear away)，搶風(luff up)，逆風（tack），定向（lay to），能做普通船隻的種種動作(2)。

Paris 氏亦說：

> 航行用木板，名 guaras，直插木桿間隙，插下深淺不同，或前或後，卽可側風航駛，桅在洋上無其他方法航行(3)。

又 Emilio Estrada 氏於1953年在 Ecuador 的 Playas 海岸試驗木桅航行，亦用六塊插板，二在桅頭，二在桅尾，同於臺灣(4)，所以南美桴桅的航海技術，以臺灣的來比較，可說完全相同。

---

(1) Smyth, 1857, fn.; Heyerdahl, 1952, p. 528.
(2) Juan and Ulkoa, 1748, p. 189.; Heyerdahl, 1952, p. 538.
(3) Paris., 1841, p. 148.
(4) Heyerdahl, 1955, pp. 263-264.

我們上以東亞和南美帆栰的構造和航法，作了較詳的比較研究之後，使人不能不設想兩地之栰是同源的。

三、太平洋各地及中國桴筏名稱的研究

由上面的比較研究，可見南美洲、太平洋及東亞桴筏的構造、航行的方法可說是大同小異的。不僅如是，連三區桴筏的名稱，至今尙能保存相同的通稱，茲再分述之。

在南美洲西海岸之筏通稱 balsa，是由西班牙航海家 Bartolomeo Ruis 氏傳聞於世。在1527年二月下旬，Ruis 氏經過舊金山角(Cape San Francisco)航近赤道，始見掛帆之筏，土人叫做 balsa，編若干輕鬆大木而成，桅面舖有葦蓆，兩桅樹立船之中部，上掛方形布帆，航行時使粗製之柁及一活動的龍骨 (a moveable keel)，用木板製成，插入筏木的隙縫中，能使水手定桴栰的方向，依航線前進，不須用槳(1)。

至1614—1617年間，Joris Van Spilbergen 氏環航全球，在秘魯的 Tumbez南一百二十哩，訪問 Payta 港，軍艦向一漁筏購魚，他說："是一野人之船，叫做 balsem，他們出洋捕魚，能乘風航行"(2)。

著名的秘魯史家 Means 氏說："balsa 一名，不是 Quecha 語，亦非 Colla 語，可能是出於 Guayaquil 灣附近的方言。初指 balsa 樹及其木材，言筏僅爲原義的假借"(3)。但十六世紀末葉，Cabo 氏說："當地稱此爲筏木 (balsa timber)，因爲用以造好筏(good balsa)"(4)。可見 Means氏之言不確，Heyerdahl氏說："balsa 一語的起源不甚明白。…… 我們知道 dalca 一語，是智利沿海小船或獨木舟之土名；而 vaka 一語，在玻利尼西亞是船或獨木舟之通稱"(5)。

德國工程師 Brüning 氏居留秘魯五十年(1875—1925)，Heyerdahl 氏說："他可能是最後一個人親見現已不用的 balsa 筏"(6)。Brüning 說："在秘魯的 Pimentel, San José, Sechura 等海港，土著漁人利用破壞或廢棄的 balsa 木桿，造小筏，叫做 balsillas"。

---

(1) Murphy, 1941, p. 7.; Prescott, 1847, p. 223.
(2) Spilbergen, 1619, p. 83.; Heperdahl, 1952, p. 530.
(3) Means, 1942, p. 19 fn.
(4) Cabo, 1653, p. 1.
(5) Heyerdahl, 1952, p. 529 fn.
(6) Heyerdahl, 1952, p. 544.

南美的筏 (balsa) 又名Jangadas(1)。Lothrop 氏說："Jangadas 係印度西海岸的筏名，由葡萄牙人傳入於南美巴西"。他又說："筏上架起平臺，蓋有小篷，在 Andes 山脈之西，分佈很廣；因此我們可以假定 Jangada 起源於南美內陸"(2)。

在玻利尼西亞新西蘭東約四百哩的 Chatham 島，居民 Morioris 人"有一種航行深海的舟筏，叫做 waka-pahi 或 pepe，長五十呎以上，他的構造正合透水的原則 (wash-through principle)"(3)。Skinner 氏摘錄 J. M. Brown 的記載說："他們 (Morioris) 的 waka-patu (waka-pahi) 使我想起秘魯海岸的 balsa 或桴栰，在 Titicaca 湖上，我看見同一型式 (就是透水) 用蘆葦紮成的筏，如 Morioris 人的一樣"(4)。

伊斯特島的筏名叫 pora，據 Métraux 氏說："該島居民所用的筏 (pora) 是用蘆葦簇捲成錐形的大捆(5)。

在大溪地，據 Enock 氏云："大溪地的 pahi 或筏船，據說似秘魯的 balsa"(6)。

當 Tuamotu 羣島土人看見 Kon-Tiki 木栰，他們立即認識像是祖先所知的 paepae。又 Mangareva 的筏伕稱他們用的筏亦名 paepae。在 Marquesas 和大溪地兩羣島，paepae 是筏的通稱。又 paepae 一語在玻利尼西亞方言中，義爲筏 (raft)、船板 (flooring)、平臺 (platform)、排行 (to place in a row)、排次 (to lay in order)，或爲浮 (to float)、漂流 (to drift)、順風而去 (to go to leeward)(7)。

綜上的敍述，在美洲和太平洋中桴筏的名稱，最普通的有兩種：waka 或 vaka 和 paepae 或 pahi。而這兩名稱對於"剡木之舟"和"維木之桴"有時通用。著者根據這一事實，去研究中國桴筏的名稱，得到同一的結論，眞不勝令人驚異。茲將中國自古以來，凡訓桴筏之字分述如下：

---

(1) Paris, 1841, p. 148.
(2) Lothrop, 1932, p. 253.
(3) Shand, 1871, p. 354., 1911, p. 86.; Heyerdahl, 1952, p. 581.
(4) Skinner, 1923, p. 119.
(5) Métraux, 1940, p. 208.
(6) Enock, 1912, p. 279.
(7) Heyerdahl, 1952, p. 584.

1. 方　詩經漢廣：“江之永矣，不可方思”。又邶風“就其深矣，方之舟之”。毛傳：“方，泭也”。

2. 舫　爾雅釋言：“舫，泭也”。孫注：“方木置水中爲桴栰也”。

3. 潢　廣雅釋水：“潢(橫)，筏也”。

4. 泭　爾雅釋水：“庶人乘泭”。郭注：“併木以渡”。國語齊語：“方舟設泭”。韋注：“編木曰泭”。楚詞九章惜往日：“乘汜泭以下流矣”。王逸注云：“編竹木曰泭，楚人曰泭，秦人曰橃也”。

5. 桴　論語公冶長：“乘桴浮於海”。馬融曰：“編竹木也，小者曰桴”。國語齊語：“乘桴濟河”。韋注：“編木曰泭，小曰桴”。淮南子說山訓：“方車而蹶越，乘桴而入胡”。

6. 栰　管子輕重甲篇：“桀者，冬不爲杠，夏不束栰，以觀凍溺”。又兵法篇：“方舟投栰”。

7. 箄　廣雅釋水：“箄(敷)，筏也”。

8. 泭　釋文：“泭，郭音孚，字或作箄同”。

9. 筏　方言第九：“簰謂之筏(音伐)；筏，秦晉之通語也”。

10. 桴　論語：“乘桴浮於海”。馬融曰：“編竹木也。大者曰桴”。

11. 橃　楚詞九章注云：“泭，秦人曰橃”。說文：“橃，海中大船，從木發聲”。玉篇注云：“海中大船也，泭也”。

12. 簰　方言第九：“泭謂之簰(音敷)”。又廣雅釋水：“簰(薄佳)，筏也”。

13. 筏　後漢書岑彭傳：“將數萬人乘枋筏下江關”。注云：“枋筏以竹木爲之浮於水上。鄧訓傳：“縫革爲船，置於筏上以渡河”。注云：“筏，木筏也”。

14. 筏　一切經音義卷三三：“筏上，敗佳反，方言筏謂之筏，南方曰筏，北人名筏也”。經典釋文：“簰，皮佳反，本又作筏同”。

15. 棑　唐韻：“棑，筏也”。

上面訓筏的十五個字，因時代和地域的不同而異體，其音讀歸類只有四種：

1. 方、舫、潢三字一類，方、舫二字早見且同音，今音讀 fang，中古音 piwang，上古音 piwang。潢字較晚，今音 hung. heng，中古音 ɣwang，上古音

g'wăng。

2. 泭、桴、桁、箄、筏五字爲一類，前三字較古；泭桁二字同音，今音 fu，中古音 p'i̯u，上古音 p'i̯u；桴字今音 fu，中古音 p'i̯u，上古音 p'i̯ug。

3. 栰、筏二字同音，今讀 fa，中古 b'i̯wat，上古 b'iwăt；橃字晚見。

4. 簰、箄、箄、棑四字音近，與牌同音，牌或碑今音 p'ai，古音 b'ai。

由上歸納起來，有桴、筏、方、簰四種音讀的不同，在中國古代對於四者的解釋，有的以大小分別，如馬融注曰："大者曰筏，小者曰桴"。有以質料分的，郭璞曰："木曰簰，竹曰筏，小筏曰泭"。又有以地域分的，王逸曰："楚人曰泭，秦人曰橃"。揚雄曰："筏，秦、晉間之通語也"。至唐慧琳曰："南方曰箄，北人名筏"。

但自發明舟後，卽以原來筏名，以之稱舟，如說文："方，併船也"。又："舫，方舟也"。爾雅："大夫方舟"，李巡注："併兩船曰方舟"。方言："方舟謂之潢"。又云："舟，至關而東，或謂之舟，或謂之航"。可見方，舫、潢三者，古爲筏名，後變併兩船 (double canoes) 之名。橃原亦筏名，說文又曰："橃，海中大船也"。

又朝鮮半島南部，濟州、南海兩島，現在尙盛行一種原始的筏、稱爲 pal-son。pal 是筏之意，son 是船之意。島民用以捕魚及搜集海草(1)。

作者非語言學家，暫時對此無暇深入研究，根據上面的材料，至少可作下列的兩項假設：

a. 南美洲東部河川中和西部沿海的 balsa，與中國之栰的中古和上古音 b'i̯wɑt 近似，與朝鮮半島的 pal-son 更相似。

b. 在玻利尼西亞羣島的 vaka, waka, paepas, poepoe, pora, pepe, pahi, 諸名稱，多可說源於中國字的栰 fa, b'i̯wat；橃 fa, pi̯wat；簰 p'ai, b'āi。

Heyerdahl氏與Heine-Geldern氏(2)二人對於vaka, paepae, pahi, 義爲舟或栰的爭論，根據上面的假設，可以作如此解決，大約在元前至漢時vaka 和 paepae，亦作舟解，如上引："橃，海中大船也"。又後漢書西南夷傳："遣兵乘簰船南下江漢"。所以南美洲的 balsa，海洋洲的 vaka 和 paepae，這三者名稱假定多起源中國，則其遷

(1) Shinji Nishinuma, 1922, p. 59.

(2) Heyerdahl, 1950, p. 23.; Heine-Geldern, 1952, pp. 332-334.

移的時代，balsa 最早，vaka 次之，paepae 最晚；如其出發地點的不同，則 vaka 在長江以北，paepae 在南方。

最後著者在此附帶說幾句話，近來因研究桴栰的名稱，而研讀 Friederici[1] 和 Hornell[2] 兩氏關於海洋洲舟名的分佈與遷移，舟名的起源地不在中南半島即在印尼羣島，依據上述筏名的考證，要研究太平洋上船名的起源與分佈，中國文獻上數以百計的舟名，是不可缺少的最古和最重要資料。

四、桴筏的起源及其在紀元前的航海

桴栰的起源，在中國傳說甚古。羅欣物原曰：

燧人以匏濟水，伏羲始乘桴，軒轅作舟。

王嘉拾遺記卷一黃帝篇亦曰：

軒轅變乘桴以造舟楫。

淵鑑類函卷三八六引稗編云：

拾遺記曰：軒皇變乘桴以造舟楫。則是未爲舟前，第乘桴以濟矣筏。卽，桴也。蓋其事出自黃帝之前，今竹木之筏，謂之筏是也。

王嘉西晉末人，去古已遠，拾遺所記，當然不能視爲信史，然未發明舟之前，中國人已知用筏以濟，當是事實。如世本云：

古者觀落葉因以爲舟。共鼓貨狄作舟。注：共鼓貨狄黃帝二臣。

周易繫辭下：

刳木爲舟，剡木爲楫，舟楫之利，以濟不通，致遠以利天下，蓋取諸渙。

可見最初作舟之法，是刳木爲舟，中國至黃帝之時，已知用玉製作工具兵器，據越絕書卷十一：

風胡子曰：黃帝之時，以玉爲兵，以伐樹木爲宮室鑿地。

因工具的進步，黃帝時雖發明了舟楫，然造舟非易事，不如編竹木而造桴栰的容易，所以舟與筏自古至今在中國並存，且更原始的匏葦渡永工具亦多存在，如莊子逍遙遊：

今子有五石之匏，何不慮以爲大樽，以浮乎江湖。

(1) Friederici, 1928.

(2) Hornell, 1931, 1946.

詩經河廣：

誰謂河廣，一葦杭之。

如在臺灣，直至清初，臺灣土著渡水工具尚用瓠、筏、舟三者，滿洲六十七著番社采風圖考云：

秋潦驟降，溪壑漲盈，腰挾葫蘆，徑渡如馳。

臺地南北大溪數十，寬廣無梁，經冬淺涸可徒涉，夏秋水泛，洶湧湍激，土目通事有經涉，乘竹筏令番浮水繞扳筏援而行。

彰化水沙連社，背山環水，水橫數里，深不可測。漢人以貨到社交易，番以獨木鑿其中爲舟渡之名曰艋舺。

中國的桴栰不僅起源很早，且早已用於航海，如拾遺記卷一少昊篇云：

少昊母曰皇娥，處璇宮而夜織，或乘桴木而晝遊。經歷窮桑滄茫之浦。時有神童容貌絕俗，稱爲白帝之子。……帝子與皇娥泛於海上，以桂枝爲表，結薰茅爲旌，刻玉爲鳩置於表端，言鳩知四時之候，故春秋傳曰：司至是也。今之相風，此之遺象也。帝子與皇娥並坐，撫桐峯梓瑟。皇娥倚瑟而清歌曰：天清地曠浩茫茫，萬象廻薄化無方，蒼天蕩蕩望滄滄，乘桴輕漾著日傍，當其何所至窮桑，心知和樂悅未央。白帝子答歌：四維八埏眇難極，驅光逐影窮水域，璇宮夜靜當軒織，桐峯文梓千尋直，伐梓作器成琴瑟。清歌流暢樂難極，滄涓海浦來棲息。

以上所記，雖爲原史時代的傳說，然可推知遠古已乘桴航海，且知利用風帆，上言"鳩置於表端"，王子年注曰："今之相風，此之遺象也"。東坡詩注曰："晉車駕出，刻烏於竿上曰相風竿，今檣烏乃其遺意"。後以鳥羽候風曰綄，淮南子云：

若綄之候風也。注：綄，候風羽也。楚人謂之五兩。

又文選：

占五兩之動靜。注：以雞羽爲之，重五兩，繫於檣尾以候風。

又淵鑑類函卷三八六引淮南子曰：

譬俔之見風，無須臾之定。注：俔卽五兩。

由上考證，可以確定"鳩置表端"，爲後之相風，檣烏，五兩，綄，俔，則"以桂枝爲

表”，爲桴上的檣桅；“結薰茅爲旌”，可能是帆。桴桅航海，主用風力，看風使帆，至今猶然。

至春秋時代（771—529 B. C.），中國海上航行尙用桴桅，如論語公冶長：

子曰：道不行，乘桴浮於海。

說文解字：

子欲居九夷，或曰陋！如之何？子曰：君子居之，何陋之有？

說文解字四上：

孔子曰：道不行，欲之九夷，乘桴浮於海，有以也。

漢書地理志曰：

孔子悼道不行，設桴於海，欲居九夷，有以也夫。

九夷，禮王制孔疏云：

九夷，依東夷傳九種曰：畎夷、于夷、方夷、黃夷、白夷、赤夷、玄夷、風夷陽夷。

皆海外遠夷別種，乘桴浮海可通。又越絕書卷八有云：

勾踐……初徙瑯琊，使樓船卒二千八百人伐松柏以爲桴。

越王勾踐滅吳後。遷都瑯琊，在紀元前瑯琊爲中國南北海道最要衝的海港，定都之後，新都與舊京間交通頻繁，所以要使樓船卒二千八百人，伐松栢以爲桴。且著者因上文懷疑桴爲用於普通航海之名，以之海戰則稱樓航，說詳另文。中國人能利用桴桅航海，因此海道開闢甚早，如禹貢有云：

淮海惟揚州……沿于江海，達於淮泗。

在春秋時代，濱海的齊、吳、越三國，海上交通均有確實記載。孟子梁惠王下：

昔者齊景公問於晏子曰：吾欲觀於轉附，朝儛，遵海而南，放於琅邪。

左傳僖公四年：

陳轅濤塗謂鄭申侯曰：師出於鄭陳之閒，國必甚病，若出於東方，觀兵於東夷，循海而歸，其可也。

左傳哀公十年：

徐承帥舟師，將自海入齊，齊人敗之，吳師乃還。

國語越語：

越之入吳也，范蠡古庸帥師，自海詣淮，以絕吳路。

國語：

范蠡浮海出齊，變姓名自稱鴟夷子皮，耕於海畔。

根據上述的史實，我們可以簡要的作一結論，紀元前五世紀，在今之東海、黃海及渤海沿岸的越、吳、齊三國，平時懋遷，戰爭軍運，早已乘桴浮海而航行矣。

結　　語

根據上面的研究，最後對於太平洋及其沿岸帆筏的起源問題，因新資料的增加，似可作進一步的探討。對於簡陋之筏，似乎沒有理由可以懷疑，在任何地方，任何時間都能發明。但東亞和南美的帆筏，不僅栰之構造、駕駛，而連名稱都相同，乃就不能不設想他們可能是同源的了。

人類學家對航海帆栰的起源已有三說：非洲起源說， Hornell 氏曾對此加以駁斥(1)，但最近 Heyerdahl 氏還說，筏可能自非洲因順風順潮，而達美洲熱帶(2)。此說似乎值不得再多加討論了。

主張桴栰起源美洲的爲 Lothrop氏，他說：

> 木栰舖有甲板，上蓋艙篷，在 Andes 山之西很爲普遍。因此可以較可靠的假設，Jangada 起源於南美內陸。在實用上，Jangada 是產於新大陸的能載重而海運價值甚高的水運工具。他能載大量貨物，水手可以安居，同時發明使帆和插板，除稍遲笨外，在洋上航行頗爲便易。

他又說：

> Jangada 的航行方法，世界上除了臺灣，他處未見。從臺灣式樣，與他處大栰插板的裝置完全相同。倘沒有臺灣的例外，插板的發明，應屬於南美土著。至於下風板許多世紀以前已知，但是插板直至1870年歐洲和北美才開始採用(3)。

但是研究太平洋船運的權威 Hornell 氏，則持反對意見，主張帆栰源於亞洲，

(1) Haddon and Hornell, 1938, p. 13.

(2) Heyerdahl, 1952, p. 594.

(3) Lothrop, 1932, pp. 237, 253.

由臺灣或海洋洲沿亞洲海岸經阿留申而至美洲。他說：

> 玻利尼西亞東部諸島和南美西岸遠隔重洋，又有西流而强力的海流，沿亞洲海岸傳播，比之橫渡太平洋的可能性較大(1)。

Means 氏則反對此說，他的理由是：

> balsa 桴自東亞或南洋 (Oceania) 沿海岸而傳至南美西岸的問題，事實上祇證明傳播路線兩頭存在，而在中途尤其美洲漫長的海岸，絕對找不到桴的遺跡(2)。

又 Lewis 氏亦贊同 Means 氏之說(3)。而 Heyerdahl 氏之意且以臺灣之筏，可能是由南美橫渡大洋而來，他說：

> 美洲之外，祇有臺灣三人竹筏，早用插板航行。而古至何時迄無明證。他可能是或不是一種偶合，但臺灣適在太平洋的死角，處於 Marianas 羣島，南中國和菲列濱之間，太平洋的北赤道洋流，自中美橫渡大洋，至此而折向北流。我們對臺灣帆筏是土著 (aboriginal)，或歐人傳入，或獨立發生等等，這是尚未解決的問題(4)。

Heine-Geldern 氏則支持 Hornell 氏的理論，他說：

> 安南和臺灣的帆筏都用插板。此應特別注意，因爲秘魯 balsa 桴亦有插板，這似乎很可以來支持 Hornell 的假設：美洲的帆桴，是起源於亞洲的(5)。

著者現根據中國古代的史實，贊成 Hornell 氏帆筏起源於亞洲，略言之：

1. 伏羲氏 (33rd cent. B.C.) 始乘桴。
2. 黃帝軒轅氏 (2697 B.C.) 變桴筏以造舟揖。
3. 少昊氏 (2597 B.C.) 乘桴泛於海上。
4. 越王勾踐 (5th cent. B.C.) 使樓船卒二千八百人伐松柏以爲桴。
5. 孔子 (551—479 B.C.)欲之九夷，乘桴浮於海。
6. 宋淳熙間 (1174—1194 A.D.) 臺灣土著 "不駕舟揖，惟縛竹爲筏"。

---

(1) Hornell, 1931, p. 355.
(2) Means, 1942, p. 20.
(3) Lewis, 1947 p. 13.
(4) Heyerdahl, 1952, p. 593.
(5) Heine-Geldern, 1952, p. 332.

以上各項事實，前三者雖是傳說，但後三者都是可靠的歷史，很可以之答覆Lothrop, Means, Heyerdahl 諸氏疑問。至於 Hornell 氏沿太平洋岸的傳播，著者不敢完全贊同，因爲帆筏航海，既安全，又重載，且能逆風航行，在紀元前，中國燕齊吳越的航海不僅在近海沿岸，早已能航行遠洋，如春秋時陰陽家鄒衍的大九州之說：史記卷七四：

> 中國外如赤縣神州者九，乃所謂九州也，於是有裨海環之。人民禽獸莫能相通者，如一區中者乃爲一州。如此者九，乃有大瀛海環其外，天地之際焉。

這種學說，必有所據，至少可表示中國人早在太平洋上航行，而得到的海洋地理知識，作者擬在另文詳論之。

FORMOSAN SEA-GOING RAFT AND ITS ORIGIN IN ANCIENT CHINA

(TRANSLATION)

LING SHUN-SHENG

INTRODUCTION

In the last decade there was a growing trend among Americanists to become interested in the basic problems of cultural history, i. e., the processes of the origin and growth of culture in general, in addition to the study of the peoples and cultures in their specialized areas.(1) For instance, in the meetings of the International Congress of Americanists held in 1949 at New York, over ten papers on the cultural connection between Asia and the pre-Columbian America were presented.(2) In 1951, when the 118th meeting of the American Association for the Advancement of Science was held at Philadelphia, Section H (Anthropology) devoted three days to the discussion of the problem of Asian and North American trans-Pacific contacts during which fourteen papers were read. Most of the papers represented the view that the cultural diffusion between Asia and America came not only by way of the Bering Strait but also across the Pacific and that "the multiplicity of Old World influences reached America in various periods and from different regions." Similar interests are to be found among the Oceanists as well. The 1948 Kon Tiki Expedition of Heyerdahl is another case in point. Heyerdahl has set forth the old theory of Joaguin Martinez de Zuñiga on the American derivation of the Polynesian, Micronesian, and the Philippine peoples and cultures and once more proposed that the Polynesians are descendants of the American Indians(3)—a theory strongly opposed by Heine-Geldern and other authorities.(4)

A number of evidently analogous cultural traits have been singled out of the primitive cultures in the Americas, the Pacific, and Asia. The theory that the American cultures were derived from, or at least profoundly influenced by, cultures in Asia should by now have been accepted by most people. However, there are still many Americanists who insist upon the uncompromising theory of cultural isolation of the New World. This, the author believes, results from their lack of

(1) Smith, 1953, p. 1.
(2) Heine-Geldern, 1950, pp. 350-352.
(3) Zuñiga, 1803, pp. 26-30.
(4) Heine-Geldern, 1952, pp. 314-362.

acquaintance with the problems of Asian-American cultural relationships on the one hand, and on the other, their skepticism towards the ability of man to get across the Pacific before the time of Columbus. Merill, for instance, once pitied "the poor Buddhist missionary who had to make such an impossible voyage across the Pacific in times when boats were crude affairs and distinctly limited in size."(1)

The present author is especially interested in the theory of cultural diffusion in the Pacific. As a Chinese, he was able to find a number of parallels to the cultural characteristics pointed out by Americanists and Oceanists, in the prehistory, history, ethnology and folklore of China. These evidences compelled the author to place himself on the pro-side of the trans-Pacific contact theory. It is his hope that more students of ethnology will give more attention to the ancient maritime activities along coastal Asia. Should it be proved that the Asians did sail into the Ocean by rafts, deck-rafts or double dugout-canoes before Christ, the Pacific was then no barrier to the communications between Asia, Oceania, and the Americas. Basing his views mainly on Chinese data, the author attempts to deal with the following two topics, "The Sea-going Raft in Present-day Formosa and Its Origin in Ancient China" and "The Sea-going Double Dugout-canoe and Deck-raft in Ancient China before Christ."

I. THE SEA-GOING RAFT IN FORMOSA

In the winter of 1955 and the spring of 1956, the author investigated the sea-going bamboo rafts in the following sea-ports of Formosa: Hsin-kang (新港) and Ta-wu (大武) in Tai-tung (臺東) Hsien, Fang-liao (枋寮) and Tung-kang (東港) in Ping-tung (屏東) Hsien, Hung-mao-kang (紅毛港) and Chia-ting (茄萣) in Kao-hsiung (高雄) Hsien, and An-ping (安平) in Tai-nan (臺南) Hsien. The rafts are built by fishermen, whose ancestors came from Southern Fukien about 300 years ago. They speak the Min-Nan (Southern Fukien) dialect. Besides fishing the rafts are also used for transporting goods along the coast.

There are two major classes of bamboo rafts in Formosa: those used in rivers (Pl. I: A) and lakes (Pl. I: B), and those used on the sea. The former, used for transporting and fishing purposes on lakes and rivers, is propelled by paddles or poles, comparatively simply constructed, and mostly flat bottomed. The latter, used for working in the sea, propelled mainly by sail and, when occasion demands, by paddles instead, has a bow-like body and is comparatively deliberately constructed. Rafts of the latter class will be discussed here.

According to the *Annual Report of Taiwan Agriculture* for 1955, the fishing boats without mechanical power in Formosa amount to 21,541, of which 13,808 are

(1) Merrill, 1950, p. 10.

bamboo rafts and the remaining one-third are plank boats. So far as, the author knows, the sea-going bamboo raft is more extensively used in Formosa than anywhere else in the world.

The sea-going bamboo raft in Formosa can be further divided into two kinds—those used along the coasts and those sailing on the high sea. Rafts used along the coasts are propelled by paddles only (Pl. I: D) while those used for the high sea are propelled by both paddles and a sail, and can be called sailing rafts (Pl. I: C). As the fisherman of the port of Chia-ting are noted for techniques of constructing and sailing the rafts, the author proposes to take a sailing raft of Chia-ting as an example of the following.

(I) *The Construction of the Sea-going Sailing Raft*

The construction of the sailing raft at Chia-ting (Pl. II) may be described under the following five headings: the body, the mast and sail, the paddles and helms, the center board, and the stone anchors.

1. The body of the raft.

There are three sets of raw material for composing the body of the raft. These are, in order of relative importance, bamboo (9 or 11 bamboo poles for each raft), timber (over 20 pieces, beside those for the mast, paddles, and helms), and split rattans (over 50 for each raft; each split rattan is 6 meters in length and about one centimeter in diameter). Two kinds of bamboos are used: the *ma-chu* (麻竹) and the *tsu-chu* (刺竹). *Ma-chu* is planted in the mountain regions of Tai-chung (臺中), Hsin-chu (新竹), and Chang-hua (彰化) Hsiens in Central Formosa and transported to the various fishing ports for sale. Each pole measures over 6 meters in length and 40–70 cm. in circumference at the fifth point from the root, and costs sixty to two hundred New Taiwan Dollars. *Tsu-chu* is planted nearby and is much cheaper in price. Rattan is imported from East Taiwan and costs about 1.00 yuan per split.

Before being lashed together to form a raft the bamboo have to undergo two procedures: The outer skin has to be scraped off (Pl. III: A) and the bamboo pole has to be shaped (Fig. 1). The first procedure is scraping which is employed in order (1) to lighten the bamboo which makes it easier to float, (2) to render the shaping and binding easier, (3) to lessen the danger of cracking under the sun heat, and (4) to make it not too slippery to walk on. The second procedure—the shaping—varies with different kinds of bamboos. For *ma-chu*, it consists of straightening the *ma-chu* pole (already softened by heating in a fire) by means of a lever and to bend the frontal end a little until a required arc has been formed.(1) For the *tsu-chu*, which is thick and hard and therefore difficult to shape, the required

(1) Kokubu, 1947, pp. 38-39.

shape is achieved either by selecting a pole with a natural bend at the end or by attaching a section of shaped *ma-chu* to one extremity.

After the shaping procedure, the bamboo poles are arranged in parallel direction on a wooden shelf about eighty centimeters high. The root-ends are adjusted in a straight line (Pl. III: B) while the other ends are left irregular (Pl. III: C). Poles that are too short are made up with sections of *tsu-chu*. Both ends of the bamboo poles are usually closed naturally by the intersectional stop. A few, however, are open and must be closed with wooden wedges or *tsu-chu* sections, bound with rattan or bamboo splits, sealed with putty and smeared with *tung* (桐) seed oil to render them watertight. The arrangement of the bamboo poles is as follows: for a sailing raft usually nine or eleven poles are used. The central one is the thickest and the outermost two on both sides are thicker than the rest; the third or the fourth one from either side inward should be of *tsu-chu*. The bamboo poles, after having being shaped, are smeared with fish-fat or *tung*-seed oil for preservative purpose (recently crude petroleum is sometimes used). The fishfat is prepared from the fat of sharks by the fisherman themselves; it is cheap in price but its results poor. The *tung*-seed oil, on the other hand, is effective but expensive. When the smear has dried, the bamboo poles are arranged in proper order on the shelf and two or three men, one or two on the shelf and one below it (Fig. 2), begin their binding work. The binding starts from the middle toward both ends and proceeds by lashing eight wooden sticks perpendicularly on the bamboo poles. Then small bamboo splints are inserted between neighbouring poles and pads of matted bamboo sticks are placed on certain parts of the raft. Finally, a thinner bamboo pole is tied to the marginal pole at either side to serve as bulwark. The construction of the body of the raft has now been completed and the craftsmen who build the wooden parts of the raft take up the work.

2. The mast and sail.

The mast is in most cases made of the long straight cedar timber with a length of five to six meters. The lower end of it usually has a circumference of some 30–35 centimeters and is made oblong in cross-section in order to fit into the mast-socket. On the mast head is carved a long groove for the passing of riggings and a bamboo loop is hung up through which the sail rope is passed. The mast-support (Pl. III: D) is an important part of the bamboo raft. It is made of an oblong wooden block (50×30×22 cm), weighing forty or fifty kilogrammes. At the center of it, a square socket is cut out (10 cm-sidelength) into which the mast is inserted (Pl. III: E). Through the holes made on both sides of the block, two wooden staffs, which are longer than the mast-support and are tied to the third and the fourth of the wooden stick, are lashed perpendicularly to the raft. The distance between these two wooden sticks is equal to the breadth of the mast-support.

The sail consists of six strips of coarse white canvas (each being 60 cm. in breadth) sewn together longitudinally with linen or cotton thread. The whole sail is about 4.5 meters in length and 3.4 meters in breadth. It is first dyed in betel-nut juice and then in pig's blood; after being dried it will be of a dark reddish-chocolate color. On the sail are attached transversely ten or a dozen of smooth and straight bamboo staffs (Pl. VI: B). The uppermost one, to which is attached the sail rope, is made of a thick bamboo or wooden staff and the lowermost one is also fairly thick. The other eight or ten staffs are arranged at equal distance. Each transverse staff is sewn on the canvas with stitches ten or twenty centimeters apart from one another. By the aid of these transverse staffs the wind force is evenly distributed on the sail and the position of the sail is made controllable. The length of each transverse staff follows the width of the particular section of the sail to which the staff is attached. A string is tied on the end of each staff; the ends of the strings are then twisted to a thick rope by which the sailor controls the tension of the sail.

3. **The paddles and helms.**

Each raft is equipped with four rowing paddles and two helming paddles (Pl. IV: B). The paddle is made of a block of cedar wood, round in the upper section and flat in the lower. On the top is a round handle. The length of it is over three meters and the maximum width of the blade is about 20 centimeters. Around the paddle at a point 40–60 cm., below the handle is wrapped the paddle protector which is composed of bamboo splits (20 or 30 cm.×1 cm.) placed parallel around the paddle and wrapped at both ends with bamboo or rattan splints (Pl. III: F). It protects the paddle while it is being rowed and friction with the paddle-posts occurs. The construction of the helming paddle is exactly like that of the rowing paddle except that it is shorter and is placed at the rear end of the raft.

The paddle-supports (20–30 cm., 10 cm., 15 cm.) (Pl. IV: D) are usually made of *nan*-wood or other varieties of hardwood. At the center a socket carved out (about 2 or 3 cm. sided) for the paddle post. The paddle-post is about 20–30 cm. high, and has a groove on the top to fix the paddle-string. The supports for the paddles are attached to the bulwark with split-rattans and supported by a staff one end of which is inserted into the paddle-support while the other end is tied to a *ma-chu* pole of the raft. The support for the rowing paddle is higher than that for the helming paddle because heightening of the fulcrum increases the force of rowing, while lowering the support of the steering paddle, facilitates the direction-changing function of the helm.

4. **The center board.**

This is the most important structure for a high-sea going raft. Ordinarily there are six board-positions (Pl. IV: A) and six boards may be used. The positions of

these six boards are: two at the front, two in the center, and two in the rear; or in other words, there is a board at each of the following points: front-left, front-right, center-front, center-rear, rear-left, and rear-right. The center-front and center-rear boards are placed in the center of the raft and may be collectively called the center-board. Of these two, the center-rear board is the most important one. However, the actual number of the boards can be reduced to three: one board for the front-left, the front-right, and the center-front respectively, one for the center-rear position, and the other for the rear-left and the rear-right positions, because no more than 3 boards function at the same time. The center board is made of a block of camphor wood.

The center-rear board is 70–90 cm. in length and 50–80 cm. in width and is oblong in shape. To its upper edge are attached two strips of wood for handling and the lower edge is cut thin to facilitate the insertion. The front and the rear boards are of approximately half the size of the center-board. However, there is no strictly defined proportion of the sizes of the boards and sometimes the boards vary greatly in dimension due to the limitation of the raw material (Pl. IV: C). Each of the two center-boards is inserted into the raft through a board-slit, which is a bamboo section with a slit tied at either side of the mast support just between two consecutive bamboo poles (Pl. IV: E). The front and the rear boards are inserted directly between two neighbouring poles without the use of a board slit.

5. **The stone anchor.**

The anchor for the bamboo raft is composed of wooden sticks tied together to a hook with a heavy stone attached to it (Pl. V: F). When dropped, the anchor sinks into the sand and mud of the beach due to the weight of the stone, and the raft is consequently held in position.

6. **Other Paraphernalia of the raft.**

Usually there are four other items with each raft: (1) a bucket with a nailed lid having a semi-lunar hole (Pl. V: B); (2) net-sinkers made of pebbles the waist of which are grooved and bound with wirings (Pl. V: A); (3) mat-pads for the nets: bamboo splint mats, oblong-shaped, and placed on the frontal part of the raft and used as pad for fishing nets (Pl. V: C); (4) floating-lanterns attached to bamboo staffs (Pl. V: D).

(II) *Techniques for Sailing the Raft*

The sailing raft in Formosa is primarily used for deep-sea fishing. Emphasis here is laid upon the description of the technique for sailing on the open sea. It requires an intricate combination of skill in handling the paddles, the helms, and the vertical boards. For a good sailor, the raft, though slower in speed, is much

safer than a boat because it can readily adjust itself to any kind of weather conditions.

1. **Paddle-rowing.**

The sailing raft is propelled by paddle-rowing on the following occasions: sailing along the coast or between spots at short distance, or when a complete calm sets in, mid-way of a long-distance sailing, and finally to increase the speed when escaping from a coming storm. The steering paddles can also be used for rowing when occasion demands (Pl. V: E).

2. **Sailing.**

The technique of sailing is influenced by two factors: the wind direction and the strength of the wind.

(1) Wind direction: A variety of wind directions may be confronted by the raft when it goes on the high sea. However, a proper orientation of the sail can always lead the wind force to act upon the sail in a parallel or nearly parallel direction to the course, no matter in which direction the wind blows. In other words, the sail is pushed by two wind directions only: the favourable wind, and the side wind, the latter including those blowing from either the left or the right side. A head wind may also be met with advantage by a proper orientation of the sail.

a. Favorable wind: Needless to say, this is the ideal wind direction for the raft-sailors (Pl. VII: a).

b. Side wind: The direction of the wind and that of the intended course form an angle wider than 45° on either side of the raft. The direction of around 45° is still favorable (Pl. VII: b). The direction of about 90° is not so favorable but is still controllable by orientation of the sail (Pl. VII: c).

c. Head wind: When a head wind is confronted, the raft simply makes a 45° or 90° turn in a S-shaped course toward its destination (Pl. VII: d 1, 2, 3).

d. Orientation of the Sail: The orientation of the sail depends upon the wind direction. When the wind is favorable, the sail is maintained at a position perpendicular to the long axis of the raft. In case of a side wind or a strong headwind, the sail must be properly orientated: the sail is put at the right side of the raft when the wind blows from the left, and *vise versa* (Pl. VII: e).

(2) Wind grade: Two grades of wind are recognized by the Formosan fishermen: the "fifty per cent wind" and "eighty per cent wind". When the wind is up to "fifty per cent", the full sail may be used; when it exceeds "eighty per cent", it is too strong to be confronted by the sail at all. The so-called "fifty per cent" or "eighty per cent" is determined only according to the fishermen's personal experience and not clearly defined. There are seldom complete calms on the sea and therefore the sail can be used on nearly all occasions. Even when the wind is over "eighty

per cent" in strength, the raft is still capable of being propelled with a sail hoisted to one half or one third of its length.

The half-sail is used, when the wind is too strong, or the returning raft is entering port, or when it becames necessary to reduce speed midway. The full-sail is used, when the wind is of a moderate strength or the raft is getting out of the port. When the sail is fully lifted, the plane of the raft will from a sharp angle with the water level, and therefore the wind strength must be now and then carefully checked, otherwise the loads will fall away into the sea. The tension of the sail, whether fully or partly lifted, is always important. It is controlled by pulling or loosening the sail rope.

3. **Helming.**

The course of navigation is controlled by the helming paddle which is set on the raft in one of the 3 following ways: (a) two helming paddles each suspended by a post on the rear portion of the raft at either side (Pl. VI: A); (b) two helming paddles each passing through a cord-ring on the rear portion of the raft at either sides (Pl. VI: C); (c) one paddle placed in the middle of the rear portion of the raft (Fig. 3). Only one of the two paddles is used, when the raft is to change direction: using the left paddle when the sail is placed at the left side of the raft or using the right one when the sail is at the right side. To change the direction of the raft-head, the sailor turns the paddle to the side toward which the head is expected to turn (Pl. VII: f 1, 2, 3, 4). When one paddle is working, the one at the other side may or may not be taken out of the water.

4. **The center board.**

The center board is the most important device for the sea-going of rafts. Its functions are to balance the body, to make the course steady, to reduce the gradient of the plane of the raft, and to avoid violent reeling and staggering.

The body of the raft is a plane floating on the surface of the water. Its center of gravity is somewhere in the plane itself. When the mast is mounted and the sail is hoisted, the weight of matters above the plane is much greater than the raft-body itself, a condition easily causing the raft to capsize. Therefore vertical boards are inserted at the front and rear of the mastsupport and at either sides of the front and rear portions of the raft to lower the center of gravity and to cause a better balance (Pl. VIII: b).

In the second place, the raft is "floating" on the water surface and is subject to shakings by the overwhelming water movement in all directions. When the vertical board is set in, the raft can better maintain its course by aid of the water's pressure on the board from both sides (Pl. VIII: d).

When the sail is lifted fully or partly and the wind is blowing strongly, the

vertical axis of the raft is liable to incline toward the weather side. Therefore the board is set in, in order to lower the center of gravity and the pressure of the water on the board thence produced can equilibrate most of the wind pressure on the sail. In this way both the gradient of the raft-body and the danger of capsizing are reduced to a minimum (Pl. VIII: a).

Finally, the raft is so light and floatable that it is subject to reeling and staggering due to the up-and-down and to-and-fro movements of the water. The use of the board can cause the raft to rest on the surface of the sea more firmly because of the water pressure on both sides (Pl. VIII: c).

As previously described, there are three to six vertical boards for each sailing raft. Their respective use may be described as follows.

The Center-Board. The center-rear board should be set in position when the raft is starting to leave the harbor. The farther it goes the deeper the board should be inserted. When the full-sail is hoisted or when the wind is strong, the board should be lowered to its full length; when the half-sail is used, or when the wind is comparatively weak or the speed relatively low, half or one-third of the board may be used. In short, the length of the center-rear board should be now and then adjusted according to the changing weather conditions. When the wind is very strong, the center-front board should also be inserted in the same way as the center-rear board. When the raft is to change direction, two-third of the center-boards should be lifted in order to lessen the water pressure. They are lowered again to their original position, when the turn has been accomplished.

The Rear Board. The function of the rear board is similar to that of the center-board. When the sail is placed at the left side, the left rear board is inserted; when the sail is at the right side, the right board comes into use. Its function is to produce an anti-functional force from the water to counter balance the wind force on the sail (Pl. VIII: e). When the raft is to turn it also must be taken out.

The Front Board. The front board is used only when there is head wind or when the wind is extremely strong. When the raft sails against the wind, the body usually forms a greater gradient than on other occasions and therefore the front board is inserted to counter balance the water pressure and to help to break the water confronted (Pl. VIII: f). The sail and the front and rear boards are usually placed on the same side; the latter two are in the same straight line. The three boards (the central, front, and rear), when used simultaneously, form the corners of a triangle (Fig. 5). But when the wind is extraordinarily strong, the front board of the side opposite to the sail and the rear board are used in order to balance the water pressure and reduce the speed. The three boards then form three points in an oblique line (Fig. 4).

There are as a rule two sailors for each raft. One of them takes charge of the

mast, the sail and the center-board and is responsible for hoisting and lowering the sail, and for handling the ropes and inserting the center-board. The other takes charge of the helming paddle, the sail rope and the rear board and is responsible for directing the course of the raft, and the tension, size, and orientation of the sail. A perfect sailing of the raft on the high seas depends entirely upon the close cooperation of these two sailors. Sometimes there is an additional seaman, hence the derivation of the term, the "Three Men Raft of Formosa," as it is called by some western scholars. The third man engages in fishing and, when occasion demands, rows the paddles or takes charge of the front-board.

II. COMPARISON OF THE RAFTS OF PERU AND FORMOSA

The sailing raft of Formosa as described in the previous section is the most common kind at the present time. For sake of comparison, we should also give a brief description of the earlier data and the minor varieties of rafts in Formosa. The record of a Formosan long-distance sailing raft first appears in the *Liu-chiu chuan* (琉球傳), vol. 250 of the *Sung History* as follows:

> The Liu-chiu kuo is to the east of Ch'uan-Chou. There is an island called P'eng-Hu (澎湖) which is at a sight-distance....Sometimes in the Period of Ch'un Hsi (淳熙) (1174–1189), several hundred Liu-chiu natives, led by their headman, suddenly arrived at Shui-Ao (水澳), Wei-T'ou (圍頭) and other villages, killing and robbing....(They) did not sail by boat, but bound bamboo poles into rafts. When condition for them turned unfavorable, they put the rafts into the water then and sailed away.

In the vol. 8 of *Chu Luo Hsien Chih* (諸羅縣誌) (compiled in 1717), Ma Kui-yu (馬貴與) is quoted as saying in his book, *Chi Liu Ch'iu* (紀琉球):

> (The natives) do not sail by boat; they sail by bamboo raft which is capable of being folded like a windscreen.

The first illustrated description was made by a Japanese sailor, Hata Sada-nori (秦貞廉) in 1803, of the sailing raft at Chio-po-ran (秀姑巒) on the east coast of Formosa[1] (Pl. IX: b). He states:

> The "bamboo boat" is over four fathoms in length and a little over seven *Chihs* (Japanese unit of length) in width. Bulwarks of matted bamboo splits are set on the left, right, and rear sides. The sail is of matted bamboo splints. A platform of bamboo work on the rear part is the place for taking meals and resting. On the boat are two or three men doing fishing and other work.

It was called a bamboo boat because the bulwark was relatively high so that

(1) Hata, 1803, p. 52.

the craft looked like a "boat". As a matter of fact, it was constructed on the same "wash-through" principle as a raft, The platform on the rear and the sail of reeds or bamboo splints make it different from a modern raft on the western coast.

At the present-time, at Hung-mao-kang of Kao-hsiung Hsien and some other places on the west coast of Formosa, there is a kind of small sailing raft, (Pl. VI: D) sailing along the coast and on the island seas. The body is composed of one *tsu-chu* pole and four *ma-chu* poles. Only one pair of rowing paddles is used. The most remarkable thing is its sprit sail. A thick bamboo pole is used for the mast; at a point one-third from its top, is attached one end of another thinner bamboo pole, the other end of which projects into the sky; this pole and the mast forming a triangle with the apex pointing downward. An oblong piece of canvas is attached to the mast on one side. The other corner of the opposite side is fastened to the upper end of the bamboo pole, which crosses the sail diagonally. Sail ropes are sewn on the upper and lower corners of the canvas on the same side. The full-sail is rectangular and the half-sail, when so used, forms a triangle.

Besides Formosa, in East Asia the sailing raft is also found in Vietnam. As shown in (Pl. IX: a) the raft is composed of bamboo poles,[1] two and sometimes three sails, one at the front and the other at the rear, are used. There are three vertical boards, one in front, one in the center, and one at the rear. The general form of the raft is similar to that of Formosa.

In the Pacific, although the raft is considered to have been the device for the Malayo-Polynesian migrations,[2] yet the early navigators and anthropologists paid much greater attention to the outrigger canoes than to the raft and consequently the records of rafts are extremely few. Only the wooden raft of Mangareva, as illustrated by Beechey can be used for comparison. Beechey states[3]: "No canoes are seen in Gambier islands, but rafts or katamarans are used instead.... They consist of the trunks of trees fastened together by rope and cross-beams: upon this a triangular sail is hoisted...."

Turning to South America, there exist a score of written records and illustrations of the raft. The earliest picture of a raft in South America known to the author was drawn by Benzoni, an Italian travellor (Pl. XI: A). He visited the Spanish Colonies, including Peru, in the years between 1540 and 1556. In 1565, he published a book, History of the New World,[4] in which he presents a sketch of a raft composed of seven wooden logs. Seven sailors and a crude sail are seen on the raft.

Next to this is the sketch (Pl. XI: B) of the raft by Spilbergen who met with

(1) Claeys, 1942, pp. 17-28.
(2) Friederici, 1928, p. 29.
(3) Beechey, 1831, p. 143.
(4) Benzoni, 1857, p. 242; Heyerdahl, 1952, p. 528.

it at Payta in Peru during his voyage round the world in 1614–1617. On the raft were five sailors, two of whom were taking care of the sail and the other three were sitting on the deck taking charge of the insertion of the center-board. On the deck were placed four water bottles and three polished stone-like objects (stone anchors). The raft was equipped with two triangular sails, one at the front and the other at the rear. This raft had been at sea for fishing already for two months and was sailing back when met by Spilbergen.(1)

As late as the beginning of the eighteenth century, the *balsa* raft was still frequently met with along the coast of South America between Ecuador and around the 8 degree of South Latitude, including the Peruvian seashore. Two Spanish navy officers, Juan and Ulloa, made studies of the construction and sailing techniques of the balsa. As shown in (Pl. XI: C) the raft is composed of nine balsa-wood logs, each measuring 75 or 90 feet in length and 20–24 feet in width.(2)

About a century ago, Paris for the first time made a detailed study of the wooden raft of Peru. His investigations were carried out at Port Guayaguil and he illustrated the result in the sketch (Pl. XI: D) reproduced here. The raft is about 80–90 ft. long and 23–30 ft. wide.

It should be added that in Brazil there existed a kind of sailing raft with a triangular sail (Pl. X: a) and vertical boards. The sail was similar in shape to a reverted-triangle as the sails used in Polynesia and on some of the wooden rafts in modern Brazil.(3)

According to the eight sketches presented above, we are able to make a preliminary comparison of rafts for the region west from East Asia to the east of South America as follows:

Form of the Raft. The form of the raft depends to a considerable extent upon the raw material used for its construction. In South America, the central log of the wooden raft is the longest one and the length of the logs decreases toward both sides, resulting in a wooden raft with two pointed ends. In East Asia, because of the great elasticity of the bamboo and the possibility of shaping it, the raft's rear end is kept straight and regular while the front end bends upward, giving the raft a boat-like appearance. It is noteworthy that Benzoni's raft seems to be composed of curved logs so selected as to bend out of the water at the bow and thus comes fairly close(3) to the Formosan raft in form. As regards the size of the raft, it varies with the number of wooden logs or bamboo poles. In all its range the sailing raft is composed of 5, 7, 9, 11, or 13 wooden logs or bamboo poles, with 7 and especially 9 as the most common numbers.

---

(1) Spilbergen, 1619, p. 93.
(2) Juan and Ulloa, 1760, p. 186.
(3) Hornell, 1946, p. 82; Heyerdahl, 1952, p. 591.

Mast and sail. Two kinds of masts are seen in South America: the pole mast and the sheer mast. The latter term refers to the mast composed of two poles crossing at tops and forming a reverted-V. Large rafts are usually equipped with a sheer mast or sometimes with two or three pole masts. In Asia, the Formosan and Vietnamese rafts have ordinarily the pole mast, two or three of which are used for larger rafts. On the inland waterways of China south of the Yangtze, the long wooden raft (Pl. X: c) is equipped with a sheer mast, while the pole mast is used for the shorter and narrower bamboo raft (Pl. X: b).

The shape of the sail is either square (rectangular or trapezoidal), or triangular, or reverted triangular. All of these varieties are found in South America. The first and the third varieties are seen in Formosa and the third one only in the Pacific. Considering the fact that sails of matted bamboo splits in Formosa and of reed-mats in South China are either square or rectangular, we would like to propose that the sail of the rectangular and the trapezoidal shape represents the more ancient type.

Helm and Paddle. For the raft, the paddle plays the rôle of a helm for the boat, which cannot be fixd to the raft because its bottom is a plane. Three varieties of the rowing paddle are in use for rafts of different sizes: single paddles for large rafts at either sides; double paddles are used for rafts of medium size and are pushed by the sailors in the middle of the raft; double-headed paddles are used for the small rafts and rowed on both sides alternately. The first and third varieties occur in South America and the second and third in Formosa. The double headed paddle even now prevails among the Ami Tribe on the Eastern coast of Formosa for rowing the small fishing raft. The general forms of the paddle, essentially similar with those of the natives of Formosa and South America, are shown in Fig. 6.

Center Board. The center board was called by the South American natives *Guara* and in Formosa is termed *tʃ'iam.* It has been used for raftsailing in Formosa and Vietnam in East Asia and in Peru and Brazil in South America. The various forms are shown in Fig. 7. The length and width of the board vary with the size of the raft: long and narrow boards (in greater numbers) are employed for the rafts of bigger size which have high and thick decks sometimes composed of three layers of parallel logs (Pl. XI: D). While large and broad boards are used for the Formosan raft yet its body of is thin and single-layered.

Among the rafts illustrated in the present paper, only those of Beechey and Benzoni show no indication of the use of the vertical board. This probably results from the fact that the board is taken out when the raft is ashore and is inserted deep below the body when the raft is sailing, and therefore was not depicted by these two authors. In the Pacific region, no use of the vertical board has been

reported, but this fact does not exclude the use of the vertical board for the Pacific. As we know, rafts in Mangareva made frequent round trips between Mangareva and Rarotonga and without the vertical board long-distance navigation by raft is almost impossible.(1) As for the raft of Benzoni, although no boards are visible in his sketch, yet we have the following footnote by Rear Admiral W. H. Smith for the "balsa" in his 1857 translation of Benzoni's *History of the New Worlds* running as follows(2):

> The larger balsas carry sails on masts resembling sheers; and they are steered by raising or lowering, as the occasion may require, some boards which enter vertically between the timbers at either end of this rude, but ingenious, floating vehicle.

Finally, to compare the techniques of navigation. For Formosa, they have been described above; for South America, Juan and Ulloa have stated:

> But the greatest singularity of this floating vehicle is, that it sails, tacks, and works as well in contrary winds as ships with a keel, and makes very little leeway. This advantage it derives from another method of steering than by a rudder; namely, by some boards, three or four yards in length, and half a yard in breadth, called guaras, which are placed vertically, both at the head and stern between the main beams, and by thrusting some of these deep in the water, and raising other, they bear away, luff up, tack, lay to, and perform all the other motions of a regular ship.(3)

Paris also says:

> For steering, there are boards called guaras, which are sunk vertically in the intervals between the middle logs. These are driven in to a greater or lesser degree, fore or after, in order to luff or go about. The rafts have no other methods for steering on the ocean, ...(4)

From the preliminary comparisons made above of the construction and function of the sailing raft in East Asia and South America, we are able to state that the rafts in these two regions were derived from a common origin. This statement is further confirmed by a comparison of the terms for the raft, which will be dealt with in the following section.

III. TERMINOLOGY FOR THE RAFT IN SOUTH AMERICA, THE PACIFIC, AND CHINA

The raft on the western coast of South America is generally known as *balsa*,

(1) Heyerdahl, 1952, p. 593.
(2) Smith, 1857, fn.; Heyerdahl, 1952, p. 528.
(3) Juan and Ulloa, 1748, p. 189; Heyerdahl, 1952, p. 538.
(4) Paris, 1841, p. 148.

first reported by the Spanish sailor, Bartolomeo Ruiz. Toward the end of February, 1527, after he had passed Cape San Francisco, Ruiz sighted near the equator a tall sail. As he drew near, he found it was a large raft, called *balsa* by the natives, consisting of a number of huge timbers of a light, porous wood, tightly lashed together with a frail flooring of reeds raised on them by way of a deck. Two masts, erected in the middle of the raft, sustained a large square-sail of cotton, while a rude kind of rudder and a movable keel, made of plank inserted between the logs, enabled the mariner to give a direction to the floating fabric which held on its course without the aid of paddles.(1)

In his early voyage round the world between 1614 and 1617, Joris van Spilbergen made a brief call at Payta harbor, some 120 miles South of Tumbez in Peru. Spilbergen had then his fleet supplied with fish from an incoming Peruvian raft, which he described as "one of the savage's vessels, called *balsem.* Here they have fish aboard and they can sail swiftly with these vessels in the wind."(2)

Means, the noted historian of Peru, says: "the word *balsa* is neither Quechua nor Colla. It probably comes from one of the local tongues spoken around the Gulf of Guayaquil. Primarily, it indicates the *balsa* tree and its wood, meaning raft only by extension of the original meaning."(3) However, Cobo at the end of the sixteen century says: ...."such is what in these lands is called *balsa* timber, because one makes of them good balsa."(4) Accordingly Mean's statement is hardly right. It is stated by Heyerdahl that "the origin of the term *balsa* for rafts is somewhat obscure ....we may note that *dalca* is the aboriginal term for 'boat' or 'canoe' on the coast of Chile; whereas *vaka* is a general term for 'boat' or 'canoe' in Polynesia."(5)

H. H. Brüning, the German engineer who resided in Peru from 1875 through 1925 and is believed by Heyerdahl to be the last witness of the existence in Peru of the now extinct balsa raft,(6) mentions that in the Peruvian harbors of Pimentel, San José and Sechura, the native fishermen made small rafts, *balsillas*, of balsa logs broken and discarded from the larger rafts.

It may at the same time be mentioned that in South America the balsa raft was also called *jangadas.*(7) Lothrop writes: "Rafts with raised platforms, often carrying small shelters, are widely employed across the Andes, so that it seems safe to assume that the *jangadas* originated in the interior."(8)

---

(1) Murphy, 1941, p. 7; Prescott, 1847, p. 223.
(2) Spilbergen, 1619, p. 84; Heyerdahl, 1952, p. 530.
(3) Means, 1942, p. 19.
(4) Cobo, 1653, p. 1.
(5) Heyerdahl, 1952, p. 529.
(6) Heyerdahl, 1952, p. 544.
(7) Paris, 1841, p. 148.
(8) Lothrop, 1932, p. 253.

Let us turn to the terms for rafts in Oceania. Among the Morioris on the island of Chatham, some 400 miles east of New Zealand, was found the real deep-water vessel, called *waka-pahi* or *pepe*, "measuring up to fifty feet over all, but was built on the very same wash-through principle."(1) J. M. Brown is quoted by Skinner as saying: "Their (the Morioriş') *waka-pata* (*waka pahi*) remind me of the balsas or buoyant rafts of the Peruvian coast. On Lake Titicaca, I saw canoes made of reeds of much the same type (i. e. wash-through) as with the Moriori."(2)

On Easter Island, the raft is called *pora*. Metraux writes: "The Easter Islanders used rafts (*pora*) made of bulrush mats, rolled into big, conical bundles."(3)

"The *pahi*, or 'raft boat', of Tahiti," writes Enock, "Somewhat resembles the balsa of Peru, it is said."(4)

It is stated by Heyerdahl that "the natives of the Tuamotu group immediately distinguished the Kon-Tiki balsa raft as a *pae-pae*, telling its crew that such crafts were well known to their ancestors....The raftsmen of Mangareva also referred to their rafts as *pae-pae*....In Tahiti, too, *pae-pae* is the word for rafts in general. Throughout Polynesia *pae-pae* appears in the various dialects, meaning either 'raft', 'flooring', 'platform', 'to place in a row', 'to lay in order', or also 'to float', 'to drift', 'to go to leeward'."(5)

It is clear that the rafts in the Pacific are most commonly designated by two terms, *waka* or *vaka* and *paepae* or *pahi*, both of which may refer to the boat as well as to the raft. Taking this as his starting-point, the author has studied the terminology for rafts in China and is greatly surprised at the similarity of the facts he meets here with what he learned about the same subject for America and Oceania.

The Chinese characters designating raft found throughout the literature are given below:

1. *fang* 方, *Han-Kuang* (漢廣) in *Shih-Ching* (詩經): "The river is so wide that one is hardly able to get across with the *fang* 方." Mao's *commentary*: "*fang* 方, means raft."

2. *fang* 舫, *Shih-Yen* (釋言) in *Erh-Yah* (爾雅): "*fang* 舫, means raft." Sun's *commentary*: "To put rectangular timbers on the water to make rafts."

3. *hung* 潢, *Shih-Shui* (釋水) in *Kuang-Yah* (廣雅): "*hung* 潢, means raft."

4. *fu* 泭, *Shih-Shui* (釋水) in *Erh-Yah* (爾雅): "The commoners ride on *fu* 泭." Kuo's *commentary*: "To bind timbers together to get across a river." *Ch'i-Yü* (齊語)

---

(1) Shand, 1871, p. 354; 1911, p. 86; Heyerdahl, 1952, p. 581.
(2) Skinner, 1923, p. 119.
(3) Métraux, 1940, p. 208.
(4) Enock, 1912, p. 279.
(5) Heyerdahl, 1952, p. 584.

in *Kuo-Yü* (國語): "The timbers bound together are called 泭." *Hsi-Wang* (惜往) in *Chiu-Chang* (九章) of *Chiu-Ts'ih* (楚詞): "Riding on a 泭 to get down the river." Wang Yih's *commentary*: "The bamboo or timbers bound together are called *fu* 泭. It is called 泭 by the Ch'u (楚) People and called *fa* 橃 by the Ch'in (秦) People."

5. *fu* 桴, *Kung-Yie-Ch'ang* (公冶長) in *Lun-Yü* (論語): "Riding on a *fu* 桴 to drift on the sea." Ma Jung's (馬融) *commentary*: "It designate the bamboo and timbers bound together; the smaller one are called *fu* 桴." *Ch'i-Yü* in *Kuo-Yü*: "Riding on a 桴 to cross a river." Wei's *commentary*: "The timbers bound together is called 泭, the small ones of which are called *fu* 桴." *Shuo-Shan-Hsiün* (說山訓) in *Huai-Nan-Tze* (淮南子): "Riding on a vehicle to foot on Yueh; riding on a 桴 to enter Hu."

6. *fu* 栿, *Ch'ing-Chung-Chia-P'ien* (輕重甲篇) in *Kuan-Tze* (管子): "No to bind the *fu* 栿 at summer."

7. *fu* 筏, *Shih-Shui* in *Kuang-Yah*: "*fu* 筏, means raft."

8. *fu* 筟, *Shih-Wen* (釋文): "*fu* 泭, Kuo pronounces *fu* 孚, also written in another character 筟."

9. *fa* 筏, Section 9 of *Fang-Yen* (方言): "*p'ai* 簰, means 筏 (raft); is the common term in Ch'in and Chin."

10. *fa* 栰, *Lun-Yü*: "Riding on a 桴 to drift on the sea." Ma Jung's *commentary*: "It designates the bamboo and timbers bound together; the bigger ones are called *fa* 栰."

11. *fa* 橃, *Commentary* to *Chiu-Chang* of *Ch'u-ts'ih*: "*fu* 泭, called *fa* 橃 by the Ch'in People." *Shuo-Wen* (說文): "橃, big boats in the sea." *Yü Pien's commentary*: "Big boats in the sea, or the *fu* 栿."

12. *p'ai* 簰, Sec. 9 of *Fang-Yen*: "泭, means *p'ai* 簰." *Shih-Shui* of *Kuang-Yah*: "*p'ai* 簰, means raft."

13. *p'ai* 筏, *Ch'in-P'eng-Chuan* (岑彭傳) in *Hou-Han-Shu*: "(He) leads thousands of people riding on the *fang p'ai* 枋筏 to get across the river barrier." *Commentary*: "枋筏 is made of bamboo or timbers, floating on the water." *Teng-Hsiün-Chuan* (鄧訓傳) in the same book: "To sew leathers into boats, which are put on the *p'ai* 筏 to cross the river." *Commentary*: "*p'ai* 筏, timber rafts."

14. *p'ai* 筏, *Yih-Ch'ieh-Ching-Yin-Yih* (一切經音義): "*p'ai* 筏 is called *fa* 筏 in the Dialect: called 筏 by the southerners and 筏 the northerners." *Ching-Tien-Shih-Wen* (經典釋文): "簰; also called 筏."

15. *p'ai* 排, *T'ang-Yun* (唐韻): "*p'ai* means raft."

The fifteen characters listed above vary in the form due to time and space distinctions. According to the pronounciation however, they may be grouped into four classes:

(1) 方, 舫, 濊. 方 and 舫 appeared early and are pronounced in the same way:

Modern Sound: *fang*; Middle Ancient Sound: *piwang*; Ancient Sound: *piwang*. 潢 occurred later: Modern Sound: *hung, heng*; Middle Ancient Sound: *rwang*; Ancient Sound: *g'wăng*.

(2) 泭, 桴, 柎, 箙, 箙. These five characters are grouped together; the first three are more ancient. 泭 and 柎: Modern Sound: *fu*; Middle Ancient Sound: *p'iu*; Ancient Sound: *p'iu*. 桴: Modern Sound: *fu*; Middle Ancient Sound: *p'iu*; Ancient Sound: *p'iug*.

(3) 栰, 筏, 橃. Modern Sound: *fa*; Middle Ancient Sound: *b'iwat*; Ancient Sound: *b'iwât*. 橃 appeared very late.

(4) 簰, 筏, 筏, 排. Modern Sound: *p'ai*; Ancient Sound: *b'ai*.

In conclusion, there were four words each designating a kind of raft and being represented by one of the following four characters: 桴, 筏, 方, 簰. In Ancient China, these four kinds of raft, each represented by one or more than one characters, distinguished either the size (e.g. Nos. 5 and 10 of the characters), or the raw material (No. 4), or refer to different areas (Nos. 4, 9, and 14).

Since the boat was invented in or introduced into China, terms for rafts have been extended to designate boats as well. *Shou-Wen* (說文): "方, means the parallell connected boats;" also: "舫, means the *fang chou* 方舟 (double-canoes)." *Erh-Yah Commentary* by Li Hsiün (李巡): "The two boats connected together is called the 方舟." *Fang-Yen*: "The 方舟 is called the 潢;" also: "The boat is either called 舟 or called 舫 in the areas east of T'ung Kuan (潼關)." It is then clear that the 方, 舫, and 潢, originally terms for rafts, were later also used as terms for double canoes. 橃, as mentioned above, was a term for rafts; but in *Shuo-Wen* it is defined as "the big boat in the sea."

Being not a linguist, the author does not dare to draw further conclusions. According to the data brought up so far, at least the following two hypotheses seem permissible:

(a) Rafts in South America are called *balsa*. It is very similar to the Korean term *palson*, which is used for a fishing raft in South Korea[1], and *balsa* is also close to the ancient Chinese term 筏, *b'iwat*.

(b) Terms for rafts in Polynesia, as: *vaka, waka, pae-pae, poe-poe, pora, pepe, pahi*, etc. seem to have derived from the chinese terms 栰 *fa, b'iwat*; 橃 *fa, piwat*; and 簰 *p'ai, b'ai*.

The argument between Heyerdahl and Heine-Geldern[2] whether the terms *vaka, paepae*, and *pahi* designate originally raft or the boat can probably be settled according to the above statements. The terms *vaka* and *paepae* were originally

(1) Nishimura, 1922, p. 59.
(2) Heyerdahl, 1952, p. 23; Heine-Geldern, 1952, pp. 332-334.

terms for rafts before the present era, and have been used to designate also the boat from the Han Dynasty onward. It seems proper to assume that the term *balsa* in South America and *vaka* and *paepae* in Oceania originated very probably from China. The chronology of their diffusion may be as follows: the *balsa* and *vaka* are the earliest to have diffused, followed by the *paepae*. If the two had different places of origin, the term *vaka* probably originated in the area north of the Yangtze and *paepae* south of it.

Finally, a few words should be added. The author has recently studied the terminology for rafts, the papers by Friederici[1] and Hornell[2] concerning the distribution and diffusion of the terms for boats and rafts in Oceania. It is assumed by both of them that terms for boats and rafts in Oceania originated from either the Indo-Chinese Peninsular or the Indonesian Archipelago. The author, basing his view on the study presented above, is of the opinion that for the purpose of determining the origin and distribution of terms for boats and rafts in Oceania, the hundreds of boat and raft terms recorded in Chinese literature must be considered as the most ancient and the most important data.

IV. THE ORIGIN OF THE RAFT IN CHINA AND ITS USE AS A SEAFARING VESSEL IN THE PRE-CHRISTIAN ERA

According to the traditional history, the raft was used in China since very old days. In *Wu-Yuan* (物原), Lo-Hsin (羅欣) says:

> Sui Jen (燧人) got across the river by riding on gourds; Fu Hsi (伏羲) began to ride on the raft (桴); Hsiüan Yüan (軒轅) invented the boat.

In *Huang Ti P'ien* (黃帝篇), vol. 1 of *Shih-Yih-chi* (拾遺記) by Wang Chia (王嘉), it is said (that) Hsiüan Yuan converted the raft into the boat.

In *P'i P'ien* (稗編), the following is said:

> It is said in *Shih-Yih-Chi* (拾遺記) that Emperor Hsiüan converted the raft into the boat. Accordingly, it is proper to say that the raft was used to get across a river before the invention of the boat.

Wang Chia belonged to the age of the end of the Western Chin Dynasty. What he describes in *Shih-Yih-Chi* about an invention centuries older than himself can not of course be taken as convincing. However, it is presumably true that the Chinese used the raft to cross rivers before the invention of the boat.

It is stated in *Shih-Pen* (世本) that:

> In old days the boat was invented by observing the fallen leaves. The boat was invented by Kung-ku (共鼓) and Huo-ti (貨狄). (*Commentary*: Kung-ku and Huo-ti, two officers of Huang Ti or the Yellow Emperor.)

---

(3) Friederici, 1928, pp. 27-51.
(4) Hornell, 1931, pp. 70-72.

In *Chou-Yih* (周易) the following is said:

> To dig out a block of wood is to make a boat; to sharpen a stick of wood is to make an oar. The boat and oar are made to conquer the water barriers and for fishing.

Accordingly, the earliest method in China of boat-making was "to dig out a block of wood." In the time of the Yellow Emporor, the "jade" is said to have been used to make tools and weapons, as stated in the vol. 11 of *Yüeh-Chüeh-Shiu* (越絕書):

Feng Hu Tse (風胡子) says: "in the time of Huang Ti, the jade was used to make weapons, to cut down the trees for buildings, and to dig the soil."

The boat was invented during the times of the Yellow Emporor possibly because of a progress of tools. However, constructing a boat is not so easy and convenient as to make a raft by binding bamboo or timbers together. It has to be assumed therefore that the raft and the boat have coexisted for a long while and that the even more primitive water transportation devices such as the gourd and the reed rafts also occured side by side with the log-raft and boat. It is stated in Chuang Tse (莊子) that:

> To make a boat of five *shihs*, big gourds for floating in the river and lake.

In *Ho Kuang* (河廣) of *Shih-Ching* (詩經) it is said that

> Who says the river is too wide to cross?
> Riding on a bundle of reeds one is able to get across.

The Formosan aborigines used gourds, rafts, and boats side by side as their water transportation devices. In *Fan-She-Ts'ai-Feng-T'u-K'ao* (番社采風圖考), Liu Shih Ch'i (六十七) says:

> When the autumn rain falls suddenly and the streams are filled up with water, they with gourds around the waist get across the streams as easily and as swiftly as riding on a horse.
>
> There are tens of great rivers in Taiwan....When the official headmen of natives want to cross the rivers, they ride on bamboo rafts which are supported and progressed by swimming natives.
>
> The Shui-Sha-Lien She (水沙連社) at Changhua is backed by mountains and encircled by a river which is several *lis* wide and of unknown depth.
>
> When the Chinese come for trade, the aborigines transport them with a dugout canoe, called *banga*.

The raft in China has not only been used since very ancient times but was also employed for sea-faring in old days. In *Shao-Hao-P'ien* (少昊篇), the vol. 1 of *Shih-Yih-Chi* the following information is given:

> The mother of Shao Hao (少昊) was called Huang Eh (皇娥) who weaved during the night in the palace and went sight seeing in the daytime by riding on a raft. She had passed the rivers in Ch'iüng Sang (窮桑) and

> Ts'ang Mang (滄茫). At that time there was a clever boy of extraordinary appearance called the Son of Pai Ti (白帝子)....The Son of Pai Ti and Huang Eh sailed into the sea. They made the mast of cassia's stem and the sail of smoked straws; they carved the jade into a bird and put it on the head of mast, saying that the bird knows the weather....The present day vane is a survival of this....

In the Ch'un Ch'iu Period (711–529 B. C.) the raft was still used for seafaring in China. In *Kung-Yieh-Ch'ang* of *Lun-Yü*, Confucius says that "When my 'way' is impossible to be put in to practice, I shall ride on a raft drifting into the sea." In *Shus-Wen-Chieh-Tze* (說文解字) the following words are said:

> Confucius says: when my 'way' is impossible to be put in to practice I shall go to the Nine Barbarians by drifting into the sea on a raft. Confucius did have reason to say so!

The Nine Barbarians, according to the *Tung-Yih Chuan* (東夷傳), consisted of: the T'ien-Yih (畎夷), the Yü-Yih (于夷), the Fang-Yih (方夷), the Huang-Yih (黃夷), the Pai-Yih (白夷), the Ch'ih Yih (赤夷), the Hsiüan-Yih (玄夷), the Feng-Yih (風夷), and the Yang-Yih (陽夷), all of whom were oversea barbarians and were accessible by drifting on a raft. In Vol. 8 of *Yüeh-Chüsh-Shu* (越絕書) it is stated: "Kou Chien (勾踐)....When he first arrived at Lang Yah (瑯琊) he ordered the 2,800 *lou-chuan* men to cut down trees to build rafts." Having exterminated Wu, Kou Chien, the King of Yüeh, changed his capital to Lang Yah which was then an extremely important harbor in the South and North communication of China by sea before the Christain Era. The old and the new communications became increasingly frequent after that time and consequently Kou Chien had given the order to his 2,800 sailors to cut down trees to build more rafts. According to the information given above, the present author considers it fairly proper to say that *fu* (桴) is a term for rafts used for ordinary sea-faring vessels which when used for fighting were called by another term, *lou chuan* (樓船).

For that reason the Chinese have been able to enter the sea since very early times, so the sea-route was opened quite early. In so old a document as *Yü Kung* (禹貢) it has already been said:

> (Between) the Huai and the sea is Yang-Chou (揚州)....He went along the Kiang (江) and the sea and reached the Huai (淮) and the Si (泗).

In the Ch'un-Ch'iu Period, the oversea communications from the three coastal kingdoms, Ch'i (齊), Wu (吳), and Yüeh (越), were actually recorded.
In *Tso-Chuan* (左傳) under the *4th Year of Hsi Kung* (僖公):

> Yuan Tao T'u (轅濤塗) told Cheng Shen Hou (鄭申侯): If the army goes by the route between Cheng (鄭) and Ch'en (陳), the country will greatly

suffer. It seems more proper to go along the East, showing our force to the Eastern Yih, and to come back by sea.

And under the *10th Year of Ai-Kung* (哀公):

Hsu Ch'eng (徐承) led the navy to arrive at Ch'i from the sea. The Ch'i people defeated them. Then the Wu's navy came back.

In *Yüeh-Yü* (越語) of *Kuo-Yü*:

The Yüeh's march into Wu was: Fan Li (范蠡) and Ku Yung (古庸), led the force to arrive in the Huai valley from the sea to cut off the Wu's transportation route.

Also in *Kuo-Yü*:

Fan Li went to Ch'i by drifting by the sea route. He changed his name into Ti-Yih-Tse-P'i (鴟夷子皮) and farmed by the sea-shore.

On the basis of the data presented so far, we may summarize our conclusions thus: as early as the 5th century B. C., in the three kingdoms Yüeh, Wu, and Ch'i, on the coast of the East Sea, the Yellow Sea, and the Chihli Bay, the communications in ordinary days and transportations during war time had been by the sea route by way of rafts.

CONCLUSIONS

The new data presented above permit conclusions as to the origin of the raft on the coasts of the Pacific and on the islands. We surely do not doubt the possibility, of a parallel invention of such a simple device as the raft in diverse regions. However, because the construction, navigating techniques, and even the terms for the rafts in Southeast Asia, the Pacific and South America are similar to each other we are compelled to say that the rafts in these areas are probably of a common origin.

As regards the question of the regions where the raft may have originated, anthropologists have provided several possible answers. The first and the least noteworthy one is the African origin theory, which has already been dismissed by Hornell.(1) However, recently Heyerdahl once more proposes that the idea if not the craft itself in one of its manifestations might have reached tropical America like the gourd and the cotton with a favorable wind and current from the African side of the Atlantic.(2) It does not seems worthwhile to argue this statement any more here.

Another theory is that of the American Origin supported by Lothrop. He states(3):

(1) Haddon and Hornell, 1938, p. 13.
(2) Heyerdahl, 1952, p. 594.
(3) Lothrop, 1932, pp. 253, 231.

> Rafts with raised platforms, often carrying small shelters, are widely employed across the Andes, so that it seems safe to assume that the *jangada* originated in the interior. In actual practice, however, the *jangada* was much the most seaworthy and capable vessel produced in the New World. It was able to carry a large cargo and to house its crew in comfort, and, at the same time, the invention of sails and center-boards made it possible to propel and manoeuvre with ease in the open ocean an otherwise clumsy raft.

and,

> From the foregoing description it will be seen that the *jangada* was steered in a manner found in no other part of the world, except it be Formosa, from which island come models of large sailing rafts with center-board fittings, apparently homologous. Were it not for this exception the invention of the center-board might be attributed to the natives of South America. While leeboards have been known for many centuries, the center-board has been employed in Europe and North America only since about 1870.

This statement is again argued by Hornell, who initiates the theory of the Asiatic Origin of the raft and assumes a diffusional route, i. e. northward along the Asiatic eastward along the America. He says(1):

> In view of the distance between the eastern islands of Polynesia and the coast of America and of the adverse westerly run and great strength of the current which a canoe would have to meet on the passage eastwards, the probabilities are apparently in favour of coastwise diffusion from Asia in very remote times, rather than by the ocean highway.

Hornell's theory is opposed by Means. Means is of the opinion that(2):

> This thesis of a coastwise diffusion of the *balsa* type of craft from eastern Asia and Oceania into western South America is vitiated by the fact that the *balsa* type appears along the indicated route only at the extremities thereof, absolutely no traces of it appearing in the immense intervening stretches of the American west coast.

And his argument is approved by Lewis.(3) Heyerdahl who led the Kon-Tiki Expedition also disagrees with Hornell and proposes the idea that the Formosan raft was derived from South America! His argument is(4):

> Outside America the center-board seems to have been historically observed in aboriginal navigation only on the three-men bamboo rafts of Formosa.

---

(1) Hornell, 1931, p. 355.
(2) Means, 1942, p. 20.
(3) Lewis, 1947, p. 13.
(4) Heyerdahl, 1952, p. 593.

Its antiquity there is apparently not verified. It may or may not be a coincidence, but Formosa is located in the same deadlock corner of the Pacific, between the Mariannas, South China and the Philippines, where the North Equatorial Current turns north after its broad sweep westwards from Central America. Whether we are dealing with aboriginal or post-European diffusion, or with independent invention, is a question not yet settled.

On the other hand, Hornell's theory is backed up by Heine-Geldern, who states[1]:

Both these Viet-namese and Formosan sailing rafts are fitted out with center-boards. This is particularly remarkable because the Peruvian balsa rafts too had center-boards. It would seem to lend considerable support to Hornell's suggestion that the American sailing rafts may be derived from Asia.

On the basis of the historical records in Ancient China, the present author stands by Hornell and for Heine-Geldern. i. e., the Asiatic Origin of the raft in the Pacific.[2] As described in the last section, the raft in China is traceable to the latter half of the forty centuries B. C. of the tranditional date.

1. Fu Hsi Shih (伏羲氏) (33rd century B. C.): "Beginning to ride on rafts."
2. Hsiuan Yuan Shih (軒轅氏) or the Yellow Emperor (2697 B. C.): "Converted the raft into the boat."
3. Shao Hao Shih (少昊氏) (2597 B. C.): "Riding on a raft and drifting on the sea."
4. Kou Chien (勾踐), the king of Yueh (5th century B. C.): "Ordered 2,800 sailors to cut down cedar trees to build rafts."
5. Confucius (551–479 B. C.): "Wanted to reside amongst the Nine Barbarians and to go by drifting on a raft."
6. In the Period of Ch'un Hsi (淳熙) (1174–1194 A. D.) of the Sung Dynasty: "The Formosan aborigines do not ride on boats; they bind the bamboo poles into rafts."

Listed above are historical records from ancient Chinese literature. Although the former three are of a more or less legendary in nature, the latter three are historically highly trustworthy. They can well answer the questions set forth by Lothrops, Means, and Heyerdahl. On the other hand, the present author in accordance with Heine-Geldern does not agree with Hornell's theory of the Asiatic coastal diffusional route for the raft. The raft on the open sea is both comparatively safe and capable of transporting heavy loads and sailing against the wind. As early as the first century B. C. the raft in the kingdoms of Yen, Ch'i, Wu and Yüeh of coastal China sailed not only along the coast but also on the high seas. In the Ch'un Ch'iu Period, Tsou Yen (鄒衍) of Ch'i proposed his Greater Nine Continents Theory as follows (from Shih-Chi, vol. 74):

---

(1) Heine-Geldern, 1952, p. 332.
(2) Heine-Goldern, 1954, p. 408.

> Outside the Middle kingdom, there are nine continents (九州) (Ch'ih-Hsien, Shen-Chou (赤縣, 神州) etc.). They are the so-called "Nine Continents." They are encircled by the sea. A continent is like a district in which the people and animals are isolated from the outside. There are nine in total like this. Finally a vast sea goes round. This is the margin of the heaven and the earth.

A theory like this must have been backed up by some kind of geographical observation. Is it possible that it indicates part of the geographic knowledge acquired by the Chinese as sailors of the Pacific?

REFERENCES CITED

A. Chinese Literature

Chi-liu-ch'iu (紀琉球), By Ma Kui-yü (馬貴與), 14th cent. A. D.
Chou-yih (周易), Author unknown, about early Chou Dynasty (1122-221 B. C.).
Chuang-tse (莊子), By Chuang Chou (莊周), 4th cent. B. C.
Ch'u-ts'ih, Chiu-chang, Hsi-wang (楚詞. 九章, 惜往日), By Ch'u Yuan (屈原), 343-290 B. C.
Erh-ya, Kuo-tsu (爾雅, 郭注), By Kou Po (郭璞), 276-324 A. D.
Erh-ya, Shih-yens, Shih-shui (爾雅, 釋言, 釋水), Author unknown, about early Chou Dynasty (1122-221 B. C.).
Erh-ya, Sun-tsu (爾雅, 孫註), By Sun Yen (孫炎), 3rd cent. A. D.
Fan-shê-tsai-feng-tu-kao (番社采風圖考), By Liu-shih-chi (六十七), 18th cent. A. D.
Fang-yen (方言), By Yang Hsuing (揚雄), 53 B. C.-18 A. D.
Hou-han-shu (後漢書), By Fan Yeh (范曄), 398-445 A. D.
Huai-nan-tse (淮南子), By Liu An (劉安), 2nd cent. B. C.
I-ch'ien-ching-yen-i (一切經音義), By Hwei-lin (慧琳), 750-832 A. D.
Kuan-tse (管子), By Kuan Chung (管仲), 7th cent. B. C.
Kuo-yu, Ch'i-yu, Wei-tsu (國語. 齊語, 韋註), By Wei Chau (韋昭), 3rd cent. A. D.
Kwang-ya, Shih-shui (廣雅, 釋水), By Chang I (張揖), 5th cent. A. D.
Li-chi, Wang-chih (禮記, 王制), Author unknown, about early Chou Dynasty.
Lun-yu, Kong-yeh Ch'ang (論語, 公冶長), Author unknown, about 5th cent. B. C.
Meng-tse, Liang-hui-wang (孟子, 梁惠王篇), By Meng Ko (孟軻), 4th cent. B. C.
Shih-chi (史記), By Ssu-ma Chien (司馬遷), 145-86 B. C.
Shih-ching, Han-kwang (詩經, 漢廣), Author unknown, late Yin, or early Chou Dynasty.
Shih-ching, Mao-ch'uan (詩經, 毛傳), By Mao Ch'ang (毛萇), 1st cent. B. C.
Shih-i-chi, Shao-hau-pian (拾遺記, 少昊篇), By Wang Chia (王嘉), 4th cent. A. D.
Shih-pen (世本), By Liu Hsiang (劉向), 77-6 B. C.
Shou-wen-chien-tse (說文解字), By Hsu Shen (許愼), 1st cent. A. D.
Shü-ching, Yü-kong (書經, 禹貢), Author unknown, about early Chou Dynasty.
Sung-shih, Liu-ch'iu-ch'uan (宋史, 琉球傳), By Tuo-tuo (脫脫) 1313-1354 A. D.
Tso-chuan (左傳), By Tso-ch'iu Ming (左丘明), 4th cent. B. C.
Tang-yün (唐韻), Sun Mien (孫愐), late T'ang Dynasty.
Tung-po-shih (東坡詩), By Su Tung-po (蘇東坡), 1035-1101 A. D.
Wen-hsüan (文選), Hsieh Tong (蕭統), 6th cent. A. D.
Wu-yüan (物原), By Lo Hsin (羅欣), 10th cent. A. D.
Yuan-chien-jui-han (淵鑑類函), By Chang Ying (張英), 17th cent. A. D.
Yueh-chueh-shu (越絕書), By Yuan K'ang (袁康), 1st cent. B. C.

B. Foreign Literatures

BEECHEY, F. W.
1831. Narrativa of a Voyage to the Pacific and Beering's Strait....in the Yəars 1825-28, Part 1. Lodon.

BENZONI, G.
1565. Historie of the New World (Tranl. W. H. Smyth,-Hakluyt Soc., No. 21, London, 1875.

CLAEYS, J. Y.
1942. L'Annamite et la mer. Institut Indochinois pour l'Etude de l'Homme, Bull. et Travaux, Vol. 5, pp. 17-28.

COBO, B.
1653 (1890-95). Historia del Nuevo Mundo, Ed, Marcos Jiménez de la Espada. Sevilla 1890-95.

ENOCK, C. R.
1912. The Secret of the Pacific. A. Discussion of the Origin of the Early Civilization of America, the Toltecs, Aztecs, Mayas, Incas, and their Predecessors, and of the Possibilities of Asiatic Influence Thereon. London.

FRIEDERICI, G.
1928. Die vorkolumbischen Verbindungen der Südsee-Völker mit Amerika. Mitteilungen aus den deutschen Schutze bieten, Vol. 36, pp. 27-51.

HADDON, A. C. & HORNELL, J.
1938. Canoes of Oceania, Vol. III, B. P. Bishop Mus. Spec. Publ. No. 29, Honolulu.

HATA, S. N.,
1803. A Voyage to the Island of Chi-po-ran, Formosa.

HEINE-GELDERN, R. v.
1950. Cultural Connection Between Asia and pre-Columbian America. Anthropos, Vol. 45, Nos. 1-3.
1952. Some Problems of Migration in the Pacific. Wiener Beiträge zur Kulturgeschichte und Linguistik, BD IX.
1954. Die Asiatische Herkunft der Südamerikanischen Metalltechnik, Paideuma, Band. V. Heft 7-8.

HEYERDAHL, T.
1952. American Indians in the Pacific. Londoh.
1955. The Balsa Raft in Aboriginal Navigation off Peru and Ecuador, Southwestern Jou. Anthro, Vol. 11, No. 3, Albuquerque.

HORNELL, J.
1931. South American Balsas; The Problem of their Origin. Mariner's Mirror Vol. LII, No. 3. Wellington, N. Z.
1946. Water Transport, Origins & Early Evolutions, Cambridge.

JUAN, G. & ULLOA, A. DE
1748 (1760). A Voyage to South America. London.

KOKUBU, N. & Other,
1947. Notes on the Bamboo-raft in Southern Taiwan, The Japanese Journal of Ethnology, Vol. 12, No. 4, Tokyo.

LOTHROP, S. K.
1932. Aboriginal Navigation off the West Coast of South America. Roy. Anthrop. Inst., Vol. LXII. London.

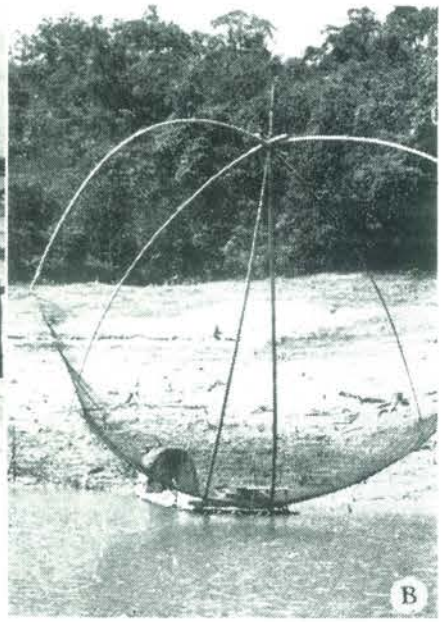
MEANS, P. A.
1942. Pre-Spanish Navigation off the Andean Coast. Amer. Neptune, Vol. II, No, 2.

MERILL, E. D.
1950. Observation on Cultivated Plants with Reference to Certain American Problems. Ceiba, Vol. 1, Honduras.

MÉTRAUX, A.
1940. Ethnology of Easter Island. B. P. Bishop Mus. Bull. 160. Honolulu.

MURPHY, R. C.
1941. The earliest Spanish advances southward from Panama along the West Coast of South America. Hispanic Amer. Hist. Rev., Vol. XXI. Durham, N. Carolina.
NISHIMURA, S.
1922. A Study of the Ancient Ships of Japan, Tokyo.
PARIS F. E.
1841-43. Essai sur la construction navale des peuples Extra-Européens., Paris.,
PRESCOTT, W. H.
1847. History of the Conquest of Peru, Londen.
SHAND, A.
1871. The canoes of the Morioris. Trans. Proc. N. Zeal. Inst., Vol. IV.
1923. The Morioris people of Chatham Islands, Polynes. Soc. Bulletin No. 2, New Plymouth, N. Z.
SKINNER, H. D.
1923. The Morioris of Chatham Islands, B. P. Bishop Mus. Mem., Vol, IX, No. 1. Honolulu.
SMITH, M. W.
1953. Asia and North America Trans-Pacific Contacts. American Antiquity, Vol. 43, No. 3.
SMYTH, W. H.
1857. Notes and comments to Benzoni's Historia of the New World. Hakluyt Soc., No. 21. London.
SPILBERGEN, J. v.
1619. Speculum Orientalis Occidentalis que Indiae Navigatio, Leiden.
ZUNICA, J. MANTINFZ DE
1803. Historia de las Islas Philipinas, Manila.

A



B

C

D

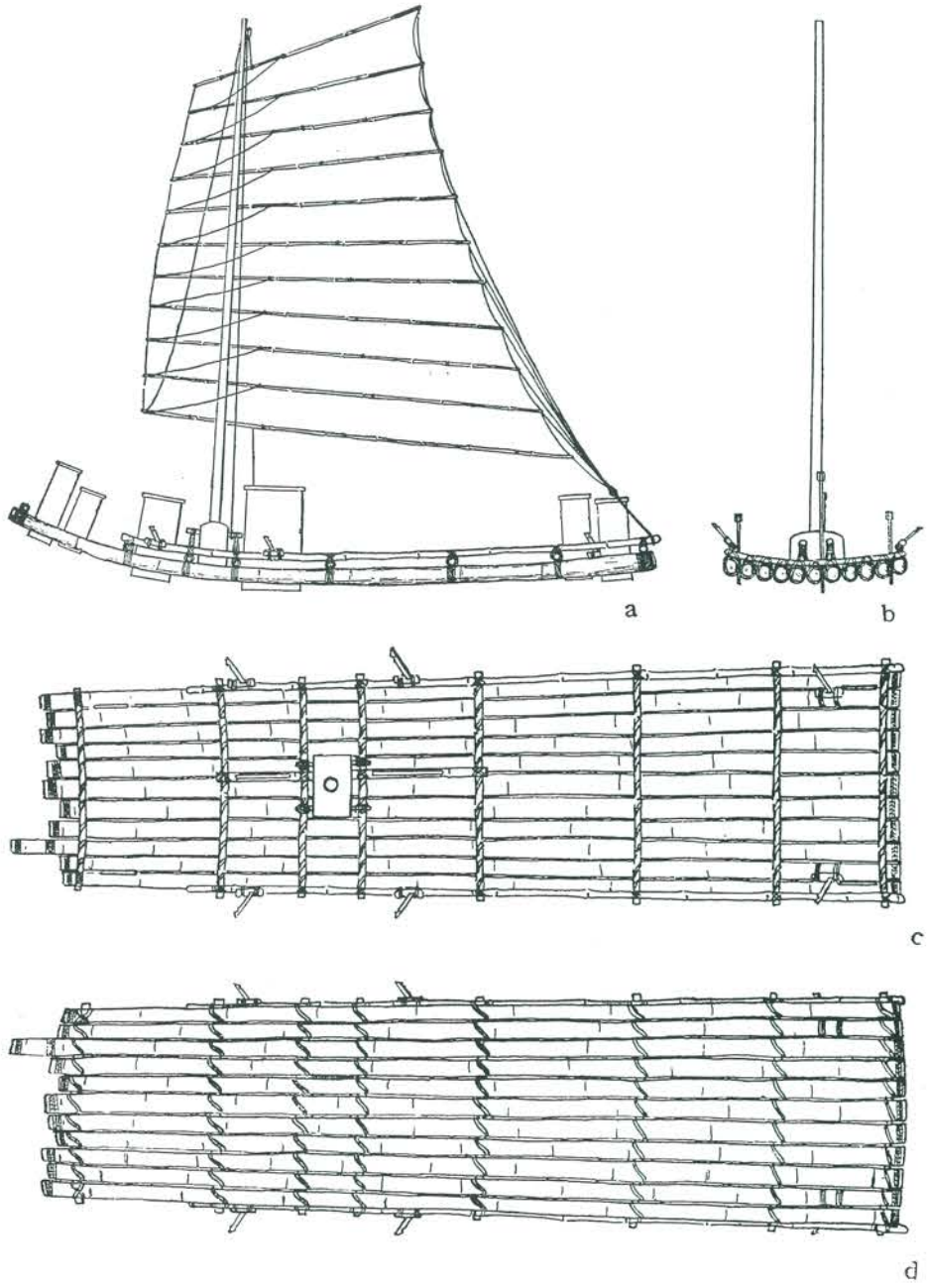
A 河川竹筏
River-raft

B 湖泊竹筏
Lake-raft

C 海上帆筏
Seagoing raft with sail.

D 海上划筏
Seagoing raft propelled by paddles.

圖版式
Plate II



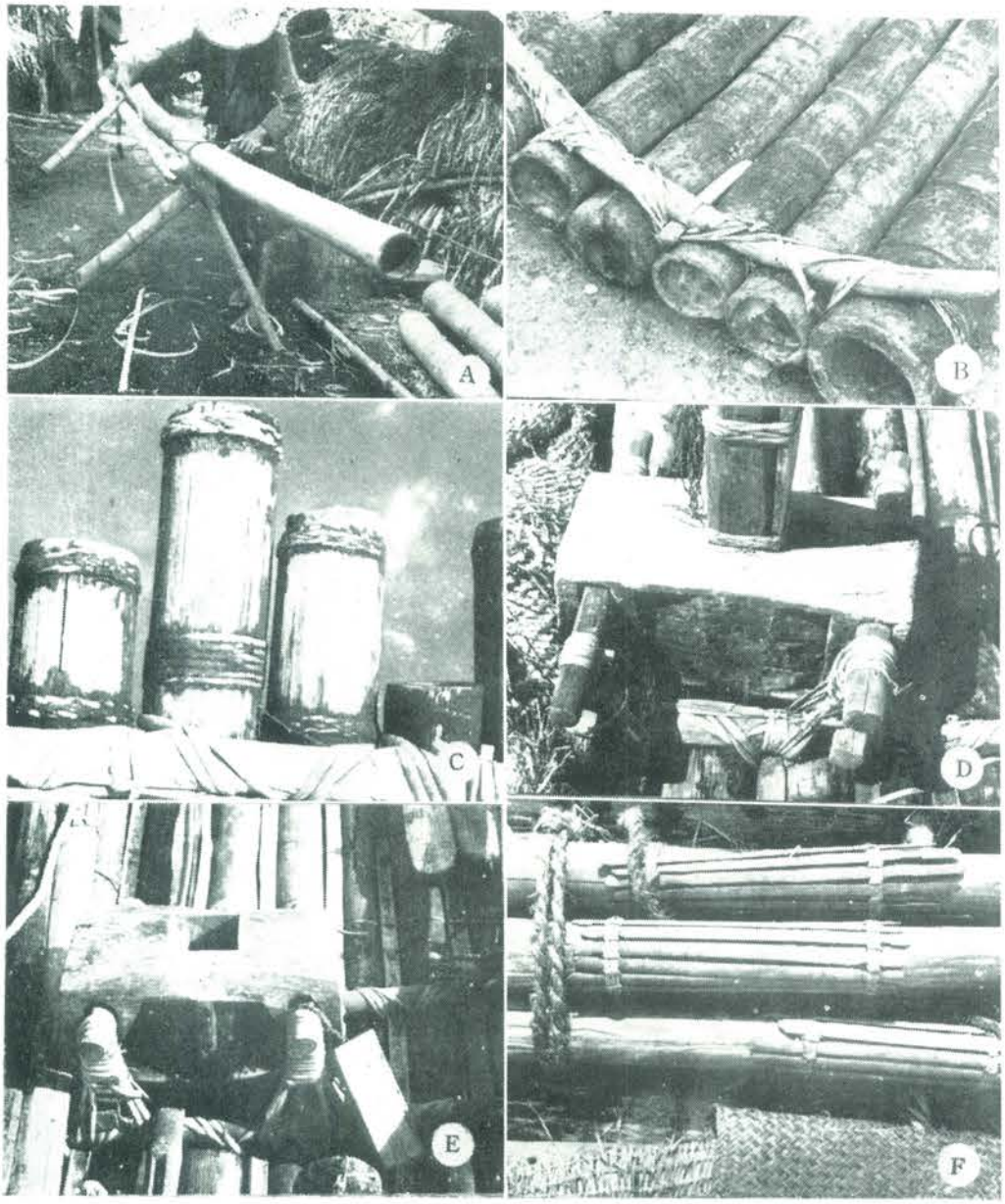
茄萣帆筏

a. 側視全貌　b. 前視　c. 俯視筏面　d. 筏底

全長7.4公尺，筏頭寬1.6公尺，筏尾寬2.0公尺，桅高5.4公尺，帆長4.5公尺，帆寬3.4公尺，中插板0.8×0.7公尺，前後插板0.5×0.4公尺，由蕨竹十根，刺竹一根組成。

Seagoing raft of Chia-ting, consisting of 11 bamboo poles.

a. Side view.　b. Front view.　c. Top view.　d. Bottom of the raft.



A 刮去竹青
Scraping off the outer layer of the bamboo.

B 筏尾取齊
The poles forming the stern are cut into equal length.

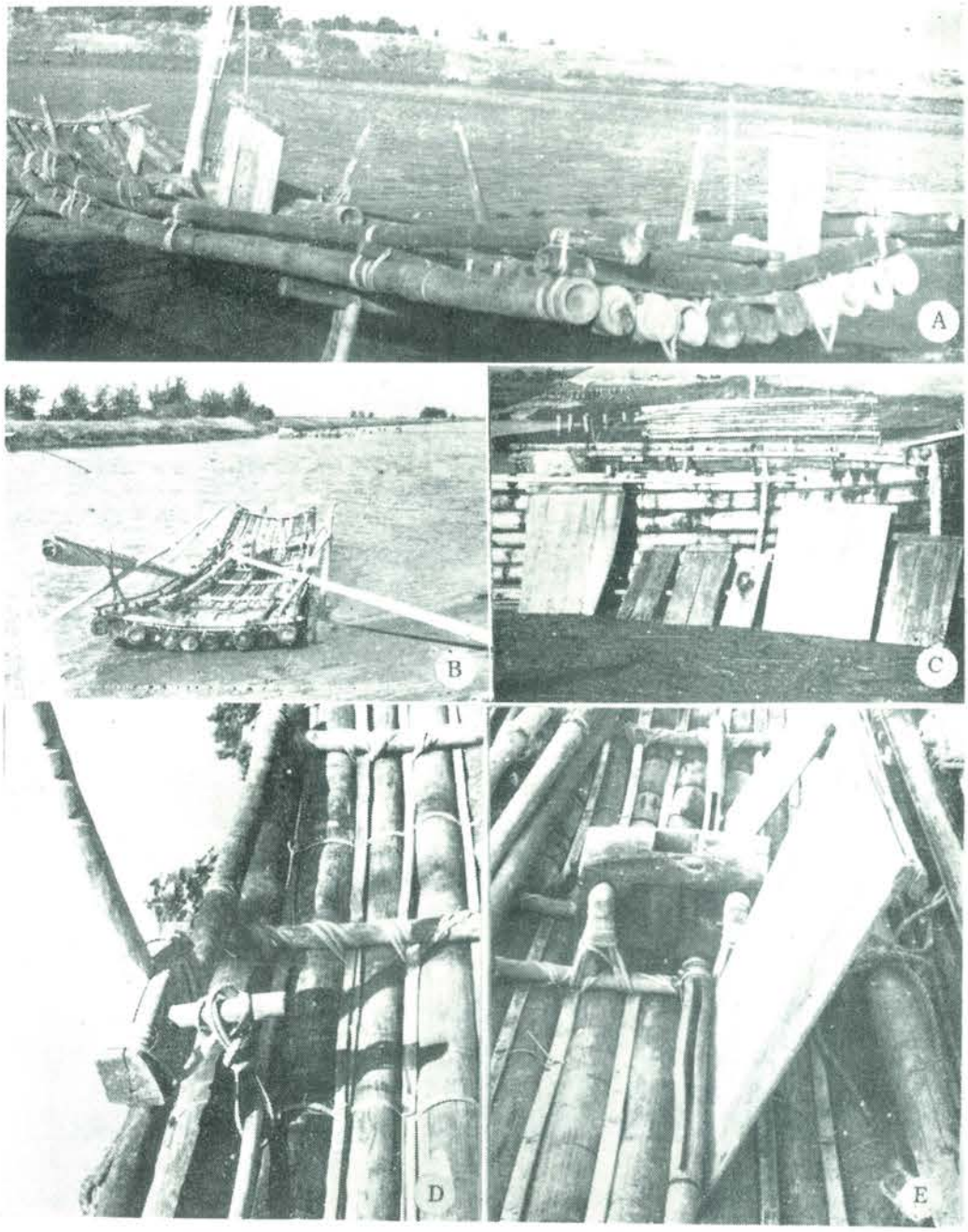
C 筏頭參差
At the bow the ends of the poles are left protruding.

D 桅桿座
Socket with mast inserted.

E 桅座方洞
The hole in the socket for the mast.

F 護槳
The paddles are protected by split bamboo.

圖版肆
Plate IV



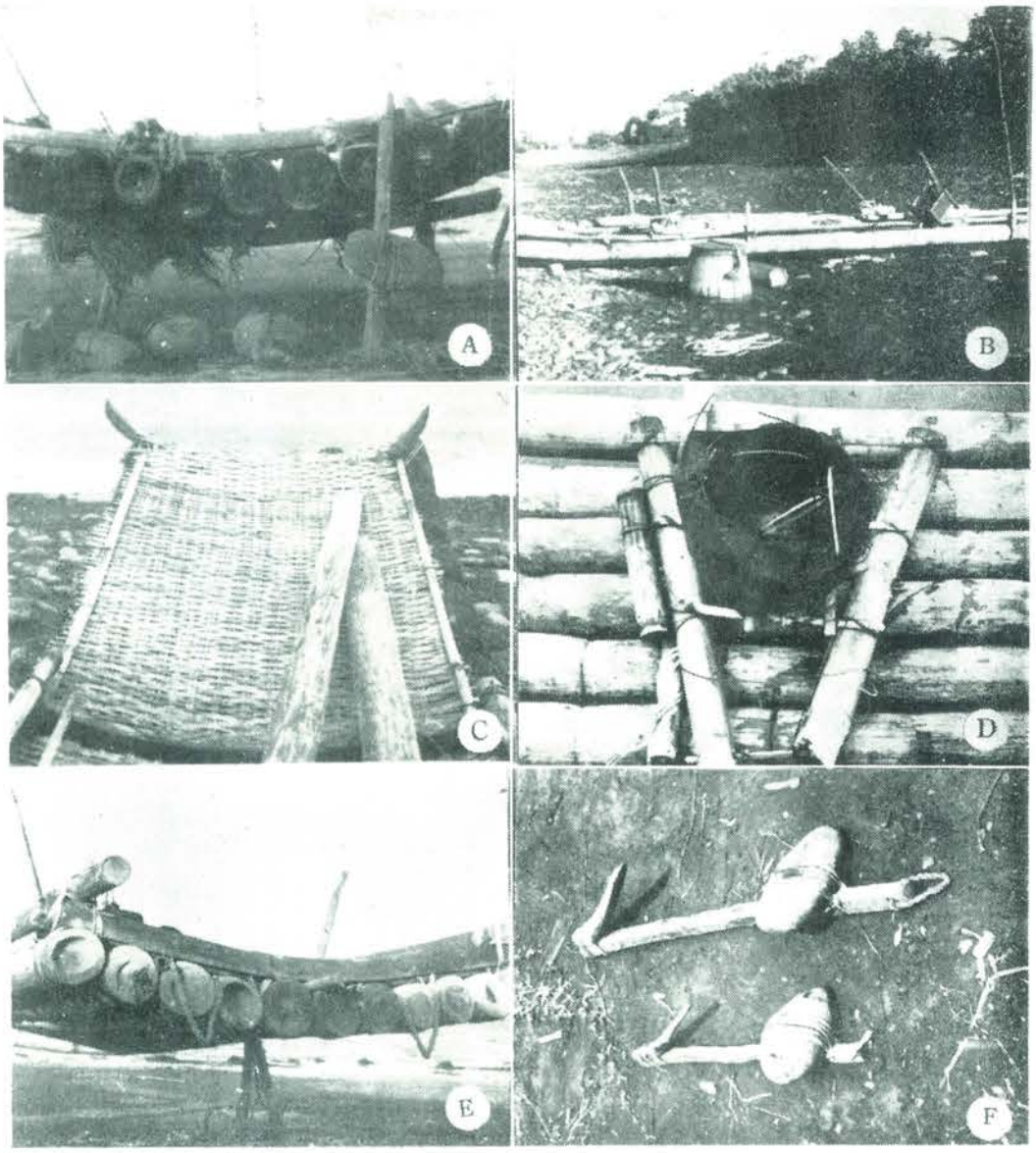
A 插板位置
Position of Center-board at bow and stern

B 划槳及舵槳
Rudder and paddles in position.

C 大小插板
Center-boards of different sizes.

D 槳座
Post for fastening the paddle.

E 插板槽
Slit for insertion of the center-board.



A 沉網石及石錨
Net sinkers and anchors made of stone.

B 水盆
Wooden pail for drinking water.

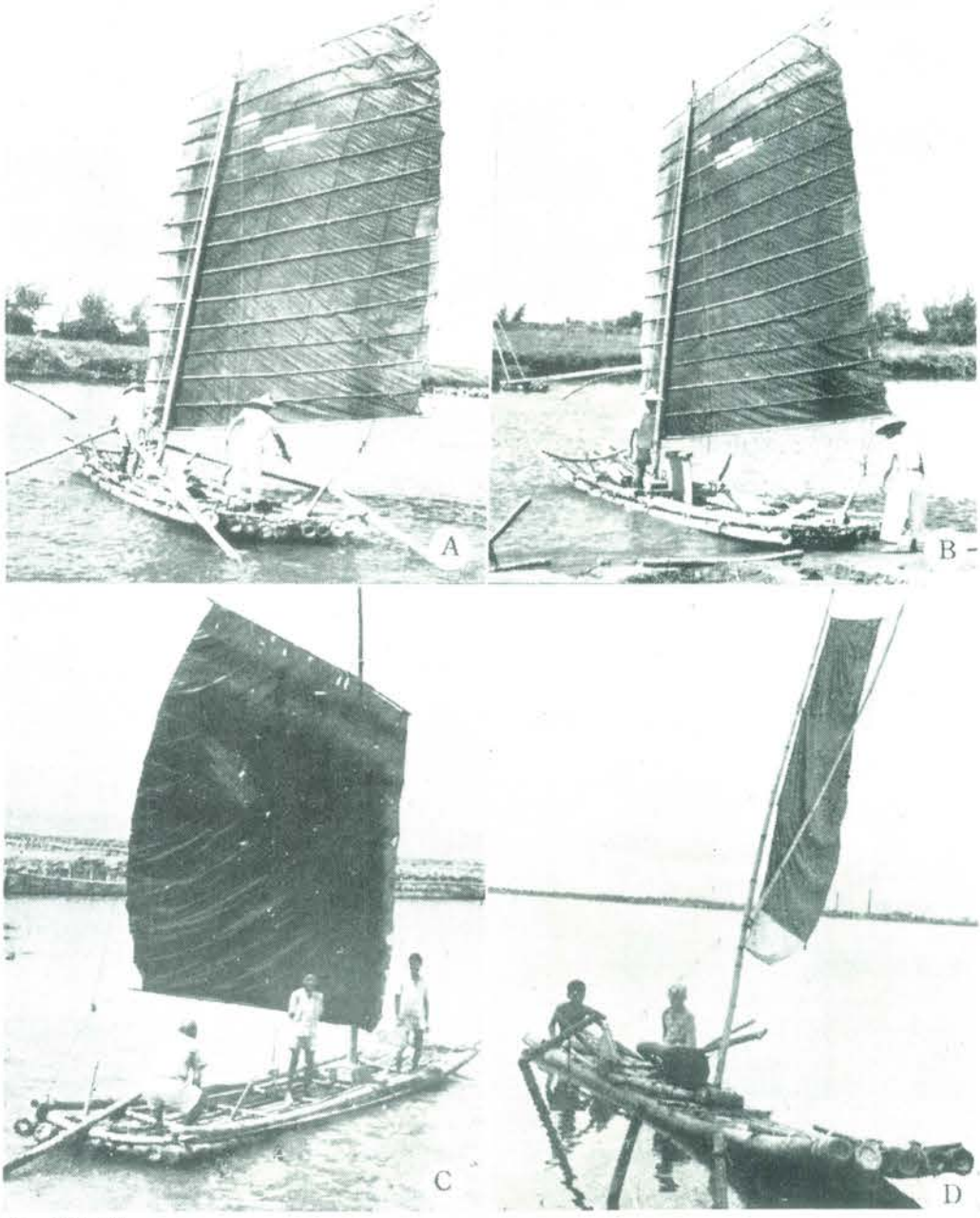
C 墊網席
Mat-pad for fishing nets.

D 海燈
Oil lamp in gauze wrapping. The lamp floats by means of the bamboo to which it attached.

E 繫槳繩圈
Loops for the rudders.

F 石錨
Stone anchors.

圖版陸
Plate VI

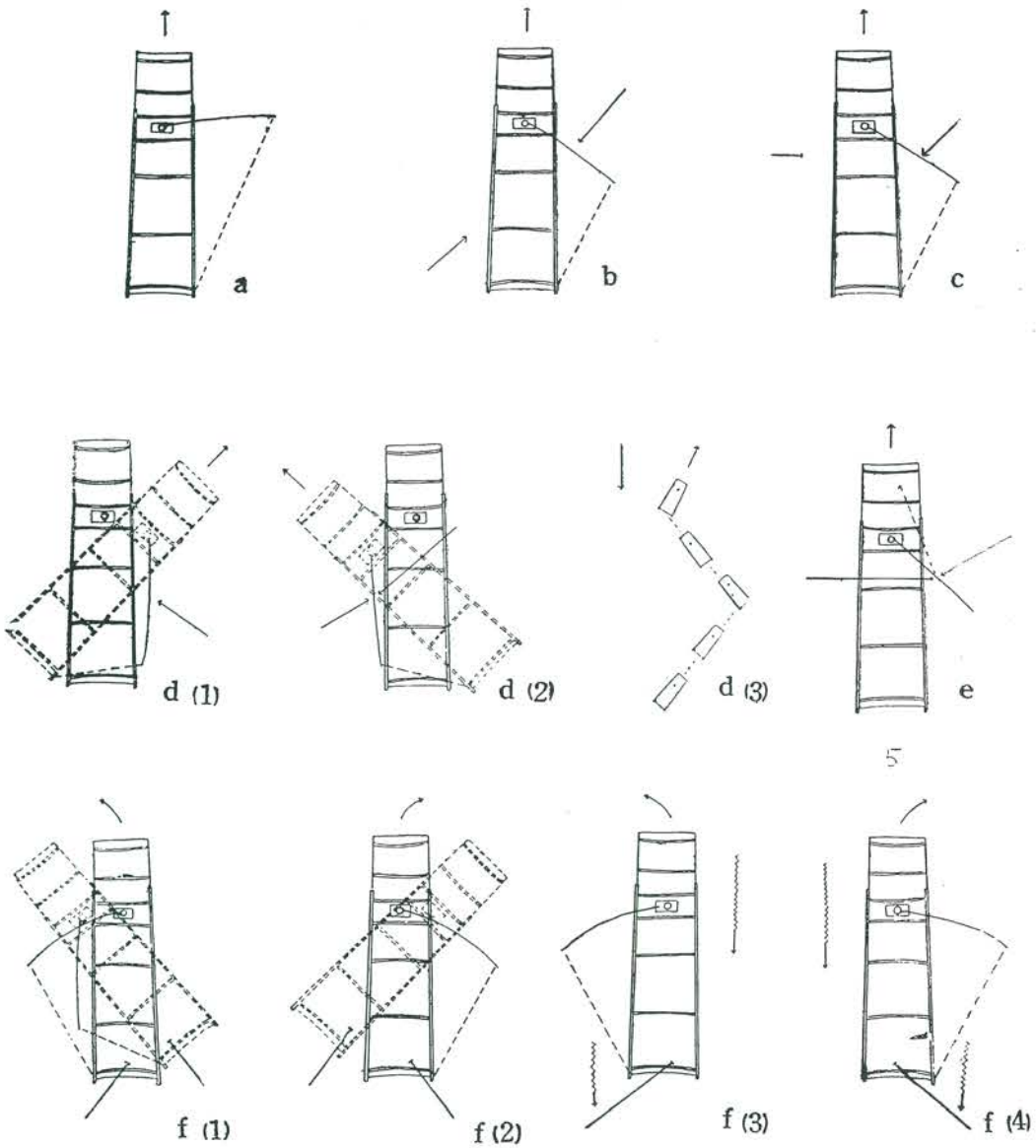


A 左右槳舵
Position of rudders.

B 帆及緯桿
Sail with horizontal bamboo poles.

C 中央槳舵
Rudder in conteral position.

D 紅毛港小帆筏
The Hung Mao Kang raft.



a. 順風之筏位　　b. 左右後側45°風向時之筏位　　c. 左右側90°風向時之筏位

d. (1)(2)逆風時之筏位及航向，(3)逆風時航行之路線

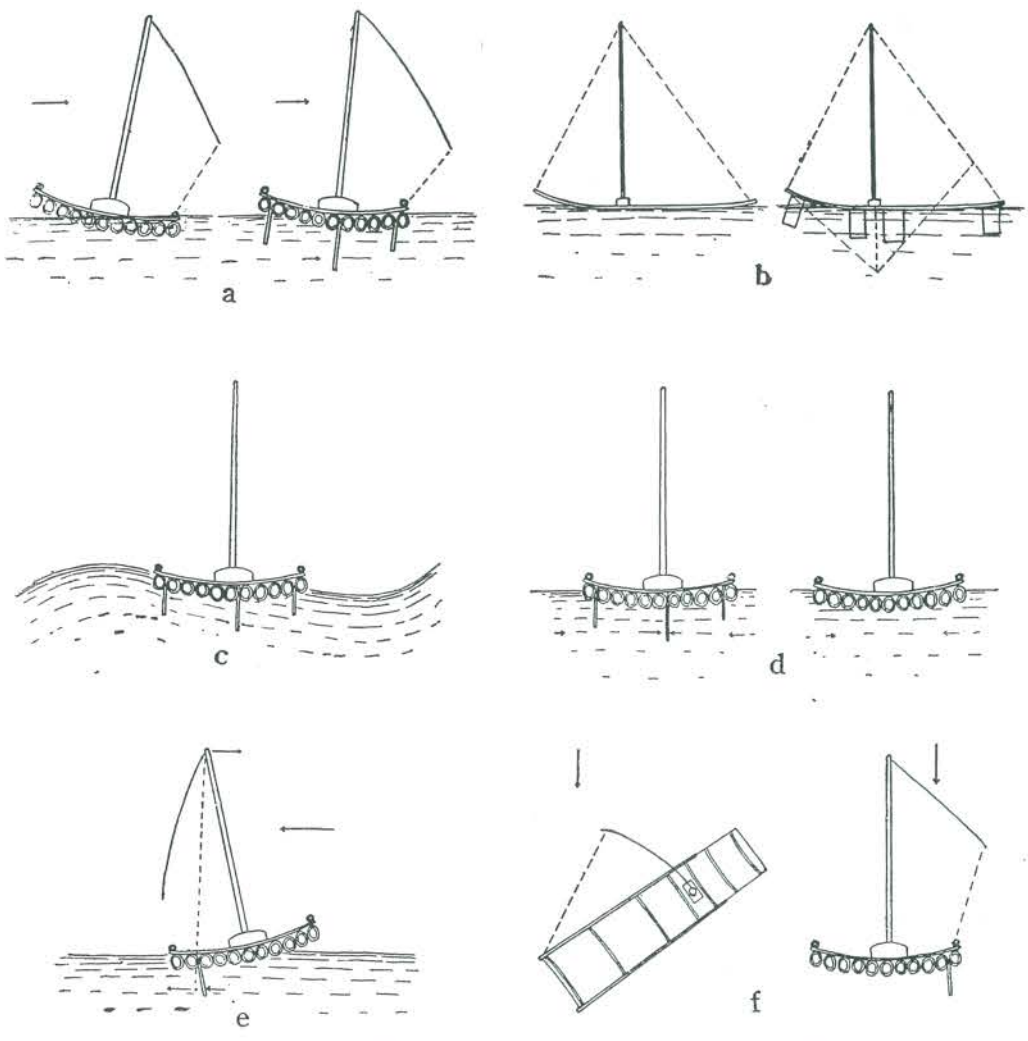
e. 風力及帆之反作用力構成之合力卽航向

f. (1)左轉，(2)右轉，(3)左轉時水作用於左槳舵，(4)右轉時水作用於右槳舵

a.-e. Course of the raft seen from above. Arrows indicate the direction of the wind, according to which the sail is adjusted.

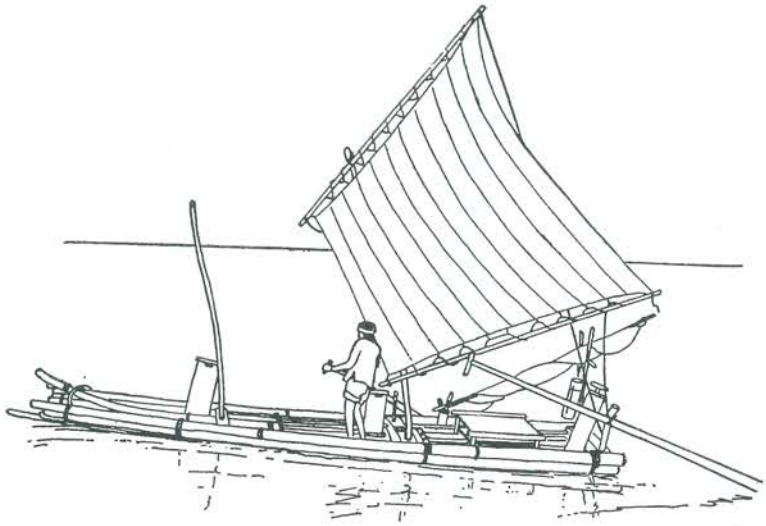
f. Adjustement of the rudder according to position of the sail.

圖版捌
Plate VIII

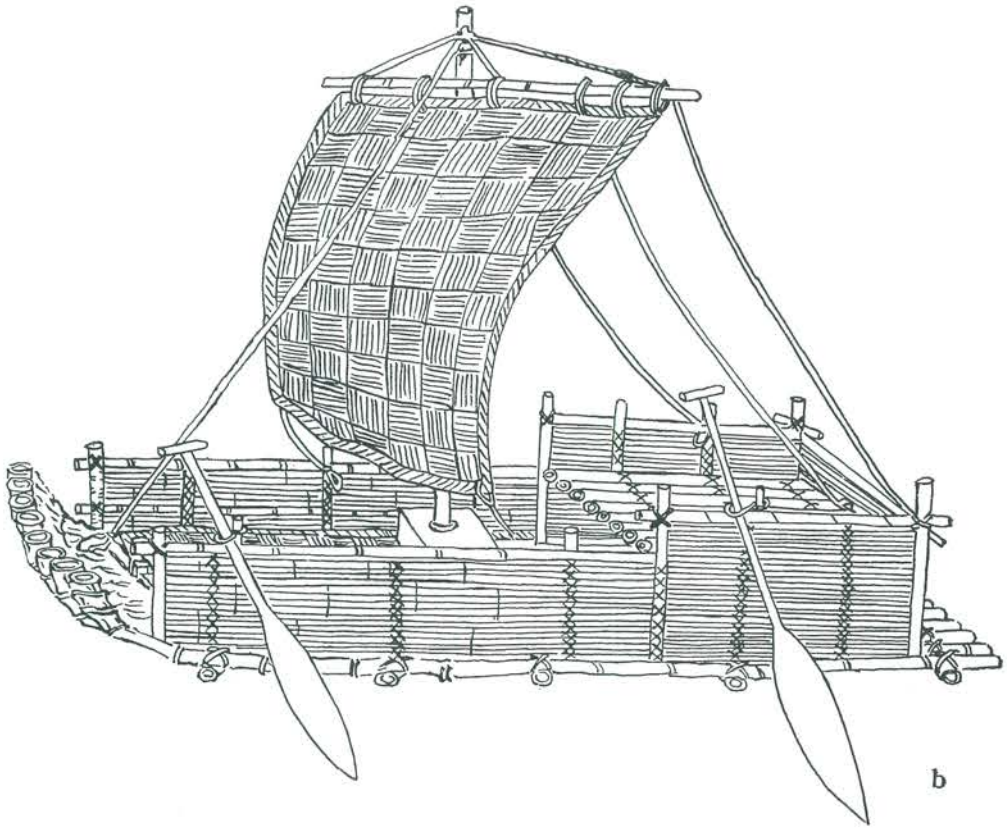


a. 加插板後減少筏身傾斜度
b. 加插板後減少筏身漂濕
c. 後插板水中反作用力減少筏身傾斜
d. 加插板後重心降低平衡筏身
e. 加插板後減少海流漂移航向
f. 前插板插於筏身傾斜入水之一側

a. By lowering the center-boards the raft keeps its balance.
b. Shifting of the center of gravity by the use of the center-board.
c.-d. Center-boards counteract the undulating movement of the water.
e.-f. Boards lowered at stern or bow counteract the pressure of the wind upon the sail.



a



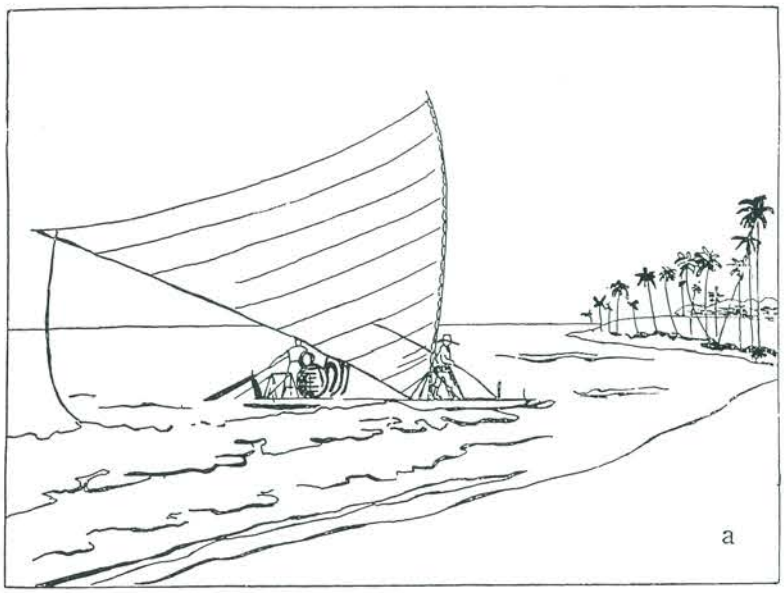
b

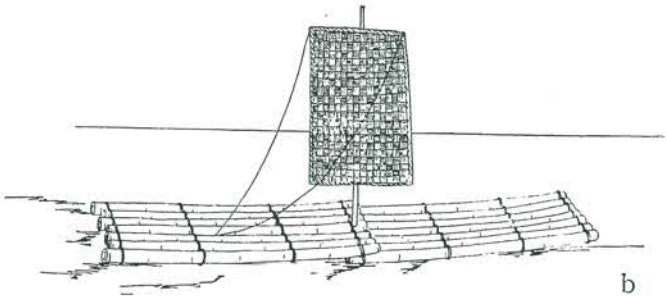
a. Claeys 氏繪 安南 Thanh-hoa 省木筏　　b. 1803年日人秦貞廉所記臺東秀姑巒帆筏

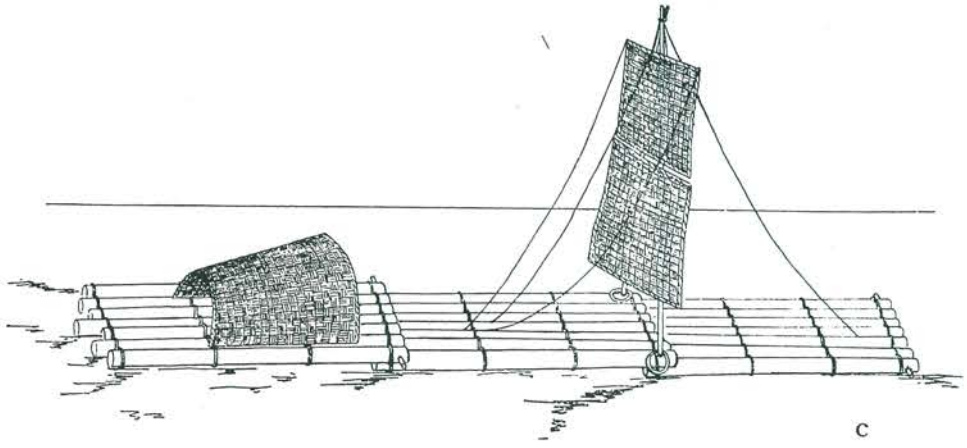
a. Wooden raft from North Annam. (From Claeys, 1942.)

b. Japanese sketch of raft from Tai-tung, Formosa. 1803.

圖版拾
Plate X

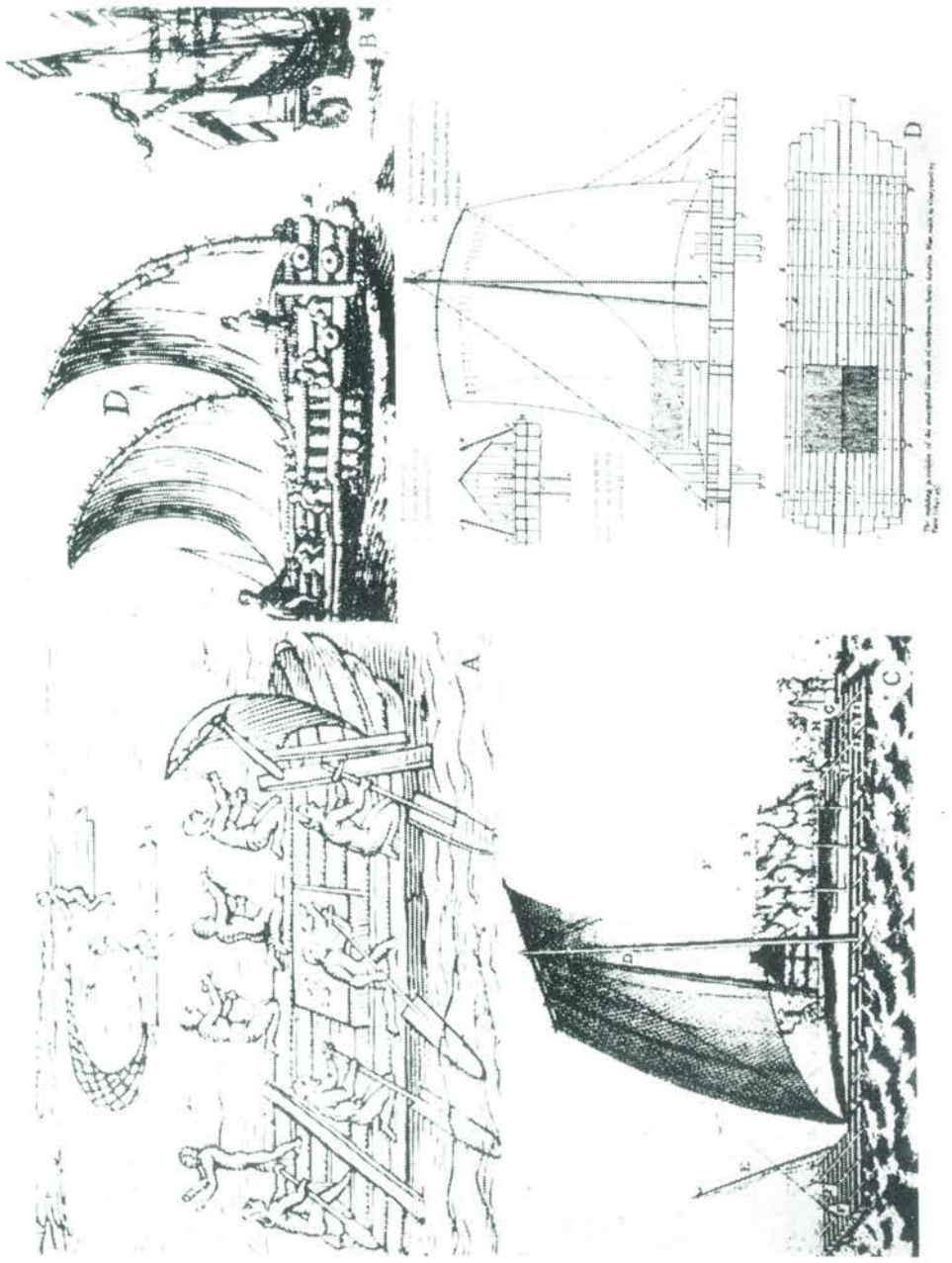






a. 南美東部巴西三角帆筏　　b. 大陸江南單桅竹筏　　c. 大陸江南剪桅木筏

a. Triangular sail with raft from Brazil. (From Heyerdahl, 1952.)
b. Raft on the lower Yangtse river with simple mast.
c. The same with sheer mast.



A 意大利人 Benzoni 所繪南美桅圖
Peruvian balsa rafts. (From Benzoni, 1565.)

B Spilbergen 氏在秘魯 Payta 港遇到的帆桅
Drawing of a Peruvian raft. (From Spilbergen, 1619)

C 西班牙軍官 Juan 和 de Ulloa 對 balsa 的構造所繪的圖
Drawing of a raft Guayaquil, (From Juan and Ulloa, 1718)

D Paris 氏在 Guayaguil 港實地調查所繪桅圖
Plan for construction of the raft of Guayaquil. (From Paris, 1841)

肆、中國古代與印度太平兩洋的戈船

一

作者於民國四十五年春，在本刊第一期發表臺灣的航海帆筏及其起源一文，在前文的引言中有云：

> 我個人覺得凡我研究亞美兩洲文化關係的同道，應先有多人來研究古代亞洲沿岸的航海問題，如能證明在紀元之前，亞洲人確已利用桴栰、戈船、方舟與樓船在海洋上航行，則整個太平洋成爲亞、美、海洋三洲處處可通的大路，如此或可使現持反對意見者，不得不承認我們的理論。因此作者根據中國資料，擬寫臺灣的航海帆筏及其起源和紀元前中國戈船、方舟與樓船的航海考兩文，本篇是前者，意在拋磚引玉，希望海內外之人類學專家，有多人來從事於此項研究(1)。

一瞬已十二年過去了！在這十多年中，雖引起了不少對於太平洋上航行問題的討論，但對亞洲中國沿海航行的研究，祇有包遵彭氏的漢代樓船考一文而已。但包氏之文是歷史的研究，很少取材民族學的資料，不能解釋太平和印度兩洋數不清的島嶼民族的分佈。我們知道在南半球西起非洲東岸，經印度與太平兩洋，東抵南美西岸，幾爲同一南島語系(Austronesian)民族所散居。這南島語系民族原先住在華東河川下游及濱海沿岸地區。在西元前三十三世紀伏羲氏又稱太昊 (Taaroa) 時代發明了桴栰，開始向海洋移殖，到了黃帝時代(西元前2697年)又發明舟楫，殷商時代(1783-1135 B. C.)雙邊架艇已成爲主要水運工具，我們在甲骨文字中找到很多的證據。周代始有方舟的記載，春秋戰國越人已用樓船，秦漢時樓船成爲主要航海工具矣。

本文原來擬題中國古代戈船、方舟、樓船考，後因篇幅過長，插圖和圖版又多，且有關戈船的材料不少，故先成中國古代與印度太平兩洋的戈船考，至於方舟與樓船考將另文發表。寫作本文時，承宋龍飛、鄭格兩先生之助甚多，特此致謝。

---

(1) 凌純聲，1956, p. 2.

二

在民國五十年作者又曾在太平洋上的中國遠古文化[1]一文說過，戈船卽印度洋和太平洋上的邊架艇（Outrigger Canoe）：

> 戈船：越絕書卷八云：'勾踐伐吳霸關東，從瑯琊起觀臺，臺周七里，以望東海，死士八千人，戈船三百艘'。又史記南越傳：'戈船下厲將軍'。作者懷疑古代的戈船卽今太平洋上的邊架艇（Outrigger Canoe），就是一隻獨木舟一邊綁紮一木架，卽成單架艇，兩邊加木架爲雙架艇。任何小船加上單架或雙架，在海上航行雖遇風浪，不易傾覆。架的形式似戈，或是戈船名稱的由來。又邊架艇或是古代的艇，淮南子俶眞訓：'越舲蜀艇'。高誘註：'蜀艇一板之舟'。廣韻：艇訓木片，與一板義合，疑艇卽梃之俗字。舟有一板或木片，由文義推測，很可能是邊架艇。這種邊架艇至今爲太平洋和印度洋上最多航海工具，他較之方舟尤便捷而輕快。

我在1961年提出了上面的假設，而今尙未有人作進一步的求證。現在由民族學，古文字學，歷史學及民俗學等各方面來研究。

三

先從民族學上來求證，臺灣至今在日月潭上猶存獨木舟，見(圖版壹 A.B.C.D)，但經日人五十年的研究，伊能嘉矩和鹿野忠雄都說臺灣無邊架艇，他們說：

> 獨木舟——在臺灣中部的日月潭，邵族至今仍使用獨木舟，以鋤（Spade）形槳划之。此外，在東海岸阿美族所分布的區域，偶而得見古時的獨木舟；伊能嘉矩氏謂：在臺灣北部淡水地方的峰仔峙社（凱達加蘭族）也有獨木舟，且使用鋤形的槳。這些獨木舟，似爲曾行用於臺灣的湖沼或海岸者的代表形式（不過噶瑪蘭族與阿美族，在古時還使用過另一種船）；其特徵爲均以樟樹製成，無邊架（Outrigger）等等；我們可推想，臺灣者之與南方島嶼者的關係，比其與大陸方面者爲密切[2]。

（1） 凌純聲，1961, p. 369.

（2） 鹿野忠雄，1952, p. 238.

伊能，鹿野兩氏謂臺灣有獨木舟而無邊架，是沒有詳考文獻的錯誤，臺灣在十八世紀的紀載，是有邊架艇的。在乾隆元年（1736年）刋行的黃叔璥臺海使槎錄卷六番俗六考北路諸羅番十附載有云：

> 康熙壬寅，五月十六至十八三日大風，漳州把總朱文炳帶卒更戍船，在鹿耳門外爲風飄至南路山後；歷三晝夜至蛤仔難（噶瑪蘭），船破登岸。番疑爲寇，將殺之，社有何姓者，素與番交易，力爲諭止。晚宿番社，番食以麪，朱以片糜餉番，輒避匿不食。借用木罌瓦釜，番惡其汚也，洗滌數四。所食者生蟹、烏魚，略加以鹽；活嚼生吞，相對驩甚。文炳臨行，犒以銀錢，不受；與以藍布舊衣，欣喜過望，兼具蟒甲以送。蟒甲，獨木挖空，兩邊翼以木板，用藤縛之；無油灰可艌，水易流入，番以杓不時挹之。行一日至山朝（三貂嶺），次日至大鷄籠（基隆），又一日至金包裏（野柳）。

上錄中所謂：'蟒甲，獨木挖空，兩邊翼以木板，用藤縛之'。這明明是邊架艇，而且是雙架的。它能沿海岸航行，自宜蘭行一日至三貂嶺，次日至基隆，又一日至野柳。臺灣之有邊架艇此最初見於文獻記載者。至道光十二年（壬辰1832年）陳淑均纂修的噶瑪蘭廳志卷一在番俗六考所載朱文炳事又附註有云：

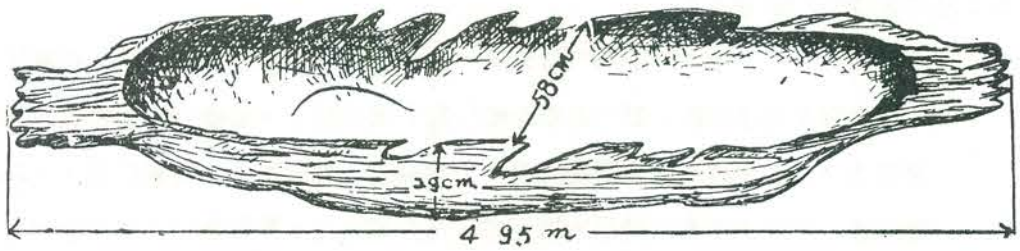
> 按嘉慶年末，開蘭未久，相傳有艋舺街香販許三元者，運貨入蘭，將至港，驟遇大風三晝夜，由山後直吹至南路，入鹿耳門登陸而回。此與番俗六考所載朱文炳事相反而適相侔。附錄之，以見山後一帶之相通。

又噶瑪蘭廳志卷五下：

> 番渡水小舟名曰蟒甲，卽艋舺也，一作蟒葛。其制以獨木挖空，兩邊翼以木版，用藤繫之。又無油灰可艌，水易溢入，彼則以杓時時挹之。恰受兩三人而已（參番俗六考）。

道光十二年（1832）距康熙壬寅（1722）後一百十年，宜蘭的土著仍是"番渡水小舟曰蟒甲，……恰受兩三人而已"。一個多世紀後，臺灣的邊架艇猶存。臺灣現存最古的獨木舟爲花蓮南勢阿美族的古舟，作者在民國四十二年(1953)偕同事和學生八人至此調查時，見里漏社有一很古已腐朽的獨木舟，當時僅攝影，無暇作詳細調查。今年春天趁王錫山先生在花蓮工作之便，請其作一簡單調查。據云此船約在七百八十年前自

東海岸南方來的，共有四隻，現祇剩一隻，船的木料係樟木，年久已朽，如插圖一所示，船的全貌如圖版貳A所示，B爲船的側長；圖版叁A爲由船的前面看，B船由下



插圖一　里漏社之獨木舟

面看。此船最使人引起注意的，舟之兩邊綁有兩根竹竿，王君說明是後來以防舟木腐朽而加上去的。至1875年 Taintor 氏著臺灣北部土著族 (The Aborigines of Northern Formosa)(1)，卽翻譯噹瑪蘭廳志的艋舺(*mangka*)，臺灣之有邊架艇，始聞於世。Ferrell 氏並告我，*mangka* 一語在 Kuvalan 或 Kariwan 語爲 *vánga*。且噶瑪蘭廳志所誌 *mangka*，據 Friederici 氏所謂 *wangka* 一詞，普通和廣泛的分佈在馬來——玻利尼西亞的區域，自印度尼西亞、菲律賓、米克羅尼西亞、美拉尼西亞、玻利尼西亞，在巴布語中常是一借詞(2)。Ferrell 氏謂 *mangka* 在 Kuvalan 或 Kariwan 語中作 *vánga*。作者推知中國古代甲骨文中的方字可能與 *vánga* 一語有關。以上證明由民族學上，在中國古代有邊架艇的存在。

四

高本漢氏有言："古文字學常對民族學有很大的價值，尤其是特出的中國文字"(3)。甲骨文字爲中國現存最古的文字，其中關於水運工具者有三字，許氏說文：俞，空中木爲舟也。从𠙵从舟，从巛，巛水也，舟，船也，古者共鼓貨狄刳木爲舟，剡木爲楫，以濟不通，象形。凡舟之屬皆从舟。方，併船也。象兩舟省總頭形。凡方之屬皆从方。𣏌方或从水。又段注說文云：

(1) Taintor, 1875, p. 73.
(2) Friederici, 1928, pp. 33-35.
(3) Karlgren, 1930, p. 2.

方，併船也。周南：不可方思。邶風：方之舟之。釋言及毛傳皆曰方，泭也。今爾雅改方爲舫，非其義矣。併船者並兩船爲一，釋水曰：大夫方舟，謂併兩船也。泭者，編木以爲渡，與併船異事，何以毛公釋方，不曰併船而曰泭也。曰併船編木，其用略同，故俱得名方。方舟爲大夫之禮，詩所言不必大夫，則釋以泭可矣。若許說字則見下，从舟省而上有並頭之象，故知併船爲本義，編木爲引伸之義。……象兩舟省總頭形，兩當作㒳，下象兩舟併爲一，上象兩船頭，總於一處也。府良切。十部。通俗文，連舟曰舫，與許說字不同，蓋方正字，俗作舫。凡方之屬皆从方，㚔方或从水。

上錄中有'釋言及毛傳皆曰方，泭也'，蓋'方'卽'泭'，作者在臺灣的航海帆筏及其起源一文中，曾研究過'泭'字有云：

泭，爾雅釋水：'庶人乘泭'。郭注，'併木以渡'。國語齊語：'方舟設泭'。韋注：'編木曰泭'。楚詞九章惜往日：'乘汜泭以下流矣'。王逸注云：'編竹木曰泭，楚人曰泭，秦人曰橃也'(1)。

附 表 一

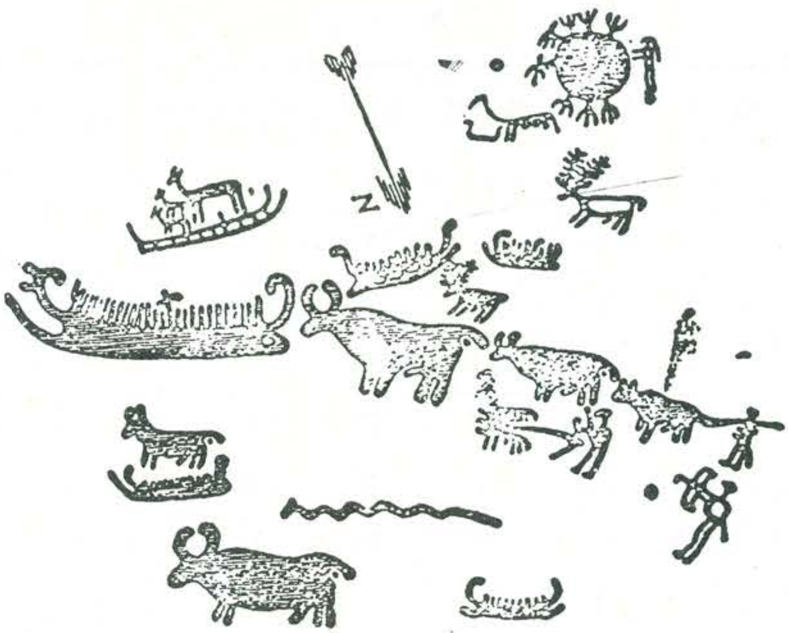
	類 形	第一頁	第二頁	第三頁	第四頁	合 計	總 計
1	𠂤	4	8	4	7	23	二百九十二個字
2	𠂤	1		1	1	3	
3	𠂤	7			1	8	
4	𠂤	21	44	36	6	107	
5	𠂤	20	22	17	7	66	
6	𠂤	14	1	8	8	31	
7	𠂤	13	9	19	10	51	
8	𠂤	1				1	
9	𠂤			1		1	
10	𠂤	1				1	

(1) 凌純聲，1965, p. 16.

中國古文字學家多從文獻上研究，很少從實物上觀察，且'方'和'汸'都由竹木製成，易於腐朽，考古的材料難得，幸有中國古文字學的甲骨文字，尙近象形可作研究之資。金祥恒編的續甲骨文編共收的'方'字有二百九十二字，如圖版肆，1, 2, 3, 4 圖將上列四圖的'方'字分析歸類，共得十個類形，如附表一，第一類[illegible]二十三字，第二類[illegible]三字，這兩字照許氏說文："併船也，象兩舟省總頭形"。在民族學材料方面有南美西岸，自秘魯的 Ica 地方（南緯15°）到智利 Maule 河口，用海豹皮做的浮船[1]。照許說'方'字，是併船，象兩舟省總頭形，有很多處不像，依形象而說，第一和第二字形是像雙邊架艇的雙尾船形，現先討論船的雙尾形，世上船的構造雙尾形有兩處：

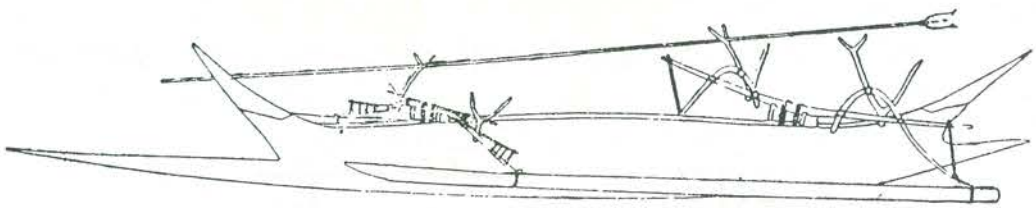
一、在斯康地尼維亞，如插圖二，爲瑞典 Bohuslan, Tanum 地方石上所刻雙尾船形[2]。

二、在西太平洋的菲律賓的 Mindonao 島 Moros 人的雙架艇叫做 *Vintas* 是首尾兩歧的[3]，巴里島和北部西里伯斯的漁船有此特徵(插圖三)、新幾內亞的 Geelvink 海



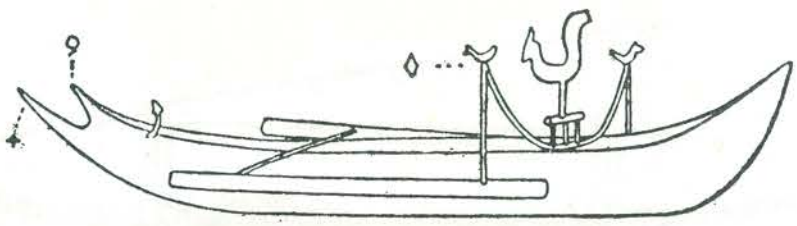
插圖二　瑞典 Bohuslan, Tanum 地方石上所刻的雙尾船形

(1) Lothrop, 1932, p. 241.
(2) Hornell, 1946, p. 202.
(3) Hornell, 1920, p. 77, Hornell. 1946, p. 210.

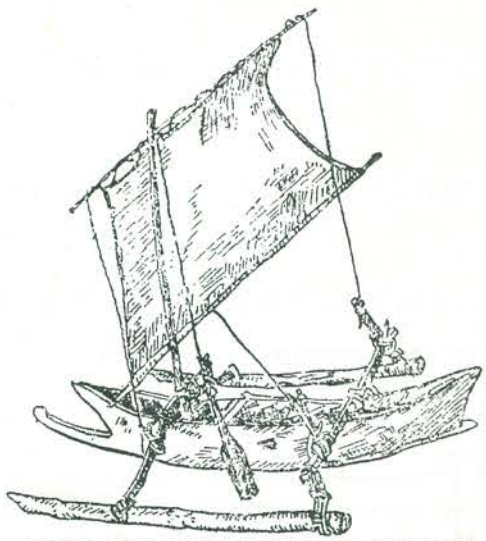


插圖三　帶有首尾兩歧的巴里島和北部西里伯斯的漁船

灣諸島的船頭亦有兩歧[1]。第二問題，兩字都有H形，乃是雙邊架艇，兩邊都有浮木，以一橫杠連繫，如插圖四所示：後面有一橫杠，前杠已變形，有些近似[2]。古



插圖四　雙邊架艇(後面有一橫杠，前杠已變形) Bawean 島



插圖五　帶有二根橫杠的雙邊架艇，船首或船尾仍成兩歧形，並附以小帆，在西里伯斯的東北部（Hickson）

籀補：南方彝有，完全象形一雙邊架艇，有二根橫杠（boom），連繫二條浮木，如插圖五所示。第三問題卽圖中和，船頭上的第一筆一小橫劃，這或代表一小帆，或是另一種船頭的裝飾。船尾或頭尙成兩歧形[3]。

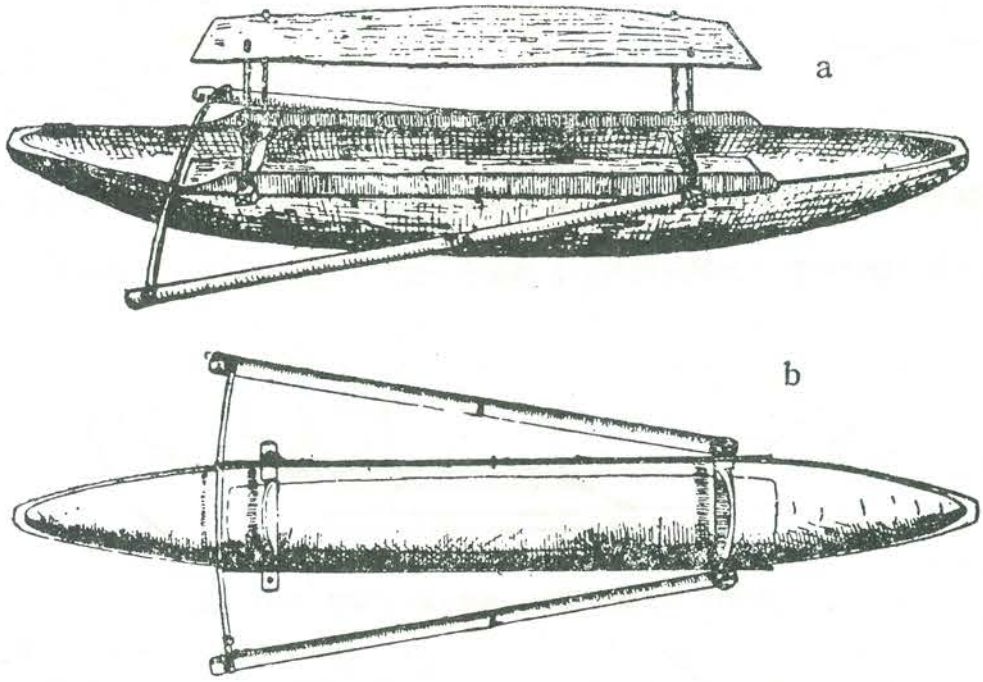
第三類字形共得八字，的頭帆、浮木、桁木、與上三字相同，所不同的，船尾不分兩歧（bifid）。

第四類字形最多，共得107字，第五類字形次多，得66字；二者不同的船

(1) Hornell, 1920, p. 83.
(2) Hornell, 1920, p. 94.
(3) Haddon, 1920, p. 95.

尾兩歧，一在左，一在右而已。

第六類字形，共31字，第七類字形，共51字；如插圖六a，b所示，浮木已變形，

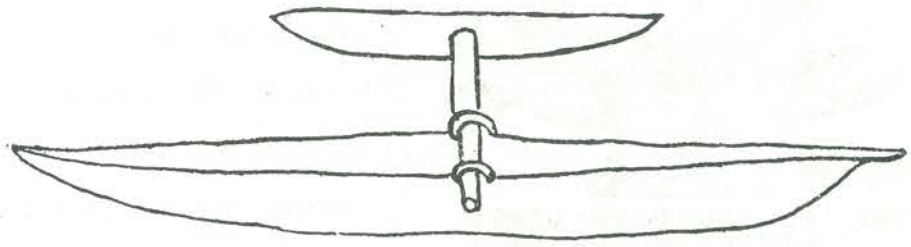


插圖六　a，b浮木已變形，將成爲下風板（Lee board）形（Sketch by H. Balfour, Oxford）

將成爲下風板（Lee board）形[1]。

第八類字形，僅得一字，第九類字形，亦僅一字；雙邊架仍存在，但與船身的關係不明，或爲寫字筆劃省筆或錯誤，亦未可知。

第十類字形，ㄎ這是代表單架艇，如插圖七所示。此圖雖是兒童玩具，但亦可代



插圖七　Toy Canoes, jong, of Malanau and Malay Children, Sarawak
(From Sketches By A. E. Lawrenc) 玩具單架艇

(1)　Haddon, 1920, p. 115.

表古代的遺意。以上十個字形，自第一到第五，第八和第九，共七個字，都是象形雙架艇，第六和第七兩字爲雙架艇的變形，幾成爲下風板，祇有第十個字形成爲單架艇。

從文字學家對於方字有兩個解釋一爲'併船'，另一則爲'泭也'。如上引的段注說文有一段很重要的話，茲再引一次，他說：

> 方，併船也。周南：'不可方思'。邶風：'方之舟之'。釋言及毛傳皆曰方，泭也。今爾雅改方爲舫，非其義矣。併船者併兩船爲一，釋水曰：大夫方舟，謂併兩船也。泭者編木以爲渡，與併船異事，何以毛公釋方，不曰併船而曰泭也。曰併船編木，其用略同，故俱得名方。方舟爲大夫之禮，詩所言不必大夫，則釋以泭可矣。

照段玉裁氏的解釋曰："併船編木，其用略同，故俱得名方"。又方或从水作汸，正韻：普郎切，音滂與滂同。荀子富國篇"汸汸如何海"。滂，溯滂風擊物聲。宋玉風賦："飄忽溯滂"。方字至少有上三個解釋。

五

我們現在再從有關方字的歷史文獻上研究邊架艇：

(一)方舟設泭　國語齊語：

> 方舟設桴，乎桴濟河。韋昭注云：'方，併也。編木曰泭，小泭曰桴。濟，渡也'。

上引的方舟如係併船，在水中航行已很穩定，則不必再設泭，所謂'方舟設泭'原在舟之兩旁，再加以編木而成兩翼，成爲雙染艇矣！

(二)窾木方版　淮南子氾論訓云：

> 古者大川名谷，衝絕道路，不通往來也。乃爲窾木方版，以爲舟航。高誘注云：窾；空也。方，竝也。舟相連爲航也。

窾，樹之空心者稱窾木，以之爲獨木舟，方，竝也。兩旁再加木版，卽成爲雙架艇了。

(三)越舲蜀艇　淮南子主術訓：

湯武聖主也，而不能與越人乘舲舟而於江湖。高誘注：舲舟，小船也，危險。越人習水，故能乘之，故湯武不能也。

又俶眞訓云：

越舲蜀艇，不能無水而浮。高誘注：舲，小船也。蜀艇一版之舟，若今之豫章是也。雖越人所便習，若無其水不能獨浮也。

上引越舲蜀艇二者並稱，想爲同類之船。又高注：蜀艇一板之舟，據廣韻梃訓木片，與一板意合。蜀艇是一板之舟，可能是甲骨文字中的爿，成爲單架艇了。

(四)大翼小翼　淵鑑類函卷三百八十六舟部，引越絕書：

闔盧見子胥，敢問船運之備如何？對曰：船名大翼、小翼、突冒、樓船、橋船。今船軍之教比陵軍之法，乃可用之。大翼者當陵軍之重車，突冒者當衝車，樓船當樓車，橋船當輕足驃騎。

又格致鏡原卷三十八舟車類戰船引：

七命：'浮三翼'。注：大翼一艘十丈，中翼九丈六尺，小翼九丈。

船或有翼，故又稱大、中、小翼三種；此或與番俗六考中所云："蟒甲，獨木挖空，兩邊翼以木板，用藤縛之"。有若干關係，故得船以翼名。

(五)方舟竝鶩　後漢書卷四十上班固傳：

方舟並鶩，俛仰格樂。注云：方舟，並兩舟也。

上注僅解釋了'方舟'並沒有解釋'並鶩'。說文：鶩，舒鳧也。郭璞曰：鴨也。方氏曰：以爲人所畜不善飛，舒而不疾故曰舒鳧。禮曲禮疏：野鴨曰鳧，家鴨曰鶩。所謂方舟並鶩，或可解釋一舟兩旁有浮木，故稱並鶩，亦未可知。

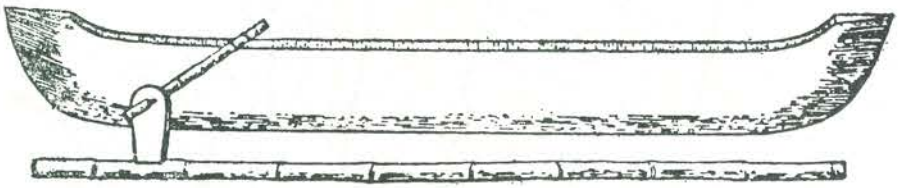
六

在民族學，古文字和歷史上都證明有邊架艇——戈船的存在。中國文化自遠古到現在，一直保存着，民物學上邊架艇的邊架漸變成下風板 (lee board)。Doran 氏在下風板的起源一文，47頁下註脚 2 所說的話，極爲重要，茲翻譯如下：

Joseph M. Needham 教授1966年三月十四日來信提出證據說明，此將在中國的科學與文明卷四第三篇發表，劍橋大學書店發行。紀元759年(唐肅宗乾元二

年）的中國文獻記述'浮板'(floating boards)附於船側可避免離開航路(side-ways)或船隻翻覆。雖然這些可能構成是邊架艇，很可信推知現代中國船隻沒有邊架的實物記述，因爲它們都變爲下風板了！(1)。

由上錄可知中國古代的邊架都變成下風板。它變的步驟如插圖八所示，是一退化的邊架艇，在爪哇的西北海岸，上圖邊架的後桁木已經消失，前桁連接浮物的變成短而濶



插圖八　已經退化的邊架艇，爪哇西北海岸 (After P. N. van Kampen)

的木栓，相同 Madagascar 的典型的船形，將成爲下風板(2)。

中國文籍載有下風板，如明代的三才圖會卷之四器用篇，有船名海鶻，如插圖九所示。圖之說明，有云：

海鶻者，船形頭低尾高，前大後小，如鶻之形。舷上左右置浮板，形如鶻翼翅，助其船，雖風濤怒漲而無側傾。覆背左右以生牛皮爲城，牙旗金鼓如常法。

又格致鏡原卷二十八引事物紺珠有云：

海鶻船頭低尾高，前大後小，左右置浮板如翅(3)。

同書同卷戰船門引海物異名記云：

越人水戰，有舟名海鶻，急流浴浪不溺。

明茅元儀武備志卷一百十六亦有海鶻船圖，如插圖十所示，又參見四庫全書中所錄之海鶻圖，插圖十一。因爲越人水戰，有舟名海鶻，急流浴浪不溺，這明明是描述由邊架艇變成下風板，武備志與三才圖會的海鶻兩圖不同，故並錄以資比較。說文：鶻，鵻也。玉篇：班鳩也。爾雅釋鳥鶻鵻注云：似山雀而小，短尾青黑色，多聲。江東呼爲鶻鵻。邊架艇因航行方便，浴浪不溺，故越人稱之曰海鶻。

中國史籍又稱下風板爲腰舵，明宋應星天工開物卷中舟車海舟條有云：

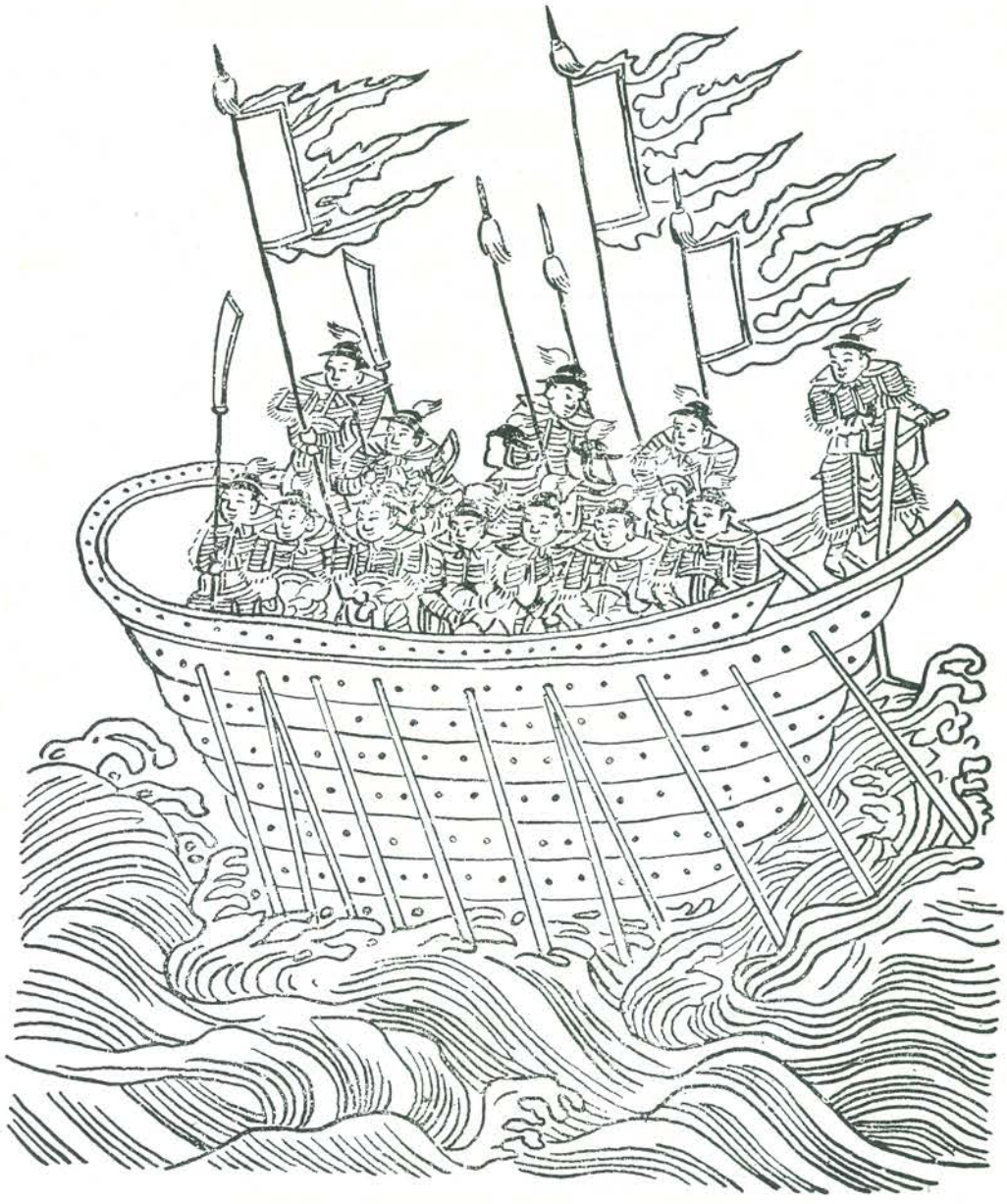
中腰大橫梁出頭數尺，貫插腰舵，則皆同也。腰舵非與梢舵形同，乃濶板斲成

---

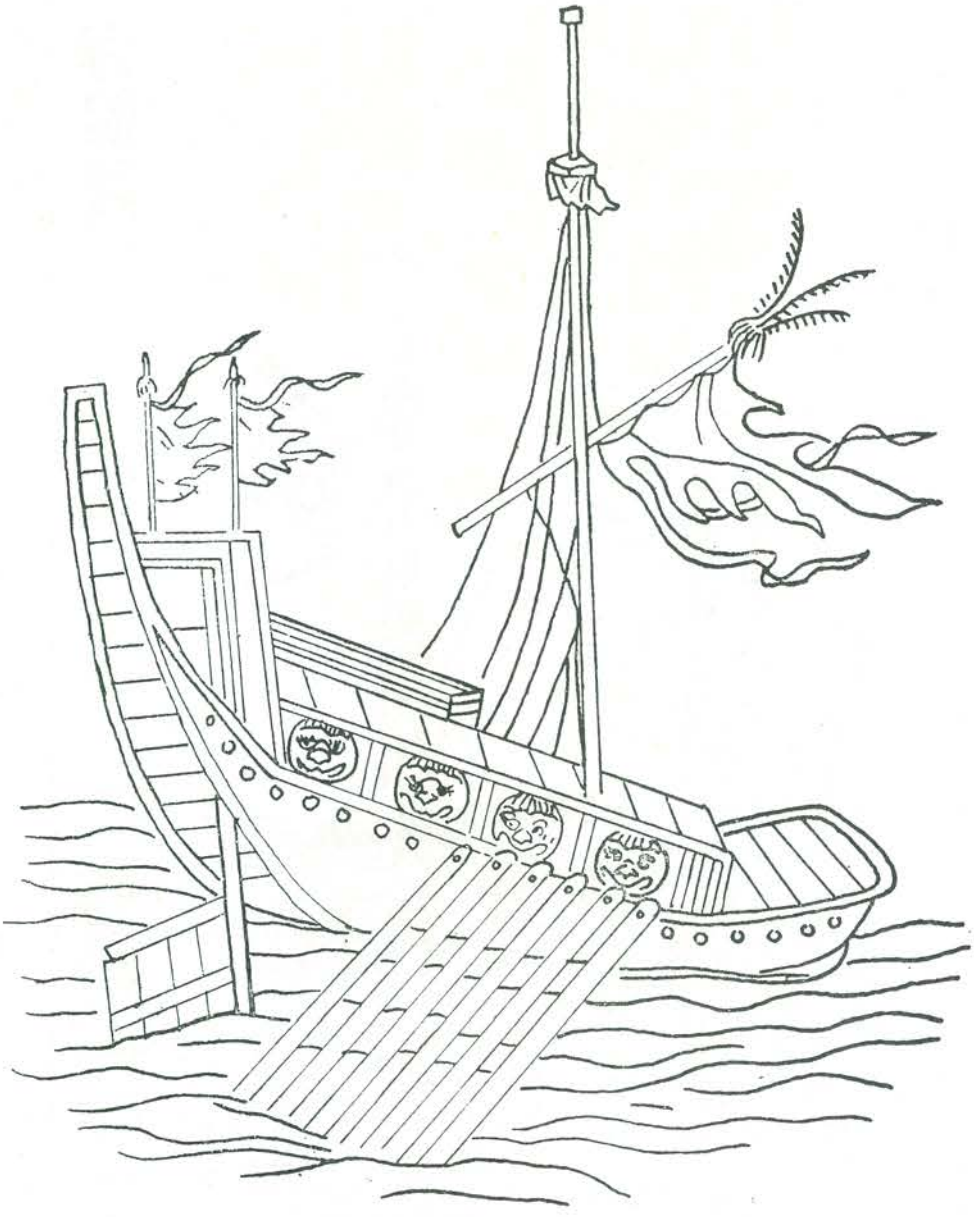
(1) Doran, 1967, p. 47.

(2) Hornell, 1946, p. 258.

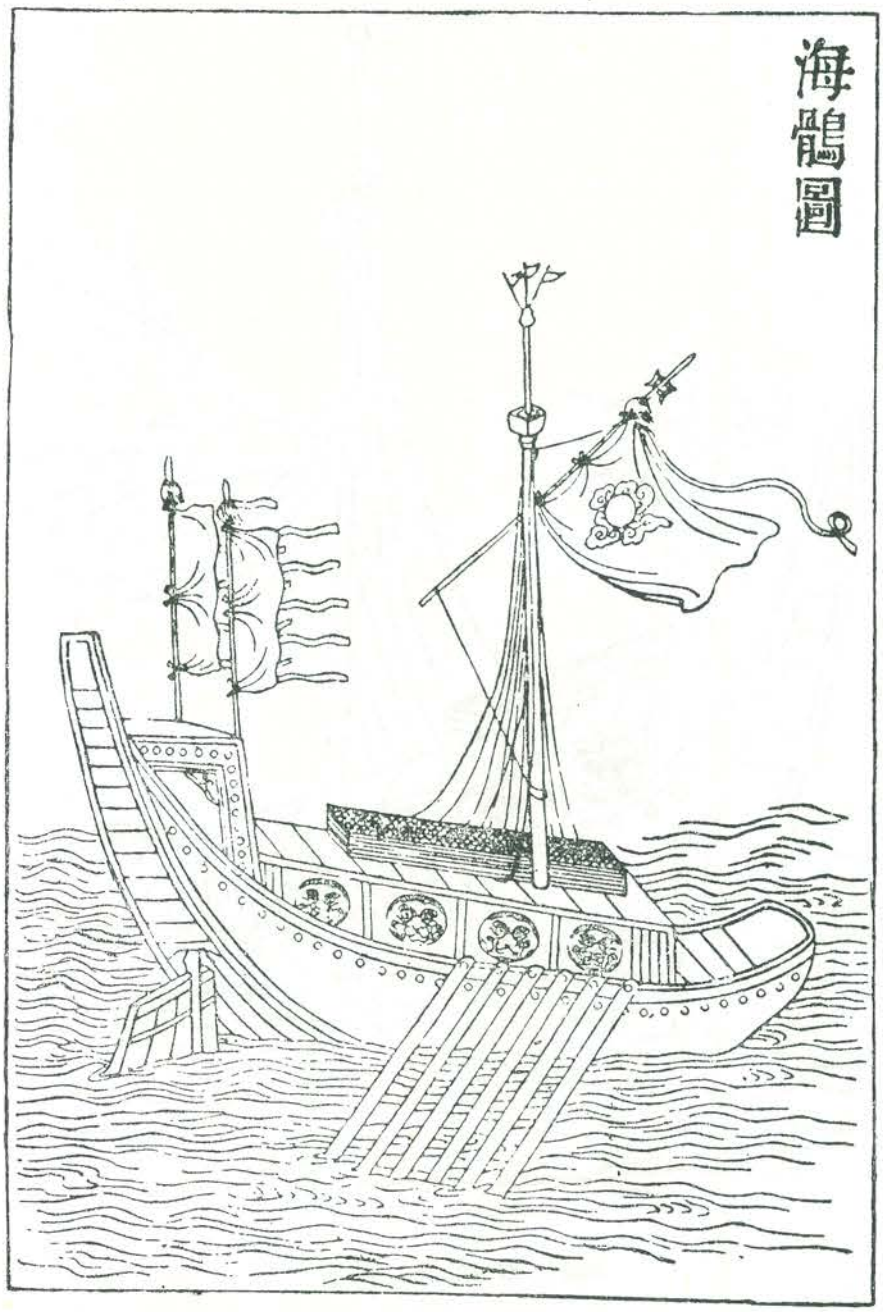
(3) 包遵彭，1951, p. 36.



插圖九　海　鶻　圖　（三才圖會）



插圖十 海 鶻 圖 (武備志)

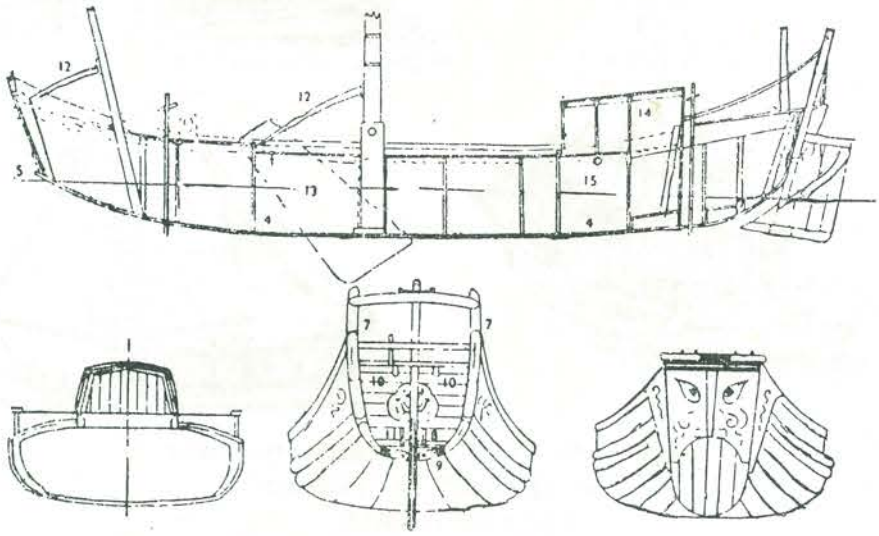


插圖十一 海鶻圖 (四庫全書)

刀形，插入水中，亦不捩轉，蓋夾衞扶傾之義。其上仍橫柄栓于梁上，而遇淺則提起，有似乎舵，故名腰舵也(1)。

上文在民國十四年丁文江氏曾譯成英文 Donnelly 氏並加附註。Wheatley 氏致函 Doran氏說，下風板在1500年以前已在使用，尤其是在海船，起自元代就有關係(2)。Needham 氏謂唐代已有。實則下風板自邊架變來，如海物異名記所云："越人水戰，有舟名海鵠；急流浴浪不溺"。越人的海鵠，至遲到秦漢時代以前可能已有之。

下風板的使用至少有兩千年的歷史了！但到現在航行沿海港口和河川的帆船，多用下風板，例如插圖十二所示：爲杭州帆船，表示用現在中國的下風板形狀。又插圖

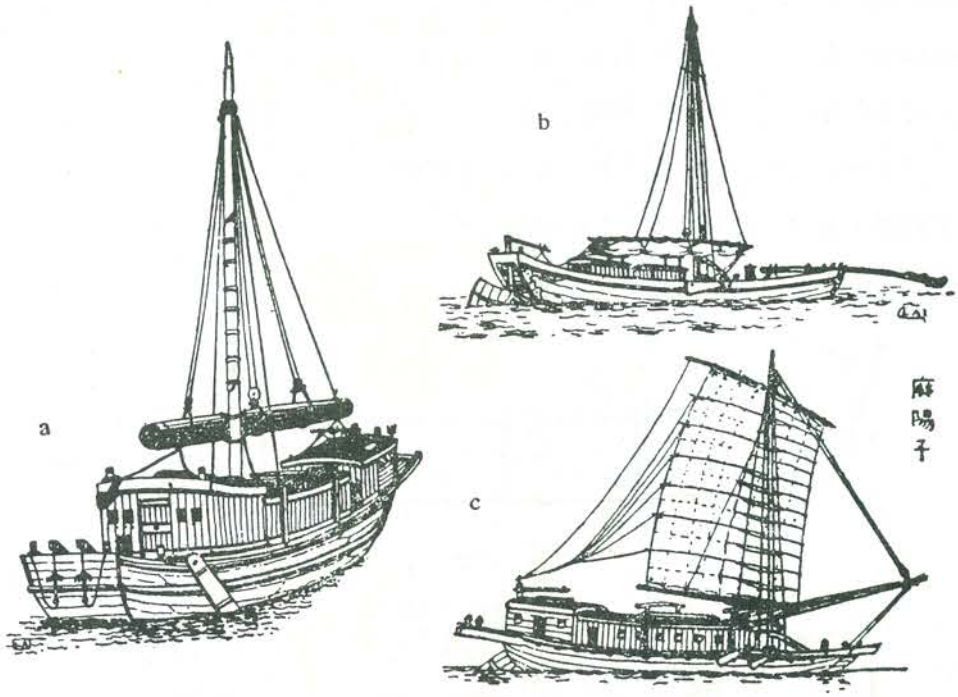


插圖十二　帶有下風板的杭州帆船 (Doran)

十三所示：a. 客貨兩載船，航行揚子江下游，來往九江、鄱陽、南京之間，有一下風板放下；b. 九江船，船頭用一艄(掃 *sao*)有如長江上游的船隻；下風板掛起。c. 麻陽子起名自湘西麻陽縣，航行於沅江及洞庭湖，船隔有數艙，適合於一家人租僱，故有家船 (house boat) 之稱。舟旁有下風板兩對(3)。圖版伍 A. 南京帆船，這是有兩帆大船，艙矮而廣，舵手當舵棒在艙上，有下風板兩對，放在水中，可以保護船殼，又可防水浪突擊；B. 燕湖帆船，前艙爲圓形；易於移動，以便裝貨；尾舵甚大，前有一櫓，可

(1) 宋應星，1937, p. 246.
(2) Doran, 1967, p. 47.
(3) Audemard, 1965, pp. 13, 19, 87.

以代掉；有下風板兩對。又圖版陸A.這是長江的四帆大船，船舷有下風板兩對，船行漢口、沙市及洞庭湖；B.由漢口航行沙市經過岳州而入洞庭湖的帆船，艙位甚大，專爲載客之用，亦有下風板兩對，但多掛起，不放在水中(1)。



插圖十三　a.航行於揚子江中的客貨兩載船，有一下風板放下
b.九江船，船頭用一橈，下風板掛起
c.麻陽子，舟旁有下風板兩對

上面所述，從四方面研究，考證古代的戈船卽爲今之邊架艇，在舟之兩旁成爲戈形。我們再看古人和今人的解釋如何？越絕書卷八："死士八千人，戈船三百艘"，越絕書雖沒有注文，但從文句上看，上句有死士，下言戈船之多，則戈船明言用作戰船。史記南越傳有云：

故歸義越侯二人，爲戈船下厲將軍。

裴駰集解云：

徐廣曰：'厲一作瀨'。駰案，張晏曰：'越人於水中負人船；又有蛟龍之害，故置戈於船下，因以爲名也'。應劭曰：'瀨，水流涉上也'。瓚曰：'伍子胥書

(1) Audemard, 1965, pp. 17, 18, 89.

有戈船，以載干戈，因謂之戈船也'。

又前漢書武帝紀有云：

歸義越侯嚴爲戈船將軍，出零陵，下離水。

顏師古注云：

張晏曰：'嚴，故越人降爲歸義侯。越人於水中負人船，又有蛟龍之害，故置戈於船下，因以爲名也'。臣瓚曰：'伍子胥書有戈船，以載干戈，因謂之戈船也'。離水出零陵。師古曰：'以樓船之例言之，則爲載干戈也。此蓋船下安戈載，以御蛟鼉水蟲之害，張說近之'。

王先謙補注云：

劉攽曰：'船下安戈，既難措置，又不可以行，今造舟船甚多，未嘗有置戈者。顏北人不知行船，故信張說，予謂瓚說是。宋祁曰：戈船將軍當時所建之官，如驃騎虎牙之類是也。戈船今有之設干戈於船上以禦敵也'。錢太昭曰：'張說以嚴爲故越人降爲歸義侯，則越字當在歸義上，如下文越馳義侯遺之例矣'。功臣表亦無此侯。先謙曰：胡注'零陵本屬桂陽，帝分置郡'。地理志：灕水出零陵縣陽海山南，東至廣信入鬱水。

漢書武帝紀又云：

甲爲下瀨將軍，下蒼梧。

師古注云：

服虔曰：'甲，故越侯歸漢者也'。臣瓚曰：'瀨，湍也。吳越謂之瀨。中國謂之磧'。伍子胥書有下瀨船。師古云：瀨音賴。

補注又云：

宋祁曰：'注文吳越舊本作吳楚'。錢大昭曰：'不知其名謂之'甲'也。漢紀作祖廣明'。先謙曰：胡注蒼梧本越地，帝始置郡，有灕水關。

以上古人對戈船有兩說；一說爲張晏謂'置戈船下，因以爲名'，顏師古贊成此說。另說爲伍子胥書有戈船'以載干戈'，臣瓚，劉攽，宋祁都贊成之。作者以爲二說均不可信，船下安戈，誠如劉攽所說，'既難措置，又不可行'。至於以載干戈，水戰兩船必有距離，不用長兵，反用戈戟短兵相接，亦不近理。近人羅香林先生有云"船而稱

戈，殆與後世裝甲戰船相若矣”。又曰：“漢代之平定越南，亦頗恃樓船與戈船之威力。然此類舟師，固越人所首創也”(1)。又包遵彭氏亦有云：“愚意第二說以船載戈，藉以御意較達實情。按戰國策燕策亦稱：‘秦正告魏曰：乘夏水浮輕舟，强弩在前，銛戈在後’。是以銛戈載於船的後部以禦敵，戰國時卽已如此”。亦爲第二說增一說據。

七

古代越人在中國分佈於江淮之南有於越、甌越、閩越、揚越、山越、南越、西甌、駱越等等。漢書地理志：

> 粵地牽婺女之分野也。顏師古注：‘臣瓚曰：自交趾至會稽，七八千里，百粵雜處，各有種姓，不盡少康之後也’。

羅香林氏有言：“粵卽越，越而稱百，則其內包之廣，種人之盛，可知矣”。自漢族南下，大部份涵化成爲漢人，一部份越人移居中南半島和印尼羣島，今之印度洋和太平洋上的民族，保存了很多中國遠古文化。戈船文化在今印度尼西亞保存最多。

在第七至第十世紀印度在爪哇建立王朝，有大量的移民，兩地船運頻繁。Leemans 圖集上有七隻船，其中兩艘無邊架，一艘爲單桅，一艘爲三桅。餘下的五艘有邊架，我們假定是雙架，其中四艘顯示有左舷邊架(port outrigger)，餘一艘有右舷邊架 (starboard outrigger)(2)。

插圖十四 a. 船有兩座二足桅杆，三根直的檔木 (boom)，經過在二縱的圓木和兩個浮物之間，三根彎的檔木經過情和直檔相同。

插圖十四 b.船有兩根桅杆，三根直的檔木，穿過兩縱木之間，又有三道彎曲檔木，穿過縱木後又經過浮木 (float) 而檔木的前端又向上彎曲。

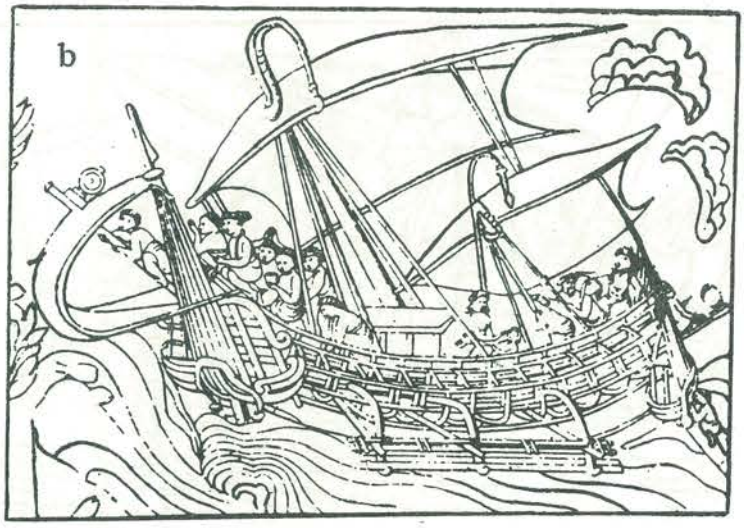
插圖十五 a. 之船：係一有梯級 (rungs) 的桅杆，三根直的檔木，經過縱木之下，到達浮木之下。尙有兩根假的檔木，結在縱木之上，彎曲的檔木經過縱木嵌在兩浮木之間。

插圖十五 b.之船：雙桅都有梯級，三直檔木都繫結縱木之下，又四彎曲檔木經過縱木，而插入在兩浮木之間，且檔木下端出頭。

---

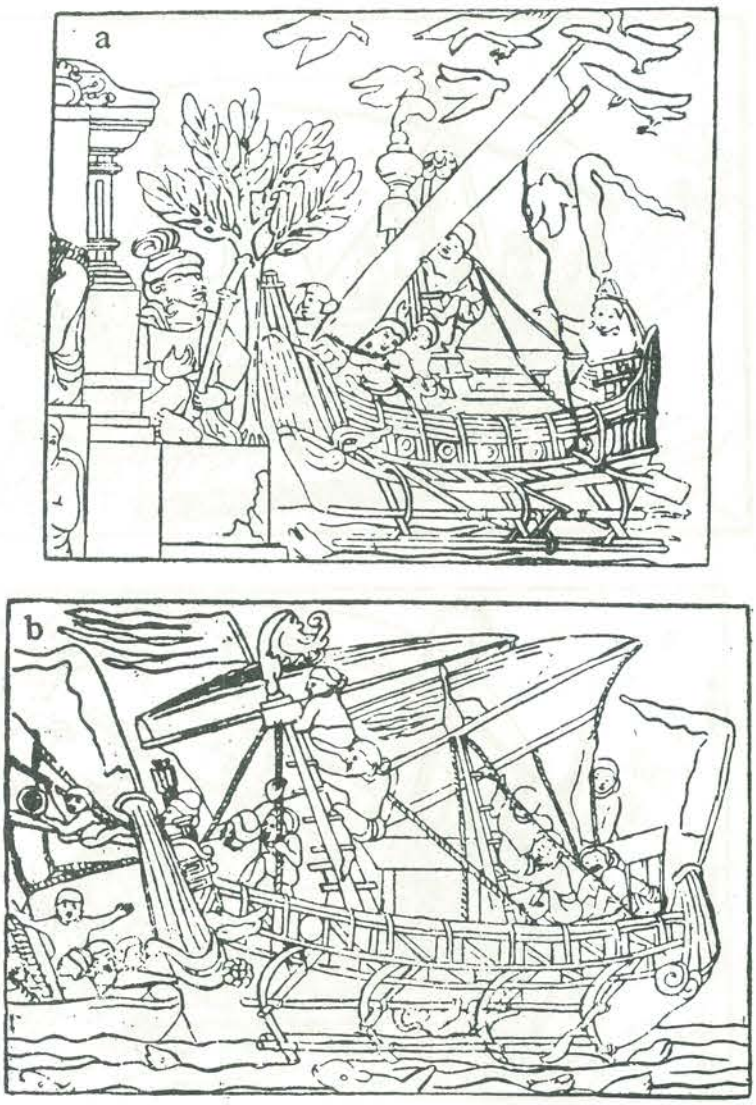
(1) 羅香林，1955, pp. 141-142.

(2) Leemans, 1873.



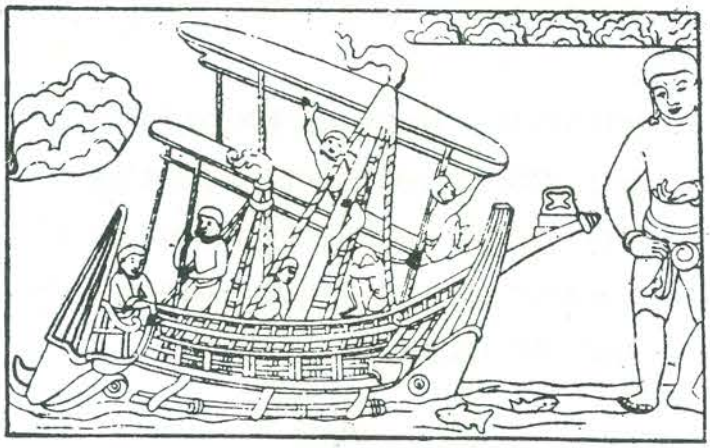
插圖十四　a. 船有兩座二足桅杆，三根直檣木（boom）和彎檣木，經過二個縱的圓木和浮物之間

b. 船有二根桅杆，三根直檣木穿過二縱木之間，三道彎檣木穿過縱木後又經過浮木（float）而檣木的前端又向上彎曲

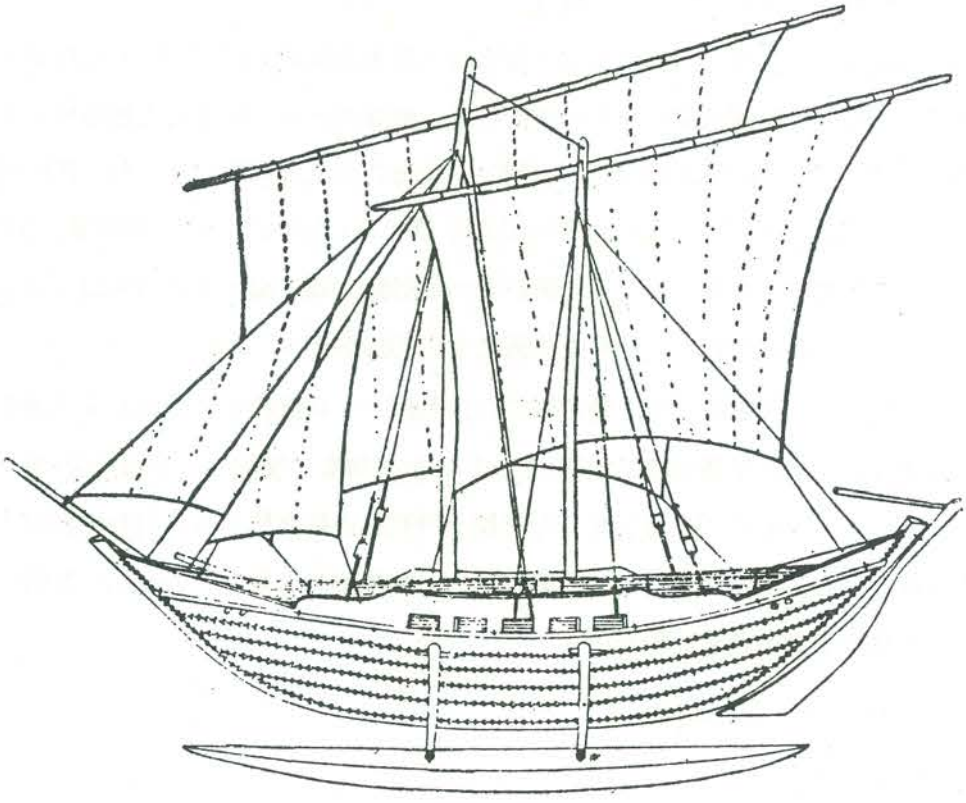


插圖十五　a. 船有梯級（rungs）桅杆，三根直檔木，經過縱木之下達到浮木之下，有兩根假檔木結在縱木之上，彎曲的檔木經過縱木嵌在浮木之間

b. 船有梯級雙桅杆，四直檔木都繫結在縱木之下，四彎曲檔木經過縱木插入兩浮木之間



插圖十六　船兩桅都有梯級，三根稍爲彎曲的檔木，假定繫結在兩浮木上



插圖十七　Sinhalese *yathra dhoni* 的船型尚裝有邊架

插圖十六，船有梯級的兩桅，三根檔木可能稍爲彎曲的，他們的外端，假定繫結在兩浮木的。

以上五圖都是第九世紀爪哇 Boro Budur 佛教寺院石壁雕刻，海船都裝有複雜而大的邊架。有了如此船運，所以後來的移民自印度尼西亞到馬達加斯加直接經印度洋，不似早期的沿海岸航行，須經錫蘭、亞丁而達非洲東海岸(1)。爪哇製造精巧的帆船，爪哇航行錫蘭和馬達加斯加直到本世紀初期。尚存 Sinhalese 的船型，很值得注意：如插圖十七所示，尚裝有邊架，該船能載重五十噸(2)。

八

中國古代所謂戈船，即今之邊架艇，邊架有雙的或單的，在遠東的島民（Island People）居地相符合。自印度尼西亞的東方和西面，經過印度和太平兩洋的赤道地帶，在此區域之外，則不見有邊架艇。

據 Hornell 氏之說，它們的主要分佈區域，過去與現在一樣，在印度尼西亞的中心島嶼，西起蘇門打臘到東達新幾內亞的西緣。那如此分佈，部份文化的傳播，主要的還是移民遍及海洋洲（Oceania），至到現在全佈在米克羅尼西亞、玻利尼西西和美拉尼西亞（蘇羅門羣島除外）。且遠達復活島（Easter Island）。在西面到達錫蘭、印度、東非和馬達加斯加。到今日它的影響仍很活躍，到了南美洲的西海岸，厄瓜多海岸，見有粗製的邊架艇，這或是受到西班牙人的影響(3)。

至於雙架和單架艇的分佈：雙架限於印度尼西亞、新幾內亞的西端及東非海岸。在面對非洲 Comora 羣島主要是雙架，但在馬達加斯加島是從雙架漸變用單架。單架艇現爲玻利尼西亞、米克羅尼西亞和全部美拉尼西亞除去蘇羅門和新幾內亞的西部(4)。祇有一種型式在錫蘭和印度雙架和單架互見的，和馬達加斯加和 Comora 島情形一樣，自從雙架到單架的過渡時期(5)。

---

(1) Hornell, 1946, pp. 257-258.
(2) Ibid. p. 258.
(3) Ibid. p. 253.
(4) Hornell, 1932, p. 142.
(5) Dixon, 1928, pp. 78-82.

西方學者所得資料比較是近代的，所以說邊架艇，過去和現在一樣以印度尼西亞爲中心，殊不知南島語系民族在中國大陸時代，居於華北東海岸的九夷，散處華南和東南濱海的百越，早已發明邊架艇，古代稱之謂戈船，因邊架之形，狀似古代兵器的戈形（halberd）。

中國遠古水運工具有桴桅、戈船、方舟和樓船四種。這四種之中，唯有戈船中國歷史學家不得其解釋，衆說紛紜，莫衷一是。現從民族學上證明戈船爲邊架艇（Out rigger canoe），先有雙架艇，後有單架艇，現民物學上的海鶻，今日帆船上的下風板（Lee board）[1]又稱腰舵，都是邊架艇的遺物。再進而有方舟或稱雙舟，最後始有三板（*Sampan*）和帆船（*junk*）[2]。

帆船英名 *junk*，法名 *jonque*，西葡均名 *junco*，荷名 *jonk*，爪哇名 *djong*，馬來名 *adjong*，縮名 *jong*，中名稱船 *tch'ouan*，厦門方言稱 *ch'un*，福州詳稱 *chiong*[3]。都源中國船字 *chun* 一音。它是桴桅，戈船，方舟遞變而來的。

郁永河裨海紀遊有云：

> 比暮，視黃土坡猶未遠，以風力弱不勝帆也。始悟海洋汎舟，固長風，又甚畏無風。大海無橹搖棹撥理，千里萬里，祇藉一帆風耳。憶往歲榕城晤梁鎔季君蓉洲，言自臺旋省，至大洋中，風絕十有七日，舟不移尺寸，水平如鏡，視澈波底，有礁石可識，斯言誠然[4]。

可見桴桅、戈船、方舟和樓船在海洋遠程航行，多藉風力[5]。南島語系的民族遠佈印度太平兩洋的海島上，在輪船發明之前，凡有海水處即有華僑，能“千里萬里，祇藉一帆風耳”，華僑能先在印度洋，後在太平洋隨南島語系民族，早在兩洋上航行遷移居住矣。

（1） Donnelly, 1924, p. 5.

（2） Hornell, 1946, pp. 86-90.

（3） Audemard, 1957, p. 19; Kani, 1967, p. 22.

（4） 郁永河，1697, p. 5.

（5） Suggs, 1960, p. 78.

主要參考書目

中　文

王元翰，王思義

1609　三才圖會器用卷四，明萬曆三十七年。

宋應星

1637　天工開物。

金祥恆

1959　續甲骨文編。

包遵彭

1966　漢代樓船考，民族學研究所集刊第二十二期，民國五十五年。

1951　中國海軍史，臺灣左營，民國四十年。

郁永河

1697　裨海紀遊，康熙三十六年，臺灣文獻叢刊本。

茅元儀

1621　武備志卷八，明天啓元年。

凌純聲

1956　臺灣的航海帆筏及其起源，民族學研究所集刊，第一期。

1961　太平洋上中國的遠古文化，大陸雜誌，第二十三卷第十一期。

陳淑均

1832　噶瑪蘭廳志。

鹿野忠雄

1946　西南太平洋的以挖製木板拼成的船，東南亞細亞民族先史學研究，第一卷。

黃叔璥

1736　臺海使槎錄卷六番俗六考，乾隆元年，臺灣文獻叢刊本。

袁　康

52A.D,　越絕書卷八。

羅香林

1955　百越源流與文化，中華叢書本，臺北。

西　文

AUDEMARD, L.

1957　Les Jonques Chinoises:　Histoire de la Jonque, Rotterdam.

1965　Les Jonques Chinoises:　Bas Yang Tse Kiang, Rotterdam.

DIXON, R. B.

1928　The Building of Cultures, New York.

DONNELLY, I. A.

1924　Chinese Junks, Kelly and Walsh.

DORAN, E.

1967　The Origin of Leeboards, The Mariners Mirror, Vol. 53, No. 1.

FRIEDERICI, G.

1928 Die Vonkolumbischen Verbindungen der Südsee-Völker mit Amerika. Mitteilungen aus den deuts chen Schutze bieten, Vol. 36.

HADDON, A.C.

1920 The outriggers of Indonesian conoes: The Journal of the Royal Anthropological Institute Vol. 50.

HADDON, A.C. and HORNELL, J.

1936-1938 Canoes of Oceania, 3 Vols, Honolulu, Hawaii.

HORNELL, J.

1920 The outriggers of Indonesia Madras Fisheries Bulletin 12.

1932 Was the double-Outrigger Known in Polynesia and Micronesia? The Journal of the Polynesia Society.

1946 Water Transpost: Origins and Early Evolution, Combridge, England.

KANI HIROAKI 可兒弘明

1967 A general survey of the boat people in Hong Kong. New Asia Research Institute, Hong Kong.

KARLGREN, B.

1930 Some Fecundity Symbols in Ancient China. Bulletin of the Museum Far Eastern Antiquities No. 2.

LEEMANS, C.

1873 Bôrô-Boedoer, Leiden.

1874 Bôrô-Bondour (French translation), Leiden.

LOTHROP, S.K.

1932 Aboriginal Navigation off the West Coast of South America. The Journal of the Royal Anthropological Institute Vol. LXII.

MÜLLER, W.

1921 Baessler-Arch., II.

SUGGS, R.C.

1960 The Island Civilization of Polynesia, Mentor.

TAINTOR, E.C.

1875 The Aborigines of Northern Formosa, Journal of the Royal Asiatic Society.

OUTRIGGER CANOES IN ANCIENT CHINA AND THE INDO-PACIFIC OCEAN

LING SHUN-SHENG

Summary

In the 'Introduction' of my early paper titled "Formposan Sea-going Raft and Its Origin in Ancient China," which was published in the first edition of this Bulletin in the spring of 1956, I made a statement as follows:"....It is his hope that more students of ethnology will give more attention to the ancient maritime activities along coastal Asia. Should it be proved that the Asians did sail into the ocean by rafts, outrigger canoes, double canoes, or deck canoes before Christ, the Pacific was then no barrier to the communications between Asia, Oceania, and the Americas. Then, those who have so far held contrary opinions to out theory of the trans-Pacific cultural contact may possibly no longer have any other choice but to accept our views. Basing his views mainly on Chinese data, the author attempts to deal with the following two topics, "The Sea-going Raft in Present-Day Formosa and Its Origin in Ancient China, and the Outrigger Canoe, Double Canoe and Deck Canoe in Ancient China before Christ". The former paper is now completed and published herein under the present title, aiming mainly at eliciting more efforts from anthropologists, both at home and abroad, to the study of this subject" (Ling, 1956:2). During the lapse of 12 years since the first appearance of that paper, many discussions have been brought forth over problems on the seafaring activities in the ancient Pacific. Most of these discussions were based on materials from Oceania, whereas the "Study of the Lou Chuan of Han Time" (Pao, 1966: 15–52) was the only paper completed with respect to the sea-faring situation in ancient China.

This article is only an investigation of the Outrigger Canoe, as to the problem of Double Canoe and Deck Canoe, it will be discussed in the next edition of this bulletin.

An early record of the outrigger canoe, dating from the 6th Century, B. C. is found in Vol. 8 of Yueh Chueh Shu 越絕書, Which states: "Kou Chien 勾踐 invaded the Stae of Wu 吳 and finally brought under his hegemony the area of Kuangtung 關東. Subsequently, he bulit a big watch-tower at Lang-Ya 瑯玡, with its circumference measuring as long as seven Li, for the purpose of keeping watch over the east sea. He had 8000 brave warriors and 300 outrigger canoes." Again, the phrase 'the Commanding General of the Outrigger Canoe Fleet' is seen in the Nan Yueh Chuan 南越傳 of Shih-Chi 史記. It is my belief that the outrigger canoes

of the old times were probably the same as the outrigger canoes sailing here and there over today's Indian and Pacific Oceans. An outrigger canoe was simply a dugout canoe with a projecting wooden frame fastened at either one side, or at bothsides, of it, to prevent upsetting while sailing over the sea. The former was called single-outrigger canoe, and the latter called double-outrigger canoe. The frame was usually made in the shape of the ancient to *ko* 戈 (halberd)....perhaps this was the reason why it was named 'Ko Chuan' 戈船 (halberd canoe) in China.

Both Ino Yoshinori 伊能嘉矩 and Kano Tadao 鹿野忠雄 of Japan stated that there had been no outrigger canoes in Taiwan. But there must have been outrigger canoes in Taiwan during the ancient time according to certain records made in the 18th Century. It was stated as follows in Huang, Shu-ching's 黃叔璥 "Fan Shu Liu Kao" 番俗六考, published in the beginning year of Chien Lung 乾隆 (1736): "*Mangka* was made by hollowing out a single log, with wooden boards fastened at both sides with rattan strips. Because it was not caulked due to lack of putty material, so water easily leaked in and the savage people who sailed in it had to lade the water out from time to time." A like record is also contained in Taintor's "The Aborigines of Northern Formosa" which, based on Kamalan Ting Chih 噶瑪蘭廳志, relates as follows: "The small boats which the savages use in crossing streams, they call *mangka*. A boat is made by hollowing out a log of wood, and fastening a board upon each side of it, to prevent its capsizing. They have no oil and chunam for filling the cracks or seams, and hence have to bail constantly. A boat will carry only two or three people" (Taintor, 1875:73). The above records lead us to believe that the outrigger canoes as mentioned in ancient historical as well as ethnological documents had indeed existed in China during the remote ages.

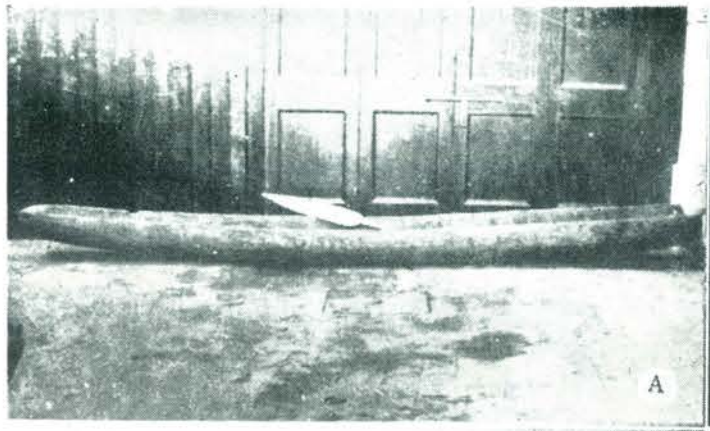
The word fang 方 (square) in the ancient Chinese oracle bone script was written in such forms as '  ', '  ', '  ', etc. which may probably be construed as a resemblance to either a double-outriggered canoe or a single-outriggered canoe. Its pronuciation is 'fang' and, as Ferrell once told me, "the actual pronunciation of the word '*mangka*' (canoe) in the Kuvalan or Kariwan language is *vánga*."... A very interesting likeness.

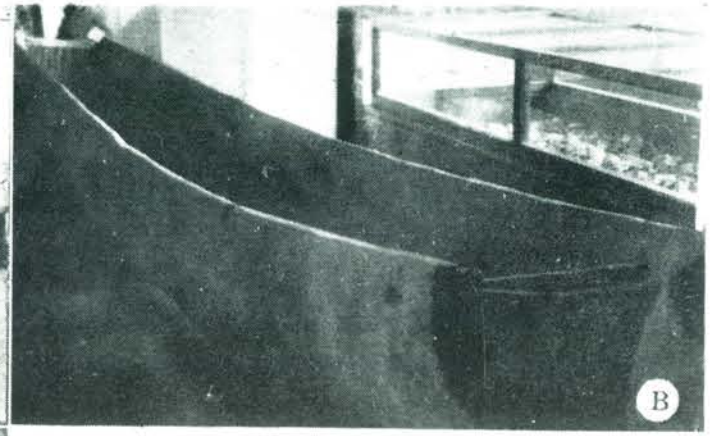
Contained in Vol. 13, Hual Nan-Tze 淮南子, completed in the early years of the Western Han Dynasty, is the record "斠木方版 Yu Mu Fang Pan." As Kao, Yu 高誘 annotated, "斠 Yu-hollowing wood. 方 Fang-placing side by side. And two boats lashed together as 航 Hang." Again, it is related in Vol. 9 Huai Nan-Tze: "the Ling 舲 of Yueh 越 and the Ting 艇 of Shu 蜀". About this, Kao, Yu explained: "Ling 舲 —a small boat. The Ting 艇 of Shu 蜀 — a boat make with one board."

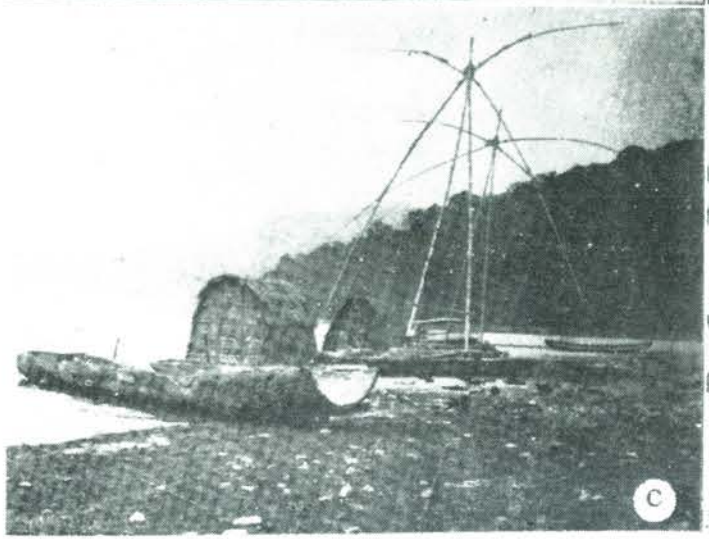
Cited below, as an early record of the 8th Century A. D., is a statement made by Professor Needham in 1966: "A Chinese document of A.D. 759 describes 'floating boards' attached to the sides of ships which prevent them from being driven side-

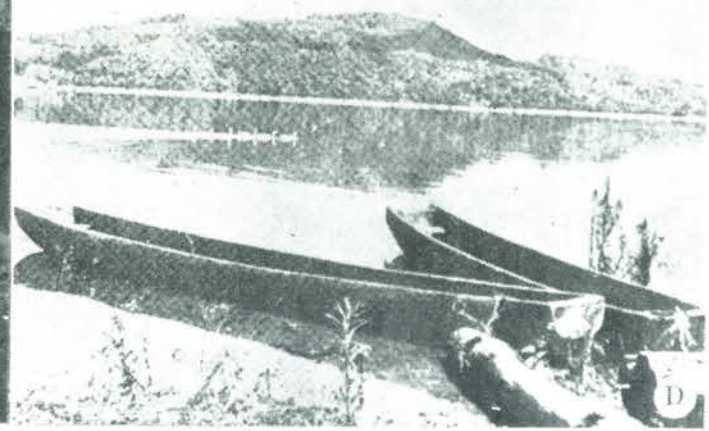
ways or from overturning. Although possibly these could be construed as outriggers, the most likely deduction from the entire description and from the complete absence of outriggers in all modern Chinese types is that they are leeboards" (Doran, 1967:47).

The following passage is found in the San Tsai Tu Hui 三才圖會, published in the 37th year under the rule of Wan Li 萬歷 of Ming Dynasty 明 (1609): "Hai Ku 海鶻 boat is constructed with its head high and its tail low, with its forward part big and its aft part small, resembling a Ku 鶻 (a migratory bird like the crested-lark) in shape. Floating boards are attached at its sides, like the wings of a 'Ku', to prevent it from careening or overturning while sailing in big wind or over high waves." (Audemard, 1957: p. 42). In addition, the Chapter of War Ship 戰船 of Vol. 28, Ke Chih Ching Yuan 格致鏡原, in citing Hai Wu Yi Ming Chi, 海物異名記, states: "The people of Yueh 越 use their boats called 'Hai Ku' for water warfare, which can hardly be sunk by rapid currents or strong waves." If the Yueh 越 in above citation was meant for the Yueh 越 of the time of Kou Chien 勾踐, it may be deduced that the outriggers on the earlier Chinese boats had been replaced by the floating boards during the 6th Century, B. C.. Such floating boards were, in fact, the origin of the leeboards of later ages. At present, junks with leeboards can be seen everywhere in the lower part of the Yangtze River. (Fig. 13 and Plates V–VI).









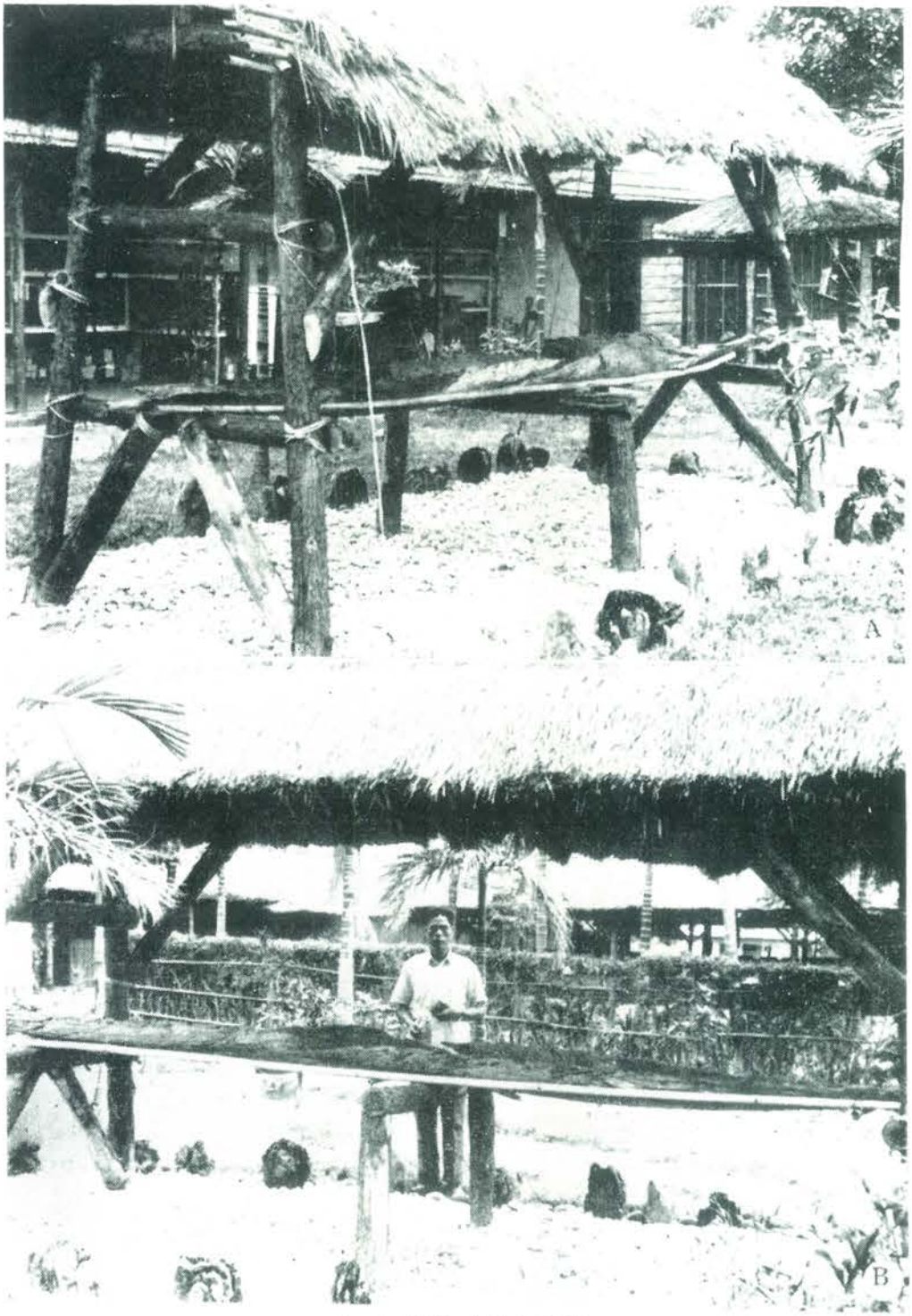
A 獨木舟附槳

B 臺大考古人類學系所藏的獨木舟

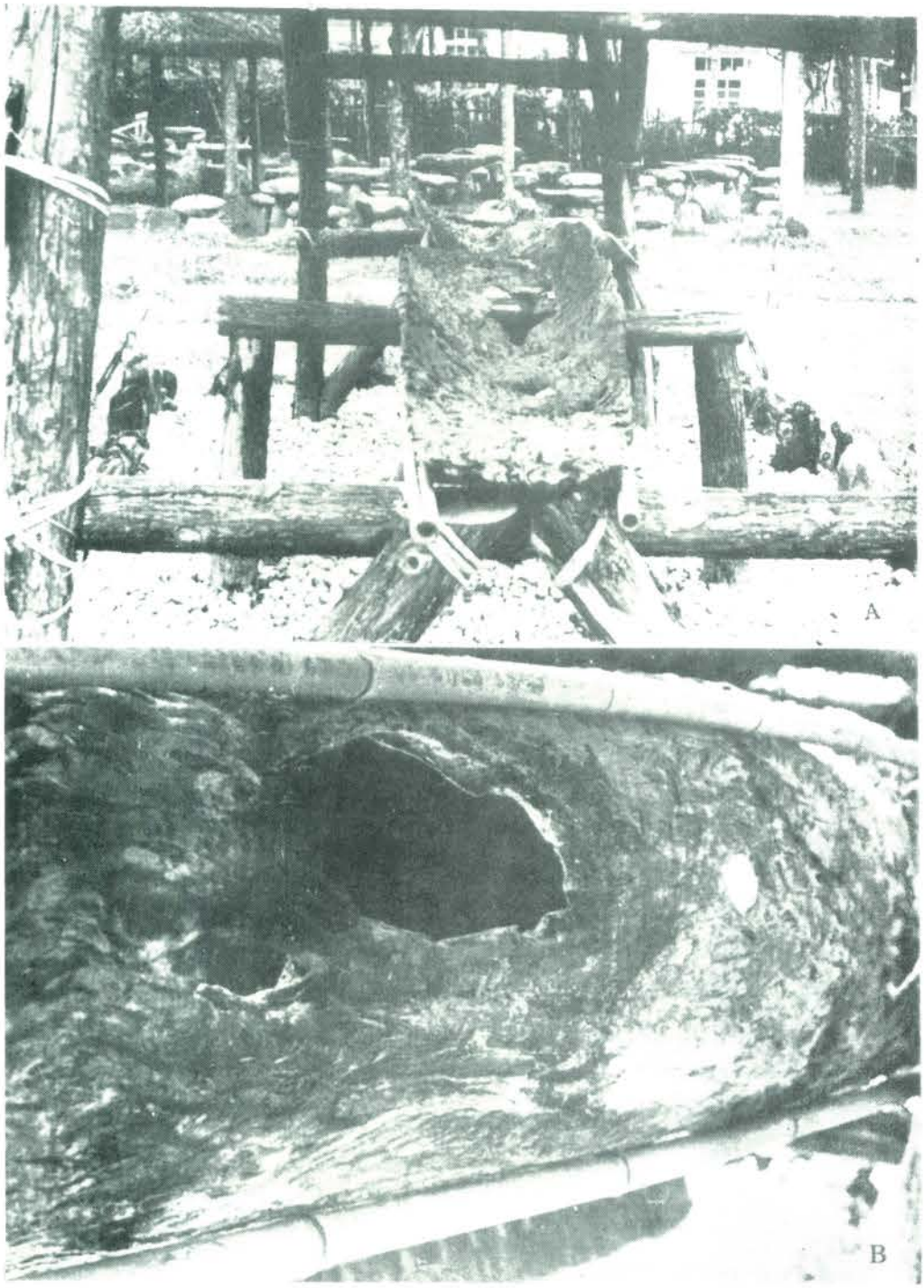
C 民國四十四年著者遊日月潭見湖岸停放之獨木舟

D 今日生活雜誌封底刋載的二隻獨木舟

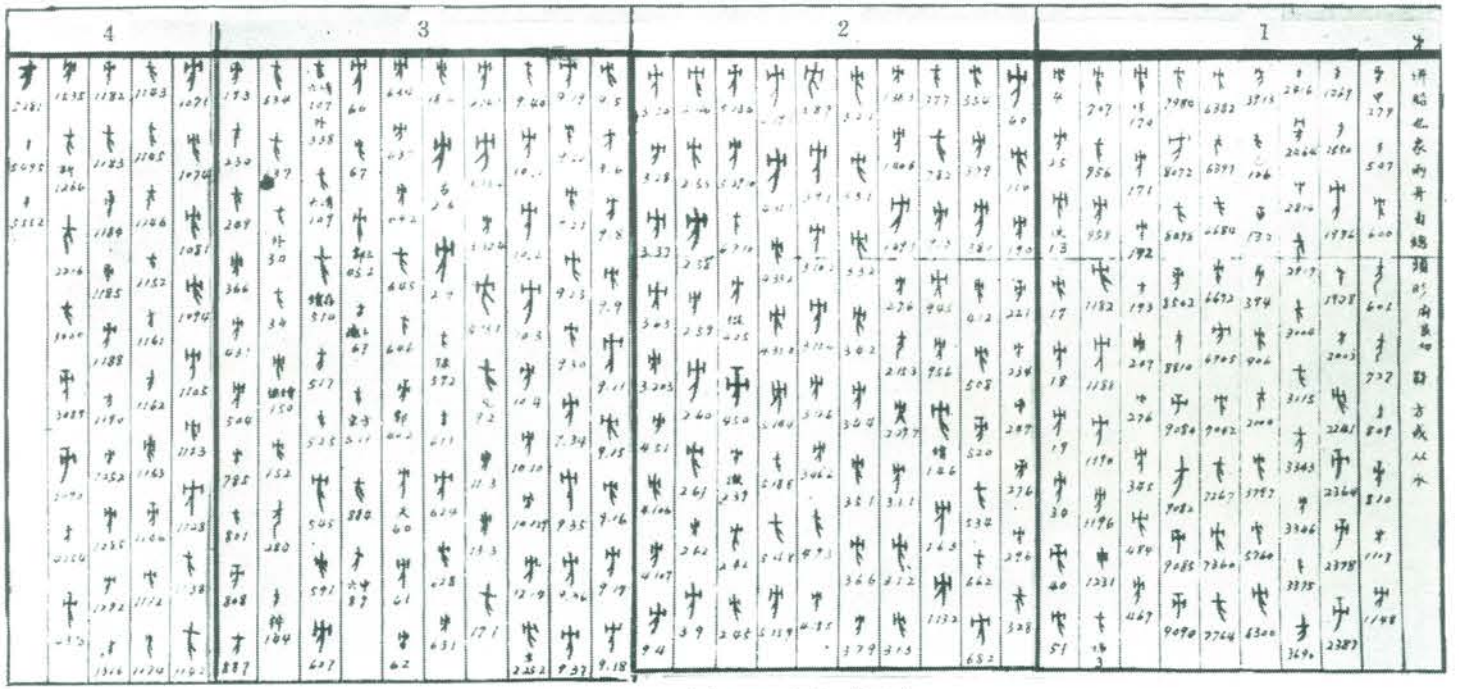
圖版貳
Plate II



A 古代獨木舟之全貌
B 獨木舟之側長



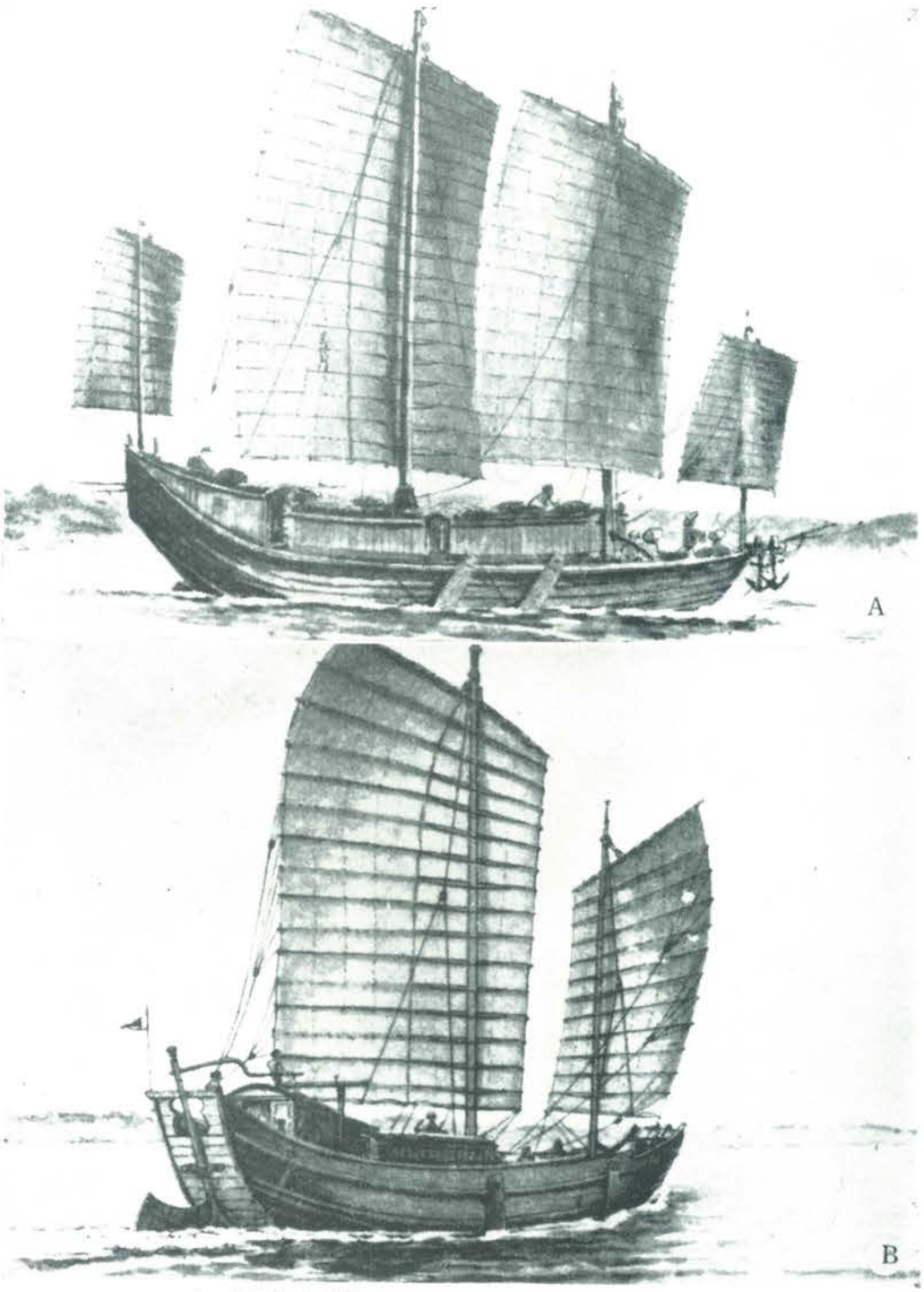
A 由正前方看獨木舟
B 獨木舟之底部



續甲骨文編上所收錄的二百九十二個方字

A 南京帆船有下風板兩對
B 蕪湖帆船亦帶有兩對下風板

圖版陸
Plate VI



A 長江的四帆大船，船舷有下風板兩對

B 由漢口航至沙市經過岳州而入洞庭湖的帆船亦有下風板兩對

伍、中國古代與太平洋區的方舟

一、引　　言

在民族所集刊第二十六期著者發表中國古代與印度太平兩洋的戈船考一文，本文的中國古代與太平洋區的方舟乃爲前文之續。太平洋與印度洋上航海的工具有四種：(一)桴桅；(二)戈船；(三)方舟；(四)樓船。這四種水運工具能載重致遠，將操南島(Austronesian)語系的同一民族，由亞洲東岸散佈移居在印度太平兩洋星羅棋佈海島上，且西達非洲東岸，東抵南美西岸。世界上任何同一語系的民族，分佈之廣無出其右者。

著者在民族所集刊第一期曾發表臺灣的航海帆筏及其起源一文，根據臺灣的航海帆筏推論兩洋上的帆筏的起源地，可能在中國，在中國古史的傳說時代，約在紀元前三十三世紀第一位皇帝伏羲氏(1)卽始乘桴(2)。到了黃帝時代(2697B.C.)乃變桴筏以造舟楫。殷商時代甲骨文字的方字多作𠂤或𠂤，我們研究的結果，𠂤字形象後世的雙邊架艇，後亦有變成單邊架艇的，這就是集刊第二十六期所考證的戈船。

前文曾說過我們在太平洋上的中國遠古文化(3)文中，簡略提到方舟，文中說：

> 方舟　詩經周南：'不可方思'；又邶風：'方之舟之'。說文：'方，併船也'；又'舫，方舟也'。爾雅：'大夫方舟'，李巡註云：'併兩船曰方舟'。所謂併兩船卽英文的 Double canoes，這是太平洋上尤其是在玻利尼西亞羣島主要航海的船隻。方舟是由筏進步而來(4)，它的功用與筏相等，既省材料又輕便而能增快航行的速度。

在前我們已研究過桴筏與戈船，本文再來詳細研究雙舟或方舟，在中國古書中對於戈

---

(1) Handy, 1927, p. 326.
(2) 凌純聲，1956, p. 22.
(3) 凌純聲，1961, pp. 27-31.
(4) Haddon and Hornell, 1938, p. 44.

船爲何物，以字義來解釋，多發生錯誤。說文云："方舟，併船也"。併兩船而航行的謂之方舟，由龜甲文字的研究，我們始明瞭古之方舟，實爲獨木舟裝有邊架之舟，邊架舟有單架有雙架之別，古書多稱戈船，併兩船的方舟，我們不如簡單明瞭稱之謂雙舟。

二、方舟與舟航

在前中國古代與印度太平兩洋的戈船一文中，我們研究'方'字，許愼說文說：

方，併船也。象兩舟省總頭形，凡方之屬皆从方，㵗方或从水。

又說文說：

斻，方舟也。从方亢聲。禮天子造舟，諸侯維舟，大夫方舟，士特舟。

許氏謂"方，併船也"。又云："斻，方舟也"。二者是有分別的，但許氏沒有說出其區別的理由。釋言及毛傳皆曰："方，泭也"。經過我們的研究：'方'是邊架艇 (outrigger canoe)，自黃叔璥氏番俗六考有"蟒甲，獨木挖空，兩邊翼以木板，用藤縛之"起，則臺灣航海用的雙架艇始見於記載。1875年 Taintor 氏譯噶瑪蘭廳志，譯'蟒甲'爲 *mangka*。Ferrell 氏謂 *mangka* 噶瑪蘭 Kuvalan 和加利宛 Kariwan 語爲 *v'anga*。"方，泭也"。'方'與'泭'二音都與 *v'anga* 之音相近。又邊架艇不論其爲雙架或單架，架之形似戈狀，故有戈船之名。今日臺北市的萬華，昔稱蟒甲、艋舺二者都是*v'anga*一名的音譯。

現在我們研究的方舟與併船不同，段玉裁注許氏說文云：

斻，方舟也。舟字葢衍。衞風：一葦杭之。毛曰：杭，渡也。杭卽斻字，詩謂一葦可以爲之舟也，舟所以渡，故謂渡爲斻。始皇臨浙江水波惡，乃西百二十里從狹中渡，其地因有餘杭縣。杜篤論都賦：'造舟於渭，北杭涇流'。章懷後漢書作北斻。注云：說文斻字在方部，今流俗不解，遂與杭字相亂者誤也。是說誠然。然斻之作杭久矣，章懷偶一正之，而不能盡正也。李南傳：向度宛陵浦里斻，馬踠足。亦係章懷改杭爲斻。而地理郡國二志，餘杭縣未之或改也。斻亦作航。方言曰：舟，或謂之航。杭者說文或字抗。从方亢聲，胡郎切，十部。禮天子造舟，諸侯維舟，大夫方舟，士特舟。大雅詩傳及釋水同，李巡

曰：比其舟而渡曰造舟，中央左右相維持曰維舟，併兩船曰方舟，一舟曰特舟。孫炎曰：造舟，比舟爲梁也；維舟，連四舟也。釋水及公羊傳注此下又庶人乘泭句。

我們祇研究上述四種舟制中的'併兩船曰方舟'，淮南子主術訓：

大者以爲舟航柱梁。高誘注云：舟，船也。方兩小船，並與共濟爲航。

又同書氾論訓云：

乃爲簨木方版，以爲舟航。高誘注曰：簨，空也。方，並也。舟相連爲航也。

上引淮南子的舟航，這與西周的方舟不相同的，管子小匡篇：

遂至於西河，方舟設泭。

楚詞七諫：

將方舟而流兮。

尤其是'方舟設泭'，方舟既已併船，則不必再編木設泭了！所以航，方舟也。漢初的方舟，已與周代的不同。方言：

舟自關而東，或謂之舟，或謂之航。

又方言注云：

揚州人呼渡津航爲杭。荆州人呼潕是亦與航同。

甲骨文中的水運工具祇有三字：俞，空中木爲舟也。舟，刳木爲舟。方，併船也，象兩舟省總頭形。三個字中以'方，併船也'，解釋較不明白，經過深入研究後，古代的戈船卽甲骨文中的'方'字，形似近代的邊架艇（outrigger canoe），到漢初始見航字。航，方舟也。方舟之制周代已有，禮，大夫方舟。方舟卽今之雙舟（double canoes），民物學上在今之東北地方，尙存此渡河之法。西清黑龍江外紀卷四有云：

'威呼'獨木船也。長二丈餘，濶容膝，頭尖尾銳，載數人，水不及舷嘗寸許，而中流蕩漾，駛如竹箭。此眞刳木爲舟也，遇河水暴漲，則聯二爲一，以濟車馬。余來時，奉天，吉林道中數乘之。中流瞑目不敢視，其險可想。

又孟森讀說文解字詁林（民國十五年）云：

許書方字解云：併船也，象兩舟省總頭形。然則以方舟爲本意，而其訓爲並，比方猶言比並，義可通矣。至方圓之方，訓殊不備，段氏以爲引伸得之，始亦

以爲如是云云爾。比往來於松花江上，乃見古代方舟之眞相。舟爲獨木爲之，如易所謂刳木爲舟，近江邊行人往來，可用舟渡。舟亦間有非獨木者，固緣後起，要其爲舟，亦全不知油艙爲何事，水從舟底入，舟人抒而傾之於江，一渡之頃，傾水多次，轉不如獨木舟之牢實。旅客在陸，必乘大車，駕以騾馬七八頭，上臥數人，兼載行李雜物。方舟之渡，乃並兩獨木舟，敷板其上，成一大方形，車馬人物畢登其上，且不滲水。輿梁徒杠，在彼爲開闢所未有，所恃爲津渡之計者，惟此方舟，乃知古代交通大率類是。而方舟之方，卽方圓之方，舉事而見其形，不勞引伸而得，此一義也。

民物學上的資料，現僅找到上述兩則，都用作津渡。上錄引文孟氏所謂："方舟之渡，乃並兩獨木舟，敷板其上，成一大方形，……而舟之方，卽方圓之方。"實非方圓之方，乃爲淮南子氾論訓所云："鑿木方版，以爲舟航"了。

三、古代圖籍所載的雙舟

在文獻上載有圖繪雙舟之制的明茅元儀武備志卷十七戰船二的鴛鴦槳船有云：

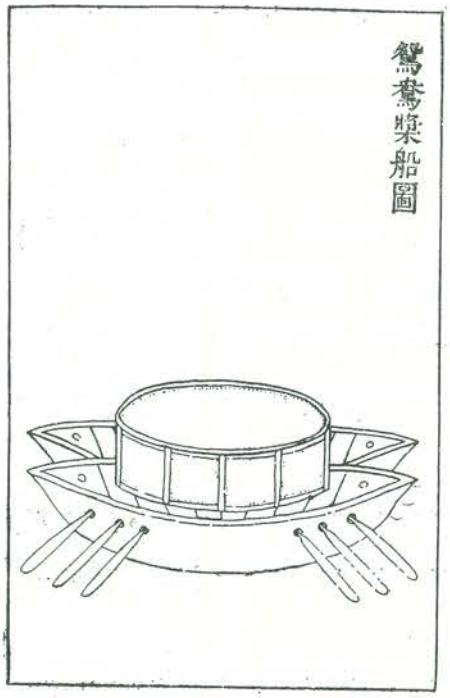
鴛鴦槳用二舟，活扣一處，形如艦船，不用蓬桅，各長三十五尺，濶九尺。艙上用生牛皮張裹，藏列兵器勇士，搖槳每邊八把(插圖一)，艙旁兩邊留箭眼。如赶敵，則兩飛棹相敵，近則放神器，分爲兩舟夾攻，使彼左右難救，賊必敗也。

又同書同卷子母舟條云：

子母舟，長三丈五尺，前二丈如艦船樣，後一丈五尺。只有兩邊幫板，腹內空虛，後藏一小舟，通連一處，亦有蓋板掩人，兩邊四棹，前每船使風送棹槳(插圖二)。前艙內裝以茅蒭油麻，縛沃交貫，火藥粗線。船前兩腋，俱用狼牙釘錠，背用鋼尖快利，或迎抵彼船艙內，發鈎拒掉，搭以溜索，與彼相連一處。先往船上放箭砂等具，卽將我母船發火，與彼並焚，我軍後開子船而歸。

上錄的鴛鴦槳船和子母舟雖都成爲戰船，但是利用雙舟的原理的。又圖書集成考工典舟楫部紀事二之八，有方舟的記載云：

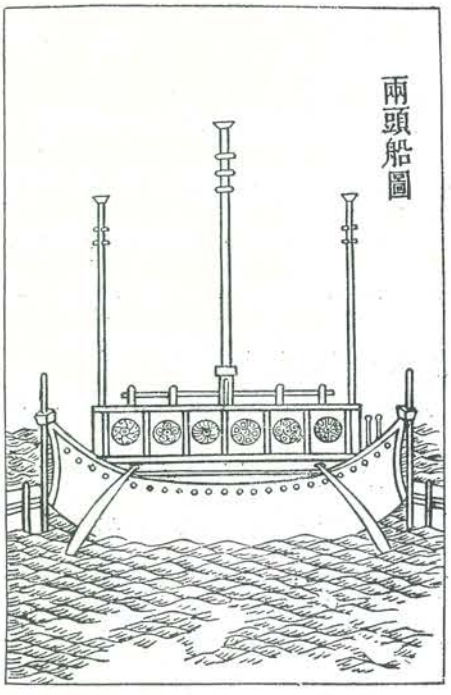
方船制長十丈九尺，濶二丈九尺五寸，爲方形。



插圖一　鷁鷁槳船圖（採自武備志）

插圖二　子母圖（採自武備志）

插圖三　鷹船圖（採自籌海圖編卷十三）



插圖四　兩頭船圖（採自籌海圖編卷十三）

上述方船之制，餘不可詳考。由作者推測方船本身尺寸：長十丈九尺，濶二丈九尺五寸，爲一隻船的長度，既稱方船，又爲方形，勢必連釘兩船始能成爲方形。

在明代海戰船隻可由前後兩方行駛的有鷹船與兩頭船兩種。籌海圖編卷十三兵船鷹船圖說云：

> 崇明沙船可以接戰，但上無壅蔽火器矢石，可以禦之。不如鷹船（插圖三）兩頭俱尖，不辨首尾，進退如飛。其傍皆備竹板，密釘如福船旁板之狀，竹間設窗，可出銃箭。窗之內，船之外，隱人以盪槳。先用此舟衝敵，入賊隊中。賊技不能却，沙船隨後而進，短兵相接，戰無不勝矣。鷹船沙船乃相須之器也。

又同書卷十三，兵船兩頭船式圖說：

> 兩頭船（插圖四）按大學衍義補有兩頭船之說，蓋爲海運爲船巨，遇風懼難旋轉，兩頭製舵。遇東風則西駛；遇南風則北駛。海道諸船，無逾其利。……以此衝敵，則賊舟雖整可亂也。

太平洋的雙舟亦可由兩個方向行駛的，詳見下節。又玻利尼西亞的雙舟亦有用作戰艦的。

四、太平洋上的雙舟

玻利尼西亞島民爲了移民或征戰，要運輸大量的貨物，或載客，乃改進發展了雙舟。這種較粗笨的運輸工具，用兩條或更多的橫木將兩船聯繫起來。如 Tongans, Samoans, Maoris 及 Fijians 的雙舟。大溪地人和夏威夷人造雙舟亦很聞名。他常在聯結兩艙的橫木之上，造一平臺，建有艙房，作爲酋長和其僕從之居所。食物儲在下艙，如船上有婦女則另居下艙(1)。

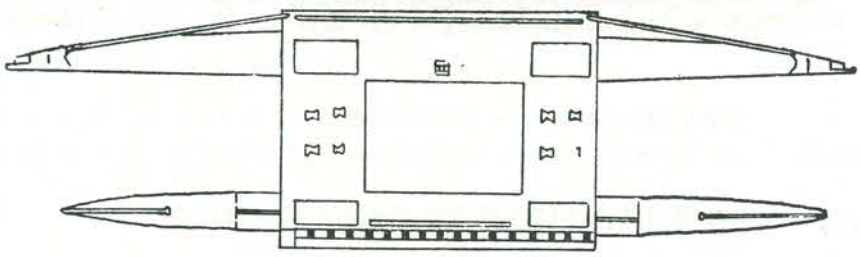
海洋洲的雙舟，在此需指出的是在歷史時代使用在玻利尼西亞是很普遍的存在。在菲基島的最後一艘是建造於1913年。在海洋洲之雙舟，有二基本的型態：(一)二舟體的大小相等或幾近相等，一般將桅杆裝置於二舟中央的前部，因此而有固定的舟首與舟尾；(二)二舟體的大小和形式不一致，桅杆設於大舟之中央，而可由兩個方向行駛。

---

(1) Hornell, 1946, p. 263.

1. 海洋洲的第一類之雙舟，包括以下諸地，卽：Hawaii、Tuamotus、Society Islands、Manikiki、Marquesas、Cook Islands 以及 New Zealand；在 Samoa、Tonga、Tokelau 和 Ellice Islands 諸地的雙舟，於十八世紀後半期轉變爲 Fijian 型式之前，這些島嶼的雙舟亦屬於此類。例如圖版壹A和B卽爲大溪地羣島的旅行雙舟。

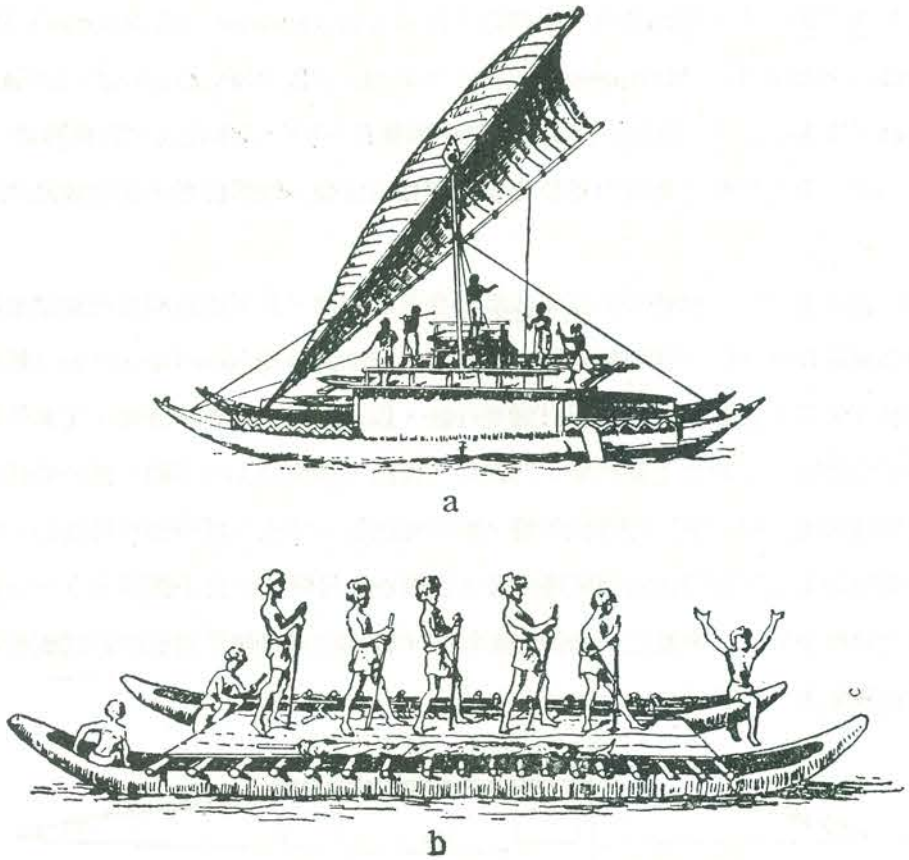
2. 海洋洲的第二類雙舟是在菲基羣島發展出來的，其來源是利用米克羅尼西亞的帆邊架艇建造的原理，將型態簡單，而又大小相等的老式 New Caledonian 雙舟改造而成的。其目的在使雙舟前後兩向都可行駛，以及在操帆時更爲方便，尤其是在逆風向時最爲便捷。其舟之主要改變，乃在於二舟的大小形狀上的不同、桅杆的位置以及帆之形狀等的改變。第二舟體的兩端，變得細而尖，其大小減少到功用僅如一浮木。桅杆則仍如米克羅尼西亞式的帆邊架艇，裝置在大舟體的中央（插圖五），而玻利尼西亞式將帆裝置在二舟體之間的情形則較少，帆則由米克羅尼西亞羣島式改變爲有力的海洋洲的大三角帆（lateen）。



插圖五　飛技式雙舟，在較大的舟上有桅承

Fijian double canoes (*ndrua*) showing mast-shoe on larger hull
(plan of canoe measured at Suva, 1925)

早期之航海者記錄，Tuamatus 的雙舟（圖版貳A），長由75至120呎，寬則爲27至33呎不等。在 Cook 第二次造訪 Tahiti 時，他看到集在在一起的150艘大型的雙舟戰船，長由50至90呎不等，每一艘可載50至120人。更大者載144人以及8至10人之水手（圖版貳B）。夏威夷的 Kamehameha I 王之大雙舟長達108呎。Fiji 和 Tonga 能載200至300人，而一艘在 Samoa 建造的 Fijian 雙舟更可載500至600人。如薩摩亞人最後建造的雙舟，本擬呈獻德皇（German Kaiser），後因運輸不便



插圖六　雙舟：a. 在 New Caledonia 者；b. 在 Bélep Islands 者

Double canoes: a. New Caledonia; b.Bélep Islands (after Lambert 1900 figs 13, 44).

而未成事實。參見本書第陸章中國古代與海洋洲區的樓船圖版叁B。

在美拉尼西亞的 New Caledonia 及其鄰近島嶼，昔日雙舟不少。Cook 說他在 Balade 的西北部曾見到10至12艘大型的雙舟(1)。如插圖六 a. 所示爲 New Caledonia 的用帆雙舟，上有層樓，成爲雙舟式的樓船；b. Bélep 島在 New Caledonia 之北，雙舟之上有一平臺，臺上有五人每人使用一暗櫓，櫓長兩公尺，插入小孔中搖櫓推進雙舟，舟首坐一人，注意是否觸礁及天氣等問題，尙有二人在舟尾，一人用划槳作舵，這種雙舟至十九世紀尙在航行(2)。

在海洋洲的所有航海工具中，桴栰當是最早而最原始工具，這是確定的事實。而

(1) Cook, 1777, Vol. 2, p. 104.

(2) Haddon, 1937, pp. 9-10.

其他雙邊架艇，單邊架艇，雙舟和樓船都有源於桴桅的可能，是可以斷言的，但誰先誰後，至今尚多爭論。在海洋民族學上，對於舟之演進次序，擬在本書第七章中，討論之。

主要參考書目

中　　文

茅　坤（胡宗憲）

1562 籌海圖編，明嘉靖四十一年。

茅元儀

1621 武備志，明天啓元年。

凌純聲

1956 臺灣的航海帆筏及其起源，民族學研究集刊第一期，民國四十五年。

1961 太平洋上的中國遠古文化，大陸雜誌，第二十三卷第十一期，民國五十年。

孟　森

1926 讀說文解字詁林。民國十五年。

陳淑均

1832 噶瑪蘭廳誌。

黃叔敬

1736 臺海使槎錄卷六番俗六考，乾隆元年。

西　　文

COOK, J.

1777 A Vayage Towards the South Pole and Round the World (1772-75), 2nd ed., London.

HANDY, E. S. C.

1927 Polynesian Religion: B. P. Bishop Mus., Bull. 34.

HADDON, A. C. and HORNELL, J.

1937 The Canoes of Melanesia, Queensland, and New Guinea, Canoes of Oceania Vol. III. Hawaii.

1938 Definition of Terms, General Survey, and Conclusions, Canoes of Oceania Vol. 111. Hawaii.

HORNELL, J.

1946 Water Transpost: Origins and Early Evolution, Combridge, England.

V. THE DOUBLE CANOES OF ANCIENT CHINA AND THE PACIFIC AREA

1. INTRODUCTION

This paper is a continuation of the article entitled "Outrigger Canoes in Ancient China and the Indo-Pacific Ocean," which the author previously wrote and was published in No. 26 of the Bulletin of the Institute of Ethnology. There were, in the ancient days, four different types of watercraft used for sea travels in the Pacific and Indian Oceans as follows: (1) Raft; (2) outrigger canoe (also known as Ko Chuan 戈船—halberd canoe); (3) double canoe (also known as Fang Chow 方舟—square boat); and (4) deck canoe (also known as Lou Chuau 樓船—tower boat). With the help of these four kinds of watercraft, which were capable of carrying heavy load and sailing for great distance, the Austronesian people had emigrated from the east coast of Asia to various islands in the Pacific and Indian Oceans, reaching as far to the west as the east coast of Africa and to as far as the west coast of South America in the east. In fact, no other people of one language family in the world had been so widely distributed as the Austronesians.

From the sea-going rafts of Taiwan it may be induced that the rafts of the Pacific and Indian Oceans were possibly originated in ancient China (Ling, 1956: 22). According to legendary history of remote China, the raft began to be used in the time of Fu Hsi Shih 伏羲氏 (the 33rd century B. C.) (Handy, 1927: 326). Later in the time of the Yellow Emperor 黃帝 (2687 B. C.) the raft was converted into the canoe. The word 'fang' (方 square) in the ancient oracle-bone inscriptions of Yin Shang 殷商 epoch was written as 𠂤. Our research reveals that the hieroglyphic '𠂤' resembled the double outrigger canoe of later ages. And through subsequent modifications of the double outrigger canoe appeared the single outrigger canoe, which was simply the Ko Chuan as identified in No. 26 of the Bulletin of the Institute of Ethnology.

As the raft and Ko Chuan have been discussed previously, this paper will treat primarily of the double canoe or Fang Chow in great detail. As to what the Fang Chow really was, the records in ancient literary works, if interpreted literally, often give a misrepresentation. For example, Shuo Wen 說文 states: "Fang Chow, means linking two boats together side by side." Through a study of the oracle bone characters, I came to know that the ancient Fang Chow was virtually a dugout canoe, equipped with either a single or double outriggers. Such outriggered canoes were referred to as Ko Chuan in most ancient books. In light of this, we may as well simply call the ancient Fang Chow, two boats linked together, the double canoe.

2. DOUBLE CANOES

In this author's previous paper on the "Outrigger Canoes" (Ling, 1968), the following comments from Hsu Shen's 許愼 Shuo Wen were quoted: "Fang 方 (square)—means linking two boats together side by side" and "Hang 航—square boat." Although it appears very obvious that there was a difference between the two explanations, Hsu Shen gave no reason for this difference. Both Shih Yen 釋言 and Mao Chuan 毛傳 state: "Fang 方 means Fu 泭 (bamboo or timber raft)." After considerable research, the author hes come to the conclusion that the ancient 'Fang' 方 was nothing but an outrigger canoe. Beginning with the following account in Huang, Shu-ching's 黃叔璥 Fan Shu Liu Kao 番俗六考, completed in 1736: "Mangka 蟒甲 was made by hollowing out a single log, with wooden boards fastened at both sides with rattan strips", many records of the sea-going outrigger canoes of Taiwan continued to appear in ancient books and documents. The word 'Mangka' was a translation, made by Taintor in 1875, of the term 'mang chia' 蟒甲 in the Kavaalan Ting Chih 噶瑪蘭廳志. Ferrell said, "the pronunciation of 'mangka' in the Kavaalan and Kariwan languages is 'vanga'". Apparently, both the word 'Fang' 方 and the word 'Fu' 泭, as mentioned above, are very close to 'vanga' in sound. Besides, the frames of the early outriggered canoes, whether with double outriggers or a single outrigger, were usually made in the shape of a 'Ko' 戈 (halberd). Perhaps this was the background from which sprang the name of 'Ko Chuan 戈船 (halberd canoe)'. In addition, 'Wan Hua' 萬華, a district of present Taipei, was called 'Mang Chia' 艋舺 in the former days. In other words, both '蟒甲' mang chia and '艋舺' mang chia were translations from 'vanga' by sound.

Only three words which represented the primitive watercraft were found in the ancient oracle-bone literature; namely, '𠂤' (yu)—a canoe made by hollowing out a log of wood; '舟' (chow)—a canoe made by scooping out a block of wood; and '方' (fang)—two canoes connected together side by side, presenting an outlook of one boat. The explanation of the last of the foregoing three types of water craft seems not clear enough. An intensive study reveals that the word '方' (fang) in the oracle bone inscriptions signified just the ancient 'Ko Chuan' (halberd canoe), which was similar in shape to the outrigger canoe of modern times. The word '航' (hang) made its debut during the early part of the Han Dynasty, standing for 'Fang Chow'. Judging from the record 'Tai Fu Fang Chow' in Li Chi 禮記, there is enough reason to believe that 'Fang Chow' was in existence as early as the Chou Dynasty and was simply the double canoe of the modern ages. As a matter of fact, ferry-boats made in like manner were still in use not long ago in Northeast China. Quoted below as evidence is a passage from Vol 4, Hei Lung Chiang Wai Chi 黑龍江外記 of Si Ching 西清: "How marvelous the canoe is'. It is over 20 feet

long, wide enough for the knees to rest in sitting position, its bow pointed and its aft end sharp. It is big enough to carry several people....It runs as fast as a flying bamboo arrow.—It is truly a dugout hewn out of a log. In the event the river is rising or is in flood, two such dugout canoes can be fastened together to ferry carts and horses across the river." Also cited here is an account from Meng, Shen's 孟森 Tu Shuo Wen Chieh Chih Ku Lin 讀說文解字詁林: "To ferry by the 'fang chow' simply means to fasten two canoes together and place wooden planks over them to form a large square surface and then use it to convey carts, horses, people and goods over a river. Such contrivance was just developed for use in place of a bridge, and this same method was frequently used during the ancient times. The word 'fang' in the term 'fang chow' can therefore be ascertained to mean just 'square' in shape." This extract from Meng Shen is, in effect, the same as the following account contained in Huai Nan Tze's 淮南子 Fan Lun Hsun 氾論訓: "To hollow two blocks of wood, connect them together, and place a large plank over them to make a square boat."

3. THE DOUBLE CANOES IN ANCIENT BOOKS

Records relative to the practice of coupling two coats together are also found in historical documents and illustrated books. For instance, the Wu Pei Chih 武備志 by Mao, Yuan-yi 茅元儀 of Ming Dynasty contains records of the 'yuan-yang-chiang chuan' 鴛鴦槳 (twin-oar boat) and 'tze-mu-chow' 子母舟 (son-and-mother boat). The yuan-yang-chiang (Fig 1) was built by lashing two canoes together in the form of a war-boat, without the use of a mast. Each of the two canoes was 35 feet long and 9 feet wide. The tze-mu-chow (Fig 2) was 35 feet long. The front 20 feet of which presented the apparance of a war-boat, while the rear 15 feet consisted of only two sides and a small boat was stored in the hellow space between the two sides. Both the yuan-yang-chiang and the tze-mu-chow were used as warships, but were built by the method of placing two boats together.

Of the battle-ships of Ming Dynasty, there were two types, i. e., the 'ying chuan' 鷹船 (Fig 3) and 'liang tou' 兩頭 (Fig 4), that could be navigated from either end.

4. THE DOUBLE CANOES ON THE PACIFIC OCEAN

The double danoes of the Pacific Ocean also could be operated at either end. Some of the double canoes of Polynesia were also used as warships, especially in Tonga, Samoa, Maoris and Fiji. The Tahitians and Hawaiians were also well known for their double canoes. Their double canoes were usually made by connecting two canoes together with cross-beams, upon which a platform was often built. In some cases, cabins were erected on the platform to accommodate a tribal chief and his entourage (Hornell, 1946: 263).

The Oceanian double canoes had been widely used in Polynesia throughout the periods of the Oceanian history, and the last of which was built in Fiji in 1913. The Oceanian double canoes may be classified into two basic types: (1) The two canoes, which were fastened together, were either same or close in size; the mast was usually installed near the front on the centerline between the two canoes, thus presenting a clear bow and stern; and (2) the two canoes were different both in size and shape; the mast was installed in the center; and therefore it could be steered from both ends.

The first type of the Oceanian double canoes were distributed over Hawaii, Tuamotus, Society Islands, Manikiki, Marquesas, Cook Islands and New Zealand. The double canoes of Samoa, Tonga, Takalau and Ellic Islands also belonged to this type prior to their conversion to the Fijian style in the second half of the 18th century. Shown in Plate IA & B, for example, were the passenger double canoes of Tahiti.

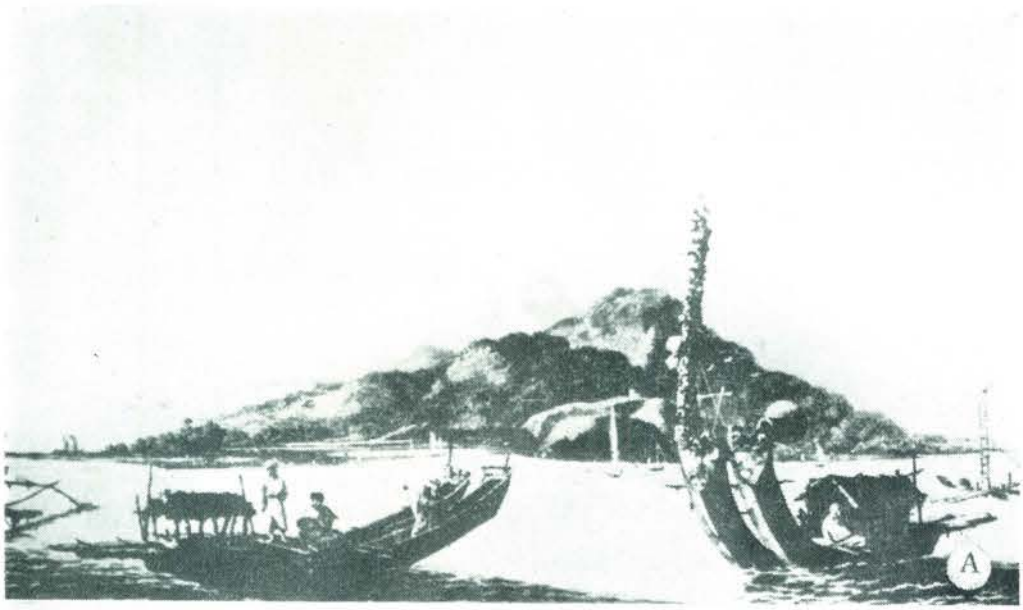
The second type of the Oceanian double canoes were first created in the Fiji Islands, by modifying the New Caledonia old-styled double canoes, and following the construction theory of the Micronesian outriggered sail-canoe with some simplifications. The main advantages of this type were; it could be operated from either end; and it could be operated easily with the sail against the wind. The main changes were reflected by the different shapes of the two canoes, the position of the mast, and the different shape of the sail. The size of the secondary canoe was reduced to merely a floating log, with both of its ends tapering almost to a point. The mast was usually installed in the center of the principal canoe (Fig 5), same as that of the Micronesian-styled outriggered sail-canoe, but the powerful Oceanian-styled lateen was used instead of the Micronesian-styled sail.

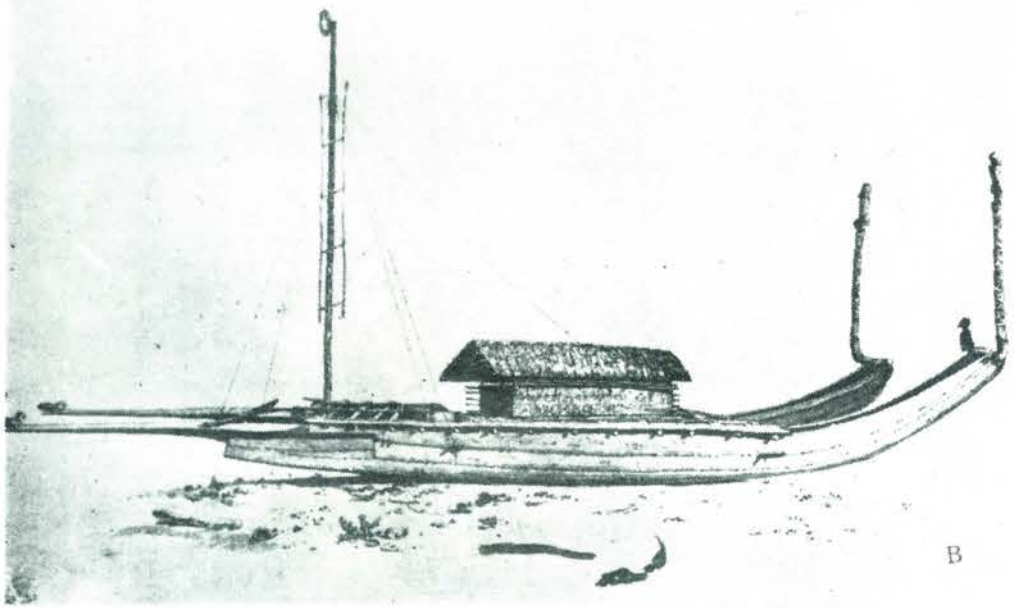
The early logs of sea journeys indicate that the double canoes of Tumamatus were normally measured from 75 to 120 feet long, and from 27 to 33 feet wide. During his second visit to Tahiti, Captain Cook saw an assembly of 150 large double canoes, all of them could carry about 50–120 persons, and the larger ones among which could even carry as many as 144 passengers plus 8–10 sailors. The huge double canoe of King Kamehameha I of Hawaii was as long as 180 feet. The double canoes of Fiji and Tonga usually could accommodate from 200 to 300 passengers, and one huge double canoe of the Fijiian style the Samoans built could carry a total of 500–600 people. The last double canoe which the Samoans built had been intended as a gift for the German Kaiser, but the plan failed to materialize due to transportation difficulty. (See Plate III B, The Deck Canoes of Ancient China and Oceanian Area, Chapter VI of this Monograph).

Double canoes were also often used in the early days in New Caledonia, Melanesia and its neighboring islands. Cook said he saw 10 to 12 large double canoes at a

place northwest of Balade (Cook, 1777: 104). Shown by Fig 6a was a sail-propelled double canoe of New Caledonia, which, having on its deck a storied building, was therefore called the double-canoe Lou Chuan (deck canoe). Fig 6b displays a double canoe of Bilep, north of New Caledonia. Standing on the deck or platform of whicn were five persons, each of them was rowing with a covert oar. In addition, one man was sitting on the bow, watching for reefs and weather changes, and two others were in the stern, one of whom was helming the boat with an oar. Such double canoes were stilll seen in use for sea voyages during the 19th century (Haddon, 1937: 9–10).

It has been verified that the raft was the earliest and most primitive watercraft of all Oceanian sea-going vessels. And it can further be ascertained that the double outrigger canoes, single outrigger canoes, double canoes, and deck canoes may all trace their origin to the raft. However, the question as to which of these different canoes had appeared first and whicn later and in what sequence has been in argument for a long time. This question will be discussed in length from the view-point of Oceanic Ethnology in Chapter VII of this monograph.

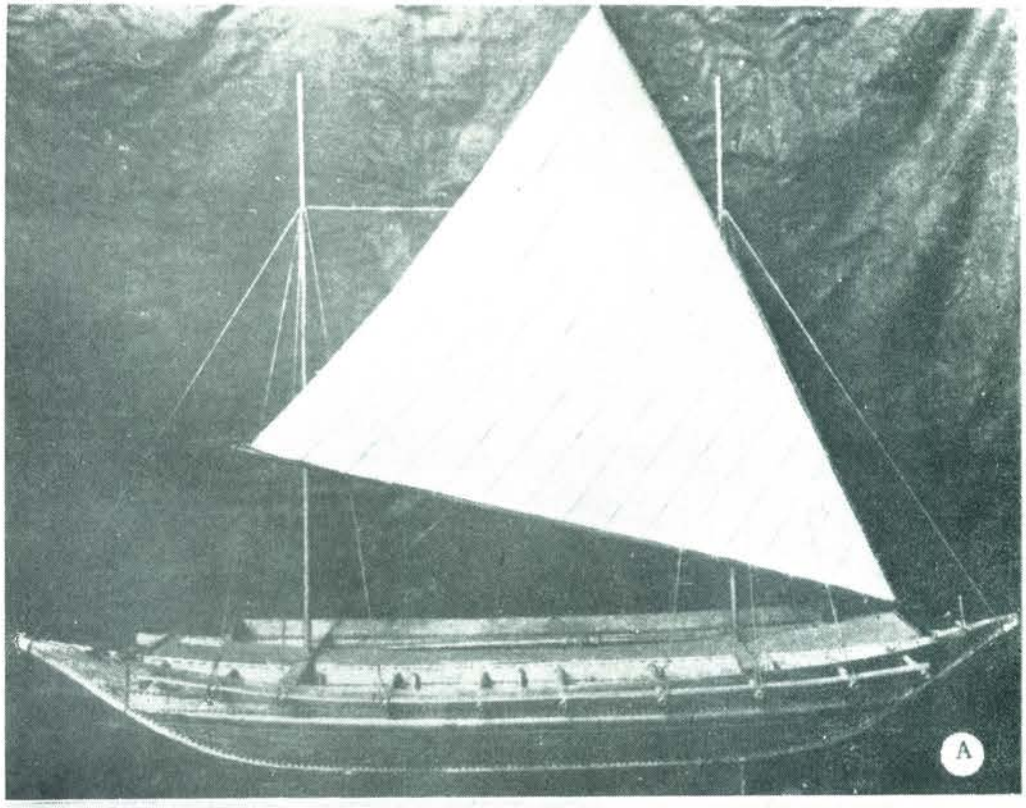


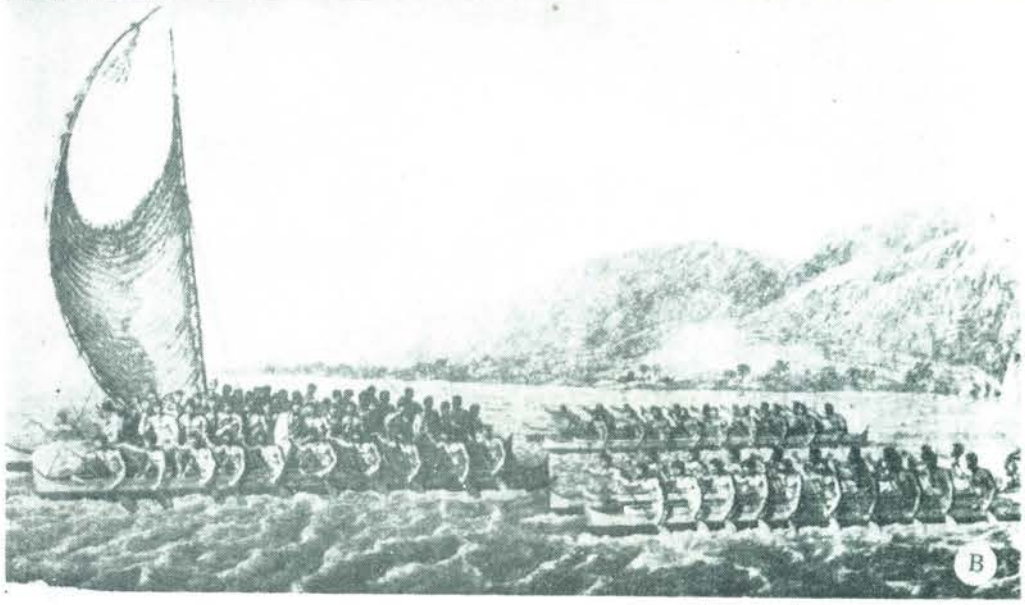


A. 大溪地旅行雙舟之一
Tahitian *tipairua* (traveling canoe), after a plate by Hodges (Cook, 1777, Atles)

B. 大溪地旅行雙舟之二
Sketch by Webber of a Tahitiana *tipairua* (British Museum, Add. M. S. No. 15515).

圖版貳
Plate II





A. Tuamotuan 雙舟 Tuamotuan double Canoe, model made under the supervision of Admiral F. E. Paris (Musée de Marine, Louvre, Paris, No. 1451.)

B. 夏威夷 Tereoboo 王之雙舟

Tereoboo, King of Owyhee, bringing presents to (drawn by J. Webber) Captain Cook.

陸、中國古代與海洋洲區的樓船

一、引　　言

我國沿海亦可說濱臨兩洋的國家，卽東濱太平洋，南臨印度洋。太平印度之交，實爲世界上星羅棋布島嶼最多之區域，自西而東有，印度尼西亞（簡稱印尼島），美拉尼西亞（簡稱黑島），米克羅尼西亞（簡稱小島），和玻利尼西亞（簡稱多島），以上四羣島合稱海洋洲 (Oceania)，我國又稱南洋羣島（圖版壹）。在這許多數不清島嶼之間，自遠古以來，早已有水運交通。我們在太平洋上的中國遠古文化文中，也曾提到運輸量最大的樓船，該文中說：

> 樓船　上述的桴桅、戈船、方舟在海上航行，如遇風浪，易受浪擊，爲避免海水侵濕，多可架高施樓，卽成樓船。又樓船可施樓數層，增加儀重，在中國古代用作水師。越絕書卷四云：'浩浩之水，朝夕有時，……念樓船之苦，涕泣不可止'。史記南越傳：'江淮以南樓船師十萬'。這種樓船在近代印度洋上尙用作戰船，同時可想到有此能載重的樓船，所以太平印度兩洋上的民族得大量的遷移和遠航(1)。

上述四種航海工具，可說多是起源於中國的，至少可說在中國古史的傳說時代已有記載，桴桅戈船與方舟我們已研究過，本文再來詳細研究樓船。

今之多島、小島、黑島與印尼島四羣島的民族語言，合稱爲南島語系民族 (Austronesian) 散佈在印度和太平兩洋的島嶼上，他們最初的水運工具，所恃者爲桅排，羅欣物原云：燧人以匏濟，伏羲始乘桴，軒轅作舟。伏羲又名太昊氏，太平洋上則稱之謂 Taaroa，或 Tangalo，視之爲航海神，常說：

> 啊！我的太昊神
>
> Oh my god Taaroa!

---

(1) 凌純聲，1961, pp. 27-31.

使海平靜而可航行

Cause the sea to be calm and navigable.

讓我們到達陸地，婦女和孩子。

Permit us to reach the land, the women and children(1)

中國遠古太昊時卽向海洋大量移殖，水運工具最初爲桴排，後又有戈舟、方舟，最後才有眞正的樓船。

所謂樓船英文名叫 deck canoe，不論桴排、戈船、方舟都可架一層或數層平臺，卽成樓船，至於漢初的樓船，或已成爲眞正的樓船。

二、樓船的型式

(一) 桴桴式的樓船

在春秋時代海上航行，猶是乘桴，論語：

子曰：道不行，乘桴浮於海。

漢書地理志：

孔子悼道不行，設桴於海，欲至九夷，有以也夫。

與孔子同時的勾踐，都提到桴桴和樓船，超絕書卷四有云：

昔者越王勾踐旣得反國，欲陰圖吳，乃召計倪而問焉。曰：吾欲伐吳，恐弗能取。山林幽冥，不知利害所在。西則迫江，東則薄海，水屬蒼天，下不知所止，交錯相過，波濤濬流，沉而復起，因後相還。浩浩之水，朝夕旣有時，動作若驚駭，聲音若雷霆，波□援而起，船失不能救，未知命之所維。念樓船之苦，涕泣不可止。

上交描寫的"念樓船之苦，涕泣不可止"。這種或是桴桴式的樓船，越絕書卷八有云：

勾踐……初徙瑯琊，使樓船卒二千八百人，伐松栢以爲桴。

所謂樓船卒卽習於水戰兵卒，漢書卷二十八地理志："廬江郡，有樓船官"。此與樓船卒爲對等的稱號。使樓船卒二千八百人，伐松栢以爲桴，卽造桴桴式的樓船。如上文所引南美 Payta 地方桴式樓船（圖版貳A）有云：

(1) Handy, 1927, p. 127.

筏的最底層是用來作地窖，他在那兒放置大石頭作壓艙物，儲放淡水的甕，以及經得起受潮溼的東西。由於壓艙物和貨物的重量，空室和艙底就沉至水面下約二至三呎。筏的第二層是住水手和放置必需用品，在第二層的上面，貨物可盡量裝載多高，通常堆至八至十呎，用木柱豎立圍成圓形，以有筏之尾部有一空地是留給操舵的人用的，在前面亦有空地，是爲了安置火爐用，特別是當其作遠航時，例如：從 Lima 到 Panama 等地，作爲烹調食物之用；其航程有五或六〇〇里格（league，約等於三哩），在筏上貨物之中央，則豎立一桅，桅上緊繫一大帆(1)。

這種桴桅式的樓船，例如圖版貳A說明云：“這是秘魯 Payta 港木桅（balsa）的舊日繪畫(採自 Spilbergen 1614–1617)記云：‘在這下午，漁人歸自海上……乘坐一船並張帆，很奇異的造法，在船上都年輕、强壯、大力的人，他們出海捕魚已有兩個月了’。看圖就知，航行技術就是水手三人升降中央板”(2)。又圖版貳B：“這是在 Guayaquil 港口停泊桴桅（採自 Paris 1841–43）。注意甲板空間的利用可能。土著全家人常乘坐浮桴，在秘魯北部沿 Sechura 或 Huanchuco 海岸，旅行自 Guayaquil 到 Payta 地方之間，直至上世紀末葉才絕跡(3)。孔子的‘設桴於海，欲至九夷’。在南美十九世紀末尚可看到，我們深信在太平洋上的島民，能够廣泛的移植，都是靠‘乘桴’的水運工具而到達的。

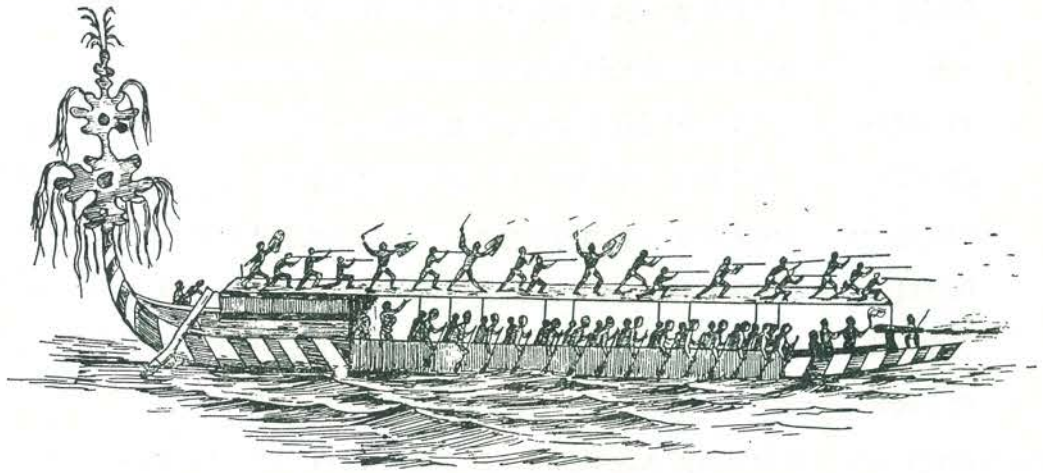
（二） 戈船式的樓船

戈船卽邊架艇，不論單架或雙架，多可疊架成簡單樓船，如 Tonga 的 Namuka 地方一例卽是。在印度尼西亞的邊架艇式的樓船甚多，如圖版貳C所示：邊架的附着物（attachment），如 Haddon 所描寫的是一塊短而寬並且相對薄的木板：（A）叫做 Coracora，雙架艇的每一浮木爲兩塊木板；（B）Ternate 王的 Karkolla 船艦，有一Y形木板附着物；（C）在前兩圖之上，是一 Madura 的戰艦。以上三船，都是有多層次的樓船。圖版貳D爲一 Maluccan 船，名叫 Cora-Cora Van Titaway。是長

（1） Edward 1965, p. 72; 1969, pp. 43-44.

（2） Heyerdahl, 1952, pp. 530-531.

（3） Heyerdahl, 1952. pp. 542-543.



插圖一　Dayak *Prahu* 戰船
Dayak War *Prahu* on Skerang River
(After F. Marryat).

木條或木板橫過在木桁的端頭，可以用作划手的座位(1)。還有 Dayak 的戰船（插圖一），叫做 ***prahu*** 航行在 Skerang 河上(2)。

（三） 雙舟式的樓船

桴栰式的樓船利於長程遠行，較近的航行都用方舟或雙舟 (double canoe)，雙舟亦能造成雙舟式的樓船。例如圖版叁 A 爲 Tongan 的雙舟；兩隻似乎混合 ***kalia*** 式，其他的特別屬於 ***tongiaki*** 式；後撐柱桅杆在船的右邊，在後面的划船有一堅固連繫物(採自 Cook，1777，卷 2），又圖版叁B是Samoan 人最後造的 ***alia*** 式的雙舟樓船，本擬呈獻德皇 (German Kaiser)，後因運輸困難，最後命運擱在海岸上(Apia Tattersall's 照相館攝)(3)，至於雙舟式樓船原始簡單式樣如圖版肆A爲 Tongan 雙舟 ***tongiaki*** 離開 Tafahi 在1616年（採自 Schoute 1619），又圖版肆B爲多根橫杠邊架艇，見於1643年在 Tongan 的 Namuka 地方（採自 Tasman, 1898）(4)。

（四） 秦漢時代的樓船

至西漢初年中國對南越、東越及朝鮮征伐，都利用樓船水師。史記卷一百十三南

(1) Haddon, 1920 pp. 87-88.
(2) Ling Loth, 1896, Vol. II. p. 247.
(3) Haddon, 1936 p. 242.
(4) Haddon, 1936, pp. 261, 266, 267.

越尉佗列傳：

元鼎四年（元前113年），……呂嘉等乃遂反，……於是天子曰：……令罪人及江淮以南樓船十萬師，往討之。元鼎五年秋，衞尉路博德爲伏波將軍，出桂陽下匯水。主爵都尉楊僕爲樓船將軍，出豫章下橫浦。故歸義越侯二人，爲戈船下厲將軍，出零陵，或下離水，或抵蒼梧。使馳義侯因巴蜀罪人發夜郎兵，下牂牁江，咸會番禺。

又討東越亦用水師，史記卷一百十四東越列傳：

天子遣橫海將軍韓說出句章，浮海從東方往。樓船將軍楊僕出武林，中尉王溫舒出梅嶺。越侯爲戈船下瀨將軍出若邪白沙，元封元年冬，咸入東越。

漢代不僅對東越和南越用兵，須利用樓船水師，即征朝鮮亦由渤海遣樓船。史記卷一百十五朝鮮列傳：

天子募罪人擊朝鮮。其秋遣樓船將軍楊僕從齊浮渤海，兵五萬人。左將軍荀彘出遼東討右渠。

在漢初樓船軍的分佈，一提及樓船，輒想到樓船多在江淮以南，但包遵彭先生說'江北亦有樓船'。漢代樓船考有云：

吾人可更進一步說，蓋不僅江南除樓船外尙有其他兵種，而江北亦有樓船。如通考注云：'滅朝鮮則用齊樓船'。漢書卷九五朝鮮傳云：'遣樓船將軍楊僕從齊浮渤海'，兵五萬。左將軍荀彘出遼東。是齊素爲樓船之根據地可知。又如史記平準書，記武帝進軍南越時，齊相上書云：'臣聞主憂臣辱，南越反，臣願父子與齊習船者，往死之'。漢書卷五八卜式傳更言'臣願與子男及臨菑習努弩博昌習船者請行'。是明言博昌素爲樓船之根據地。至於沿接江海各郡及江淮以南地區，更早爲航舶之所(1)。

作者認爲中國樓船可分三個區域(一)北方的燕齊(二)江南的吳越，(三)南方的閩越。我國史籍所載，某一地區有樓船，是記中原民族與海洋民族文化接觸的時代，史記集解應劭曰："時欲擊越，非水不至，故作大樓"。以水爭逐，中國必先鑿大池，造樓船習水師。可見沿海燕、齊、吳、越、閩、粵、諸海洋民族，早已有水戰用的戰船了。

（1） 包遵彭，1966, pp. 20-21.

三、秦漢時代樓船的航線及港口

中國東濱太平洋沿岸居民多爲東夷民族，東夷由我們研究的結論，蓋爲玻利尼西安（義爲多島）和米克羅尼西安（小島）等民族，信奉太昊（Taaroa）伏羲氏爲創造神，伏羲氏爲我國傳說史上爲第一位皇帝，羅欣物原云："伏羲始乘桴"。自遠古至春秋戰國時代，尙是乘桴浮海。至秦漢時代樓船盛行。據包遵彭氏著樓船的航線及港口一文。共分四節：

（一） 遠海航線

在太平洋上的航行。祇有簡略的記載，如論語微子篇說：

> 少師陽，擊磬襄，入於海。朱熹註：'海，謂海島也'。

論語又說：

> 子曰：道不行，乘桴浮於海。

又孟子梁惠王下，齊景公問於宴子曰：

> 吾欲觀於轉附、朝儛，遵海而南，放於琅琊。但朱注：轉附、朝儛，俱爲島名。但依焦循孟子正義說：轉附卽係之罘，朝儛卽係成山，均濱海。此與韓非子外儲說左：'齊景公游少海'之說相合。

至於"遵海而南，放於琅琊"，而琅琊爲其北方大港口。轉附、朝儛，朱注爲海島，焦注海濱之地，以焦說較近，蓋轉附、朝儛與琅琊三地同爲其時北方的港口。但作者對海字有另一解釋，前著中國古代海洋文化與亞洲地中海一文有云：

> 越絕書卷三有云：'越王勾踐返國六年，皆得士民之衆而而欲伐吳，於是乃使……習之於夷，夷，海也，宿之於萊，萊，野也'。夷義爲海，孟子曰：'舜，東夷人也'。和史記齊太公世家：'齊太公望呂尙者，東海上人'。集解：'駰案：呂比春秋曰：東夷之士'。由此可證明夷海同義。凡是居於海濱之人，都可稱夷。在東方稱東夷，在南者稱南夷(1)。

上錄'夷義爲海'，則前引文的'入於海'和'浮於海'，海義都可作夷字解釋。所謂夷卽今太平洋上散布的多島和小島的民族，在遠古居於中國大陸稱爲東夷及或九夷，和南

（1） 凌純聲，1954, p. 3.

方的百越即今太平印度兩洋之間的印度尼西安（印尼島）和美拉尼西安（黑島）等屬於同一語系稱南島（Austronesian）語系民族，在古代者中國大陸時，誠如呂思勉氏所謂在淮以北者稱夷，淮以南則稱越(1)。

今由民族學上研究中國民族的構成，我曾說過：

> 中國文化是多元的，文化的形成是累積的，最下或最古的基層文化，可說是發生和成長於亞洲地中海沿岸的海洋文化。

中國最古的基層文化，既是海洋文化，由西北來的大陸文化接觸之後，鼓盪成海洋思想。史記封禪書載：

> 自齊威、宣之時，騶子之徒論著終始五德之運。及秦帝，而齊人奏之，故始皇用之。而宋無忌、正伯僑、充尙、羨門子高，最後皆燕人，方、僊、道，形解消化，依於鬼神之事。騶衍以陰陽主運顯於諸侯。而燕齊海上之方士，傳其術不能通。然則怪迂阿諛苟合之徒自此興，不可勝數也。自威、宣、燕、昭使人入海求蓬萊、方丈、瀛洲，此三神山者，其傳在勃海中，去人不遠，患且至，則船風引而去。蓋嘗有至者，諸僊人及不死之藥在焉。……及至秦始皇並天下，至海上，則方士言之不可勝數。始皇自以爲至海上而恐不及矣，使人乃齎童男女入海求之。船交海中，皆以風爲解，曰：未能至，望見之矣。

上錄中有“騶衍以陰陽主運顯於諸侯，而燕齊海上之方士，使其術不能通”。蓋春秋時陰陽家鄒衍有大九州之說：史記卷七四：

> 中國外如赤縣神州者九，乃所謂九州也，於是有裨海環之。人民禽獸莫能相通者，如一區中者乃爲一州，乃有大瀛海環其外，天地之際焉。

這種學說，必有所據，至少可以假說中國人是由近海而至遠海早在太平洋上航行！胡適之先生說：

> 騶衍的地理頗有驚人的見解。……這種偉大的想像，只有齊東海上的人能做。我們看這種議論，不能不驚歎齊學的偉大(2)。

胡先生所謂齊學，我們之謂海洋學派，騶衍的地理知識能有如此驚人的見解，他雖不

（1） 呂思勉，1934, p. 212.

（2） 胡 適，1971, pp. 35-36.

能親自遠航外洋，必得之於海洋航行者的口頭報告，綜合而成的學說，就完全出於類推。我們將在第八章論夷越民族時，再詳論之。

上述遠海航線，是在太平洋上航行，祇有原史時代的神話和傳說而無確實歷史的記載，試舉一例，如王嘉拾遺記卷一二"少昊母曰皇娥，處璇宮而夜織，或乘桴木而晝遊，經歷窮桑滄茫之浦。……"(1)又古史考："宗昧太皞之道，故曰少皞"。(2)太皞與少皞古代認爲分佈於淮濟間之東夷民族，詳見中國古代的太皞氏與太平洋區的Taaroa另一文中。包氏研究先秦及兩漢時的樓船，其時沿海航線與港口，他分述如下：

（二） 東北沿海航線

我國東北沿海海道交通，因古陰陽家學說及燕，齊海上方士的活動，興起甚早。到戰國時，沿海航線，日漸開闢。兩漢以降，更擴展爲大規模海上軍事航運，商業上的貿遷有無和海外移民的孔道。大體以渤海灣之山東半島、遼東半島作兩翼，向北越海至朝鮮，更東轉到日本；向南可到今江浙之吳越，乃至更南的閩，粵(3)。

（三） 東南沿海航線

我國周代以後，文化始由黃河流域逐漸推展於長江流域。春秋時代，楚及吳越始吸收中原文化，戰國之交，吳越具先後代興，爲中原之盟主。後來再接觸燕齊海上方士學術，更增益其'水行山處，以船爲車，以楫爲馬'之海國文化。以吳越人士本身航海技術言，前節已說明其舟師自海入齊，自海入淮的史事，則其對於鄰近之南部沿海航道，必早已熟悉。及秦始皇統一，至漢初，南粵政治中心是番禺，即今之廣州。稍東還有閩越王無諸，東都東冶，東海王搖，建都東甌，都靠近海。由於他們相互間，常有戰爭，海道軍運頻仍。因之各地沿海航線，亦交互聯接。

（四） 港口

（1） 凌純聲，1956, p. 19.
（2） 傅斯年，1933, p. 75.
（3） 包遵彭，1967, pp. 66-79.

先秦及兩漢時代，沿海港口之名，……其較重要者有在今河北境之碣石；在今山東半島之黃（縣）腄（縣），琅邪，之罘、成山，勞山；在今浙江境之句章（寧波）東甌（溫州），在今福建境之東冶（福州）；在今廣東境之揭陽，番禺(廣州)等。另尙有上述樓船基地之廬江、豫章、尋陽暨其他在長江沿岸者。其爲史文失載不可考者，當不止此(1)。

包氏之文，多述先秦及漢代的樓船，取材於文獻，至於九夷之在太平洋，百越多數之在印度洋上航行，當從事於海洋民族學（Maritime Ethnology）的研究，始能知其源流。

四、漢代樓船的式樣

至於漢代（約自西元前 206 年至西元220年）樓船的式樣，據史籍中的記錄。"漢元鼎四年（西元前113年），南越呂嘉等反，武帝令江淮以南樓船十萬師往討之"。當時所用樓船，據史記卷一百十三南越尉佗傳裴駰集解引應劭曰：

時欲擊越，非水不至，故作大船。船上施樓，故號曰樓船也。

這是對'樓船'形制最明白的一種解釋。在漢書卷六武帝紀元封二年（西元前 106 年）記遣樓船將軍楊僕、左將軍荀彘將應募罪人擊朝鮮，注亦云：

應劭曰：樓船者，時欲擊越，非水不至，故作大船，上施樓也。

二者文字略同。他指出漢代的樓船形制，是'船上施樓'的，雖然這都是後世注家的一種說法。

對樓船作更具體的記載，還是司馬遷。他在史記卷三十平準書中說：

是時，越欲與漢用船戰逐，乃大修昆明池。列觀環之，治樓船高十餘丈，旗幟加其上，甚壯。

漢書卷二四下食貨志記載相同。使我們知道，樓船不僅是船上施樓，而且是'高十餘丈'。平準書裏'列觀環之'一句話，在食貨志裏改作'列館環之'，史記的'觀'字在漢書概作爲'館'。據史記索隱說：

蓋始穿昆明池，欲與滇王戰，今乃更大修之，將與南越呂嘉戰遂，故作樓船。

（1） 包遵彭，1967, pp. 66-79.

……昆明池有豫章館，豫章地名，以言將出軍於豫章也。

杜注左傳："豫章漢東江北地名"。其地在淮南江北之界。漢移其名於江南，置郡。漢初豫章在今南昌濱臨鄱陽湖，爲對東越和南越交通要道，史記東越傳：

東越王餘善發兵拒漢。道入白沙，武林，梅嶺。天子使樓船將軍楊僕出武林。

史記索隱云：

今豫章北二百里接鄱陽界，地名白沙，沙東南八十里有武陽亭，亭東南三十里地名武林。此白沙，武林，當閩越之京道。

豫章爲樓船水師的基地，昆明池修築爲練水軍之湖，故列有豫章館環之。

在平準書說："治樓船高十餘丈"，沒有說明其層數多少。後漢書公孫述傳則逕說："又造十層赤樓帛蘭船"。兩者正好互相說明（案：帛蘭船又與 Dayak 的 *Prahu* 戰船音相近，見插圖一）。因此，我們並可據此初步推定：漢代樓船的形制，是船上施樓，約十層，高十餘丈。

漢樓船具有這樣高度，且多至十層，是頗不容易使人相信的。但在這裏有兩件佐證，可以幫助我們對高度和層數的認識。

第一、因爲它裝載人數多，此可間接推知其層數多。水經江水注云："孫叔裝大船，名曰長安亦曰大舸載，坐直之士三千人。"

第二、因用它在江中，攻擊敵人高聳之'鬬樓'，此可證明本身之高。在建武九年（西元33年），公孫述遣其將任滿、田戎、程泛，將數萬人，乘枋箄下江關。擊破了馮駿、田鴻及李玄等。遂拔夷道夷陵，佔據荆門虎牙，與漢兵對抗。據後漢書岑彭傳記載雙方的戰爭形勢說：

橫江水起浮橋鬬樓，立攢柱絕水道，結營山上，以拒漢兵。（岑）彭數攻之不利，於是裝直進樓船，冒突，露撓數千艘。

依章懷注，樓船、冒突、露撓三者，並船名，樓船之上施樓；依爾雅之說，則祇有樓船一種："橹謂之櫓，露橹在外人在船中，冒突取其觸冒而唐突也。"其意，露撓、冒突、祇是樓船的形式。作者以爲樓船，有層樓之船（deck canoe）可以多載客貨大船的通稱而已。

關於樓船的詳細結構，史漢諸書甚少記載，至其裝飾設計，三輔黃圖卷四載：

三輔舊事曰：昆明池地三百三十二頃，中有戈船，各數十。樓船百艘，船上建戈矛。（西京雜記作中有戈船樓船，各數百艘。樓船上建樓櫓，戈船建戈矛。玉海引作有百艘樓櫓。戈船各數十，上建戈矛）。四角番垂幡旄（西京雜記旄下有旌字；玉海引無旄字）葆旄，蓋照燭涯涘。圖曰：上林苑有昆明池，周匝四十里。廟記曰：池中後（畢本作復）作豫章大船，可載萬人，上起宮室。

又後漢書公孫述傳亦載："又造十層赤樓帛蘭船"。原注云："蓋以帛飾其蘭檻也"。章懷此註，由字面解釋，未可確信。包氏對樓船的式樣，由史籍中的記錄研究，他的結論說：

從上列諸說，我們可以推知，樓船的形制，是上建樓櫓，常達十層，高十餘丈。至於一般樓船，雖有船上施樓的形制，惟高度則不必盡同(1)。

樓船常達十層，如從底艙算起，再加上露臺則十層之數，亦極有可能，並非過甚其詞。

在考古方面，漢代的木船近代雖亦有發現，然以船上施樓的標準而言，則不能視爲樓船或可能是戈船，據包氏的研究，漢代甲式船出土時，還有三塊長板，一塊木片遺存，在船的附近。包氏假設爲船弦平衡板。可能有幾種用途，如浮板，板翼等。但是它們應置於船之兩弦相對稱的地位，則是一定。試以後代船舶形制比證。如武備志海鶻圖說載：

海鶻者，船形頭低尾高，如鶻之形。舷上左右置浮板，形如鶻翼翅。助其船雖風濤怒漲，而無側頃。

如果是這一類船舷上的浮板，則兩側共應有十餘塊才符合圖式。例如籌海圖編卷十三福船圖議載：

福船高大如樓，最上一層如露臺。須從第三層穴梯而上，而傍板翼如欄，人傍之以攻敵，矢石矢炮，皆俯瞰而發。

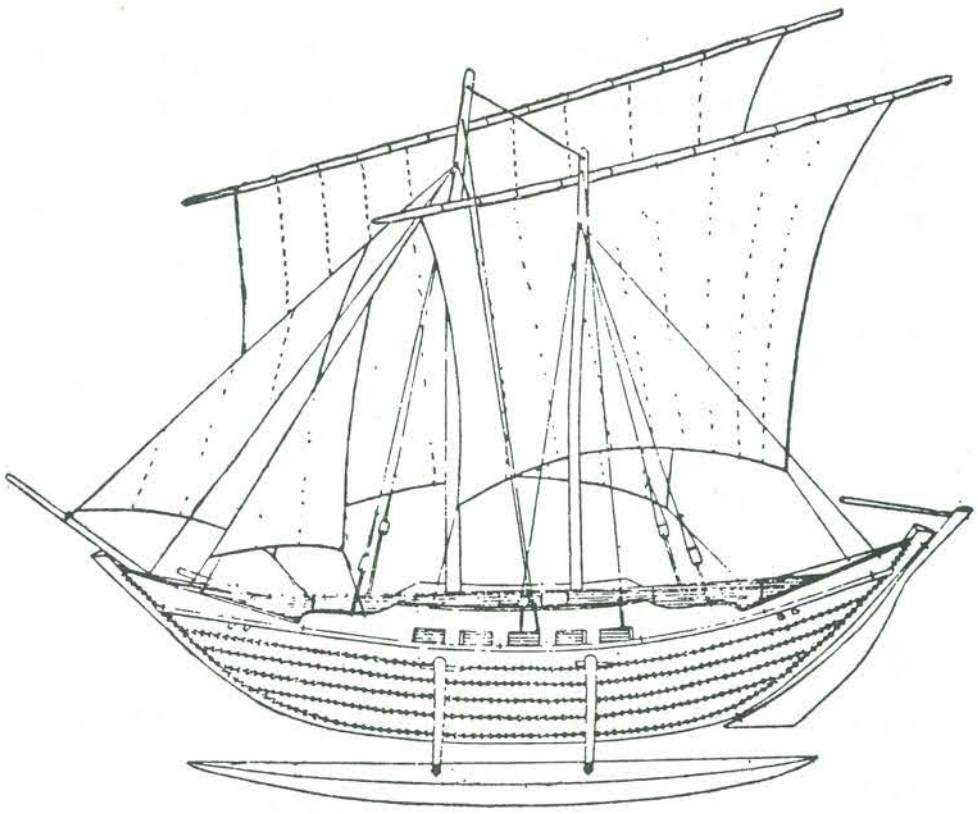
包氏考證漢代甲式船的船舷的平衡板，不能確言其爲浮板或板翼。他又考漢代乙式船云：

考漢代乙式船，自前艙至後艙兩側，由兩厰向外延展，有木板兩塊，左右對稱。我稱它爲船舷平衡板。廣州皇帝岡西漢木槨墓發掘簡報僅簡單的紀錄：艙

(1) 包遵彭，1966, pp. 21-24.

旁的左右兩邊各有走道。這是不明瞭這兩塊長板在船身結構上更重要的用途。由於漢代造船，尙係採用平底，爲保持船身平衡，安裝兩舷對稱的長板，'雖風濤怒漲，而無傾側'。我認爲第九三、九四兩塊大小相同，長四一・五，寬三・九厘米的長板，就是漢代甲式船的船舷平衡板。

照包氏的考證，漢代甲式船隻同時出土的長板，確是安裝兩舷對稱的長板，爲保持船身平衡，則此船可稱漢代的戈船（outrigger）型式，如插圖二爲印度 Sinhalese 的裝有邊架的帆船尙不能稱謂樓船。



插圖二　印度 Sinhalese *yathra dhoni* 的船型尙裝有邊架

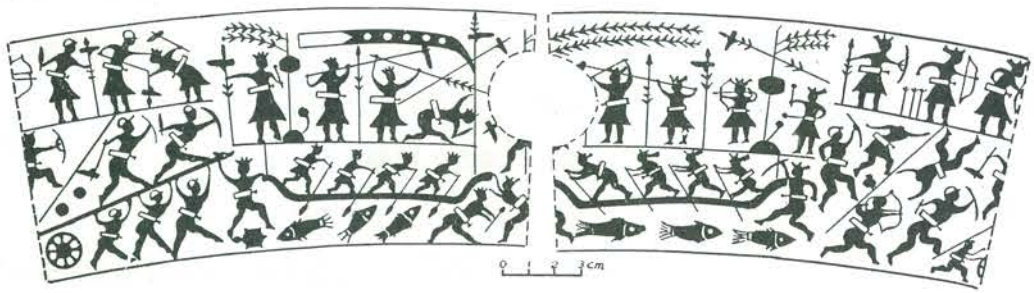
五、考古學上的樓船

所謂樓船，一定要'船上施樓'才能算樓船。現在考古學方面銅器和城磚所鑄印樓船的紋樣，可舉三例述之。

(一) 戰國時代水上戰蹟艦圖象

現在傳世最古的實物中具有船舶圖樣者，是戰國時代的戰艦圖，原器現藏中央研究院歷史語言研究所。據郭寶鈞氏著山彪鎮與琉璃閣[1]載：

> 水戰部分：每組十二人，分兩方面，每方面各有一舟。左方舟後一人推舟，四人舟上盪槳，舟前一人下水，又手持槳護舟。右方最後一人推舟，舟上四人搖槳與左方同。舟前一人，攀對方舟舷，作進攻勢。右方人皆有頭幘，左方人皆露頂短頭髮。舟下並有鱉一個，魚六條，順逆浮游，象徵有水（插圖三）。



插圖三　戰國時代水上戰蹟艦圖像(錄自郭寶鈞，1959, p. 21)

包遵彭氏曾解釋上圖有云：

> 舟之式樣，底板單薄。船首尾均成約四十五度弧形翹起，似用以拒浪。右方舟前一人，係攀對方船頭。郭氏認爲是攀對方的舟舷，不免小誤。實際上兩側無舷亦無艙房，極可能爲一淺水浮筏，其結構極其簡單。

作者認爲依繪圖所示，認爲有的是係一層樓船，如左方一圖下層四人划槳，上層四人各執長戈和長槍等兵器與敵交戰，船上層並樹有旌旗，尙有一面長旗或是風帆。最後一人左手持戈，右手擊鼓。右面一戰船與左面相同，惟層樓與下船缺一直線連繫。下面四人，兩手划槳，前二人持長戈，一人射箭，一人持雙槌擊鼓。除樓船外，其他或係包氏所說的浮筏，或爲戈船，如右圖上浮筏上三位戰士都持弓箭。

對於上圖說明，使我們連想 Dayak 的戰船（插圖一）叫做 ***prahu*** 航行 Skerang 河上[2]。由 ***prahu*** 的音譯是否與宋周去非著嶺外代答所載番舶名帛蘭者有關；又中

(1) 郭寶鈞，1959, p. 19.

(2) Ling Roth 1891, Vol. II. p. 247.

國古代有八櫓船，徐玉虎氏云：

> 八櫓船：按以櫓名船，爲西晉之制，太平御覽引義熙起居注云：'盧循作八櫓船，起樓四層，高十餘丈'。宋代因之，夢梁錄云：'……餘者謂鑽風，大小八櫓，每船可載百餘人，皆網魚買賣，亦有名三板'。南京下關靜海寺碑銘云：'八櫓船'。祝允明前聞記云：'大八櫓，二八櫓'(1)。

按八櫓 ***prahu*** 爲馬來語船之通稱，自西晉而南宋至明代都有八櫓船之名，幸有 Marryat 氏所繪一圖，由民族學上推知晉代盧循作八櫓船起樓四層，高十餘丈。宋有大小八櫓……亦有名三板，明稱八櫓船，並分大八櫓，二八櫓，从馬來語 ***prahu***，番舶的帛蘭，晉宋明三代的八櫓，音譯相似，又戰國時期戰船紋樣又與 Dayak 族 ***prahu*** 戰船相似，這不能說是偶合，應認爲東南亞洲海洋文化，流長地廣了！

（二） 銅鼓上鑄刻的樓船

在考古方面銅鼓所鑄刻樓船的紋樣。據羅香林先生所說：

> 唯古代越族擅於使用舟楫，故其表現於工藝或宗教品之製作者，亦每以船形圖樣爲紋飾，如上述越南河內所發現駱越舊遺銅鼓（插圖四所示：a. b. 玉侶和 c. d. 黃下兩銅鼓）(2)，其胴部有船形紋樣，是其顯例。

兩銅鼓上的神船，都有'船上施樓'的紋樣。

我們知道插圖的神船，是與我國各地在五月五日競賽的龍船相似。如船頭有橈(或掃)船尾有舵，可說這些神船能航海的。如沿海各地的龍船試舉二例：譬如漳州南溪的龍船：

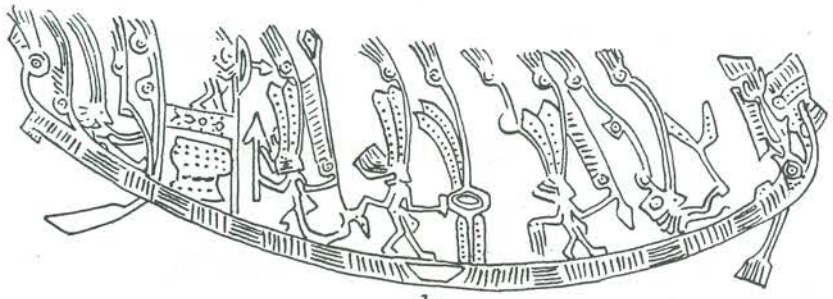
> 船身長五丈零，船頂是蓋竹篷的——普通船也是如此——旗面繡龍、馬九爺諸神的像、和船主的姓。船艙上安置香案桌，香案桌之前掛彩和吊燈。佈置完畢以後，就去水頭祈請賽爺，南山請馬九爺、媽祖來供奉舟中……到了三十日，各地就要比賽龍舟了。

這樣裝飾起來的龍舟，實際是一條神船。我想他們划龍船的目的並不是給人看，而是娛神。銅鼓上的神船就是後世的龍船了！又像廣州的大洲，其龍船上的裝飾就顯得更

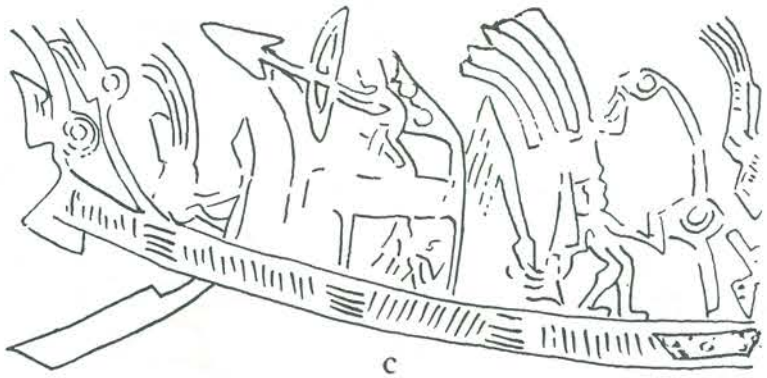
（1） 徐玉虎，1970, p. 43-44.

（2） 羅香林，1955, p. 142.

a



b



c

d

插圖四 a. 玉侶銅鼓上的神船花紋之一
b. 玉侶銅鼓上的神船花紋之二
c. 黃下銅鼓上的神船花紋之一
d. 黃下銅鼓上的神船花紋之二

熱鬧了。

廣東通志卷九二，引天山堂草焦記明時廣州府賽龍舟事云：

> 粵人習海競渡角勝，而大洲比常製猶異。十餘年始一舉。船廣可三丈，長五丈。自龍首至尾，金光奪目，疊綵如層城，上飾童男女作仙佛、鬼神及古英雄凡數十事。旋轉舞蹈，冒之以幔，數里外望猶可見。兩旁持短櫓，應鼓者百夫，銀帽紅衫，鐃哈沸作。更爲游龍十數，繚繞後先，若羣螭之從母出入者(1)。

作者故鄉常州現爲武進縣，猶憶兒時，在家鄉白雲古渡看龍船，亦有如"疊綵如層城"樓船式的龍舟。

（三） 廣州漢代城磚印刻的樓船

羅香林氏在百越源流與文化書中有云：

> 余所獲廣州漢代城磚，亦有劃繪樓船形者，雖城磚製作或奎出中原所遣官吏之功令，然其工匠之技術，當受古代越族之工藝影響，以漢代中原各地奎不以船形紋樣爲磚瓦飾紋也。唯古代越族擅於使用舟楫，故其一部分苗裔歸宗於中夏

插圖五　漢磚上描寫的樓船圖形（描摩自羅香林氏藏廣州漢代城磚）

（1） 文崇一，1961, pp. 86-87.

系統之較遲者，亦以擅於操舟著稱，如浮家泛宅之蜑民，卽其顯例(1)。

羅先生在民國四十四年發表百越源流與文化一書，包遵彭先生說：“該書未附圖，樓船紋樣不可知”(2)。該圖對於研究樓船實太重要，乃託陳槃庵兄致函羅先生惠賜照片一張，並允發表，在此特致謝意。接到羅先生照片，影印放大，如圖版伍所示。又將放大照片，繪成一圖，如插圖五。照描寫圖所示，樓船頭低尾高，船尾有一大舵，船身左邊，連底艙共計可有十層，船的中央有一大鐘(或爲帆形)，船身右邊，有一桅上的帽形之帆和旌旄，船邊水中有浮木和檔木成爲邊架，此圖可與第九世紀爪哇 Bord Budur 佛教寺院石壁雕刻相似，海船都裝有複雜而大的邊架，根據 Leemans 於 1873 年在 Leiden 出版的圖集中，試摹石刻一圖與城磚刻印紋樣，作一比較研究，如插圖六，船有主要二座桅杆，上掛大帆，船首好像尙有一小帆，船中似有艙房和許多水手。船有邊架：三根直檔木穿過二縱木之間，三道彎檔穿過縱木後又經過浮木(float)，而檔木的前端又向上彎曲。廣州城磚旣稱漢磚，中國漢朝自西漢開國紀元前

插圖六 第九世紀爪哇 Bord Budur 佛教寺院石壁雕刻，裝有邊架船海的帆船。

(1) 羅香林，1955, p. 142.

(2) 包遵彭，1966, p. 26.

306年至東漢亡在紀元264年共四百七十年，故此磚至遲可稱第三世紀遺物，與第九世紀爪哇寺院石壁刻紋，作一比較研究後，對於磚紋可以明瞭許多，故此一城磚印紋，爲研究漢代樓船最重要的珍品(1)。

六、清明圖籍所載的樓船

在漢之後，歷經唐宋元明（初葉）多有水運與海戰的記載，但未有附圖，不知艦船之形制。直至明之中葉萬曆三十七年(1609)刊出三才圖會和天啓元年(1621)的武備志都附有船圖，武備志卷一百十六有云：

> 樓船者，船上建樓三重，列女墻戰格，樹幡幟，開弩窗矛穴，外施氈革禦火，置砲車檑石鐵汁，狀如小壘。其長者，步可以奔車馳馬。若遇暴風，則人力不能制，不甚便於用，然施之水軍，不可以不設，足張形勢也。

Audemard 氏著中國帆船史 (Histoire de la jongue)(2) 亦有樓船兩圖，一圖譯武備志文作說明，另圖採自四庫全書（圖版陸ＡＢ）又三才圖會與圖書集成上各有樓船一圖（圖版陸ＣＤ）亦附於後供作參考。

古代所稱之樓船卒或樓船師，是指普通戍水兵的艦船，不一定是“樓船者，船上建樓三重，……然施之水軍，不可以不設，足張形勢也。”包遵彭先生著中國海運史第六章第二節元代海運與造船事業有云：“由此亦可推見海船與戰船之屬之一斑”(3)。所以我們要研究海船作戰船的形制，中國載籍記述海船及其形制恐始自明嘉靖時方杰人先生有云：

> 關於福船的形狀和敍述，恐怕要算明嘉靖四十一年(1562)茅坤序託名胡宗憲編籌海圖編爲最早又最詳，且附有插圖。

籌海圖編明嘉靖四十一年刊行，據方氏又言：“按是書實爲鄭若曾撰，……余所見爲天啓四年(1624)刊本”(4)。籌海圖編卷十三，經略三，兵船，共載戰船十七種，其中最大者爲廣東船（插圖七）與大福船（插圖八）而無樓船，大福船式圖說云：

（1） 凌純聲，1968, pp. 18-19.
（2） Audemard, 1967, pp. 40-41.
（3） 包遵彭，1951, pp. 52-53.
（4） 方　豪，1961, p. 168.

福船高大如樓可容百人，其底尖，其上濶，其首昂而口張，其尾高聳設柁樓三重于上。其傍皆護板，揚以茅竹，堅立如垣。其帆桅二道，中爲四層……

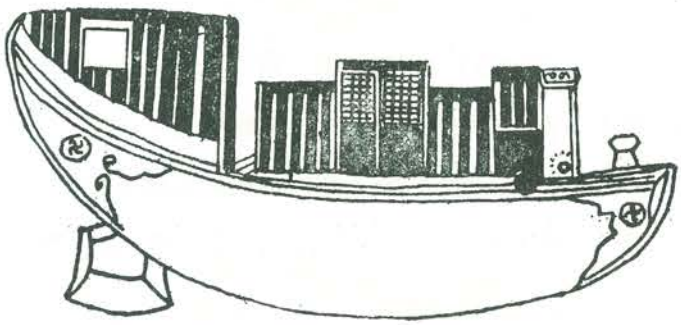
又廣東船式圖說亦云：

插圖七　廣東船（採自籌海圖編卷十三）

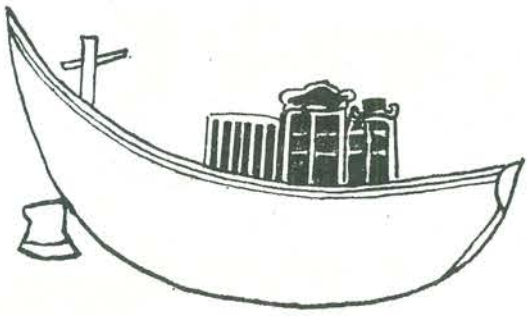
插圖八　大福船（採自籌海圖編卷十三）

廣船視福船尤大，其堅緻亦遠過之。蓋廣船乃鐵栗力所造，福船不過松杉之類而已。二船在海若相衝擊，福船卽碎，不能當鐵栗之堅也。

1562年始刊籌海圖編只有'福船高大如樓'和'廣船視福船尤大'。1609年刊出的三才圖會和1621年的武備志所載的樓船，有謂：'若遇暴風，則人力不能制，不甚便於用。'多代以大福船和廣東船了！雖嘉靖癸丑三十二年(1553)刊行的龍江船廠志卷二尚載有後湖一號樓船（插圖九）和後湖二號樓船（插圖十），龍江船廠志卷二有云：



插圖九　後湖一號樓船（採自龍江船廠志卷二）



插圖十　後湖二號樓船（採自龍江船廠志卷二）

> 按後湖者，古玄武湖也。自舒王建議富國，遂爲耰耡之地，蓋三百餘年矣。我聖祖神謨獨覽，開府其中，用藏版籍。乃復潴水爲浸，非船不濟，非有事不入矣。船之數爲樓者一，官乘之；爲平者十有二，胥役乘之。正德十三年(1518)因大查官衆，奏准添造樓船一而稍殺其制焉。船皆鑰于石，非五日之期，不得輒啓；啓則請鑰于內府，返復鑰而歸之，可謂禁而地重矣。其視六朝歌舞遊嬉何如哉(1)。

由此所錄，可見明代後湖的樓船乃乘載官員之船，非如史記卷三十所云：'越欲與漢

（1）李昭祥，1553, Vol. 2.

用船戰逐，乃大修昆明池。……治樓船高十餘丈，旗幟加其上，甚壯'，用習水戰的樓船。明代圖籍所載戰船最大者爲大福船和廣東船了！

大福船和廣東船都是大型的帆船，平時用之商運，戰時用作戰船。這種中國帆船於明初公元十四、五世紀之間，曾稱雄於印度太平兩洋之上，馮承鈞氏在伯希和著鄭和下西洋考序言中曾慨乎言之曰：

> 西方史書言新地之發現者，莫不盛稱甘馬（Vasca da Gama）、哥倫布(Columbus)等豐功偉業。就是我們中國人編的世界史，也是如此說法。好像在講座中很少有人提起在這些大航家幾十年前的中國航海家鄭和。這眞是數典而忘祖了。說來也很慙愧，我們中國人所忘記的這個中國大航海家，業經外國學者研究過多次(1)。

馮氏之說，雖對我國航海歷史而言，至於中國航海技術（Nautical Technology），更爲西方和我國學人同所忽略，在1924年 Donnelly 氏出版的中國帆船和其他原有的水運工具書中導言有云：

> 對於中國及其人民雖有很多的著述，但很少有人論及她的一種極其重要工業——造船。這造船業，雖然事實上中國自遠古以來，是一最前進的海外（seafaring）遠航的國家。這一疏忽使人驚異的，吾人記得中國船隻之多，超過世界各國船數的總和(2)。

中國海洋民族學（Maritime ethnology）眞是一處女地，其研究成績國人可說成就極少，日人尙有西村眞次注意此項研究，自 1920 至 1936 年刊行日本古代船舶研究共七冊(3)，在1938年的人類學先史學講座第六冊又發表先史時代及原史時代之水上運搬具一篇長的論文。現在我們要想從事此項研究已來不及，因資料都已消失了！幸有外國學人注意及此，保存許多資料，除上述 Donnelly 與西村二氏外，尙有二氏，必須詳述，一位法人 Audemard 著有中國帆船自 1957 年至 1965 年先後出版六冊：Ⅰ、1957 年帆船的歷史；Ⅱ、1959年帆船的構造；Ⅲ、1960 年帆船裝飾與型式；Ⅳ、1962 年

（1） 馮承鈞譯，1934, p. 1.

（2） Donnelly 1924, p. 3.

（3） Shinji Nishimura, 1938, pp. 1-38.

帆船的描述；V、1963年長江上游的帆船；VI、1965年長江下游的帆船。Audemard 氏的遺著自一至三冊對於中國帆船的歷史、構造和船飾作綜合的研究，其第四冊爲沿海及其他內河航行的船舶，第五、六兩冊爲長江上下游及其支流的帆船。誠可算是中國海洋民族學（Maritime Ethnology）對於帆船研究的巨著。又英人李約瑟（Needham）和王林合作著作中國科學與文明卷四第三章第二十九節有航海的技術（Nautical Technology），書之目錄內容早已預告，託友人在倫敦多次詢問，迄未出版，在本專刊出版前未能參考到李氏之書，實爲遺憾！

主要參考書目

中　　文

文崇一

1961 九歌中的水神與華南的龍舟，民族學研究集刊十一期，民國五十年。

王元翰、王思義

1609 三才圖會器用卷四，明萬曆三十七年。

茅元儀

1621 武備志卷八，明天啓元年。

茅　坤（胡宗憲）

1562 籌海圖編，明嘉靖四十一年。

李昭祥

1553 龍江船廠志，明嘉靖三十二年。

包遵彭

1951 中國海軍史，臺灣左營，民國四十年。

1966 漢代樓船考，民族研究所集刊二十二期，民國五十五年。

1967 樓船的航線及港口，幼獅雜誌，民國五十六年，臺北。

呂思勉

1934 中國民族史，民國二十三年，世界書局，上海。

胡　適

1971 中國中古思想史長編，胡適紀念館，臺北市南港區，民國六十年。

凌純聲

1954 銅鼓圖文與楚辭九歌，中央研究院院刊第一輯，民國四十三年。

1954 中國古代海洋文化與亞洲地中海，海外雜誌第三卷第十期，民國四十三年。

1956 臺灣的航海帆筏及其起源，民族學研究集刊第一期，民國四十五年。

1961 太平洋上的中國遠古文化，大陸雜誌第二十三卷第十一期，民國五十年。

1968 中國古代與印度太平兩洋的戈船考，民族學研究集刊第二十六期，民國五十七年。

傅斯年

1933 夷夏東西說，史語所集刊外編第一種，民國四十四年。

郭寶鈞
1959 山彪鎮與琉璃閣，考古學專刊乙種第十一號，北平。
徐玉虎
1970 鄭和時代航海術語與名詞之詮釋，輔仁大學人文學報第一期，民國五十九年。
羅香林
1955 百越源流與文化，中華叢書本，民國四十四年，臺北。
馮承鈞譯
1934 伯希和著鄭和下西洋考，民國廿三年。
西村眞次
1920～1936 日本古代船舶研究第一册～第七册
1938 先史時代及原史時代之水上運搬工具

西　　文

AUDEMARD, L.
1957 Les Jonques Chinoises: Histoire de la Jonque, Rotterdam.
1959 Les Jonques Chinoises: Construction de la Jongue, Kotterdam.
1960 Les Jonques Chinoises: Ornementation et Types Rotterdam.
1962 Les Jonques Chinoises: Descrjption des Jongues Rotterdam.
1963 Les Jonques Chinoises: Hant Yang Tse Kiang, Rotterdam.
1965 Les Jonques Chinoises: Bas Yang Tse Kiang, Rotterdam.
COOK, J.
1777 A Voyage Towards the South Pole and Round the World (1772-75), 2nd ed., London.
DONN,ELLY, T. A.
1924 Chinese Junk and Other Native Craft, Kelly & Walach, Shanghai.
EDWARD, C. R.
1965 Aboriginal Watercraft on the Pacific Coast of South America Ibero-Americana: 47.
1969 On Pre-European Voyaging in the Pacific, Milwaukee.
HANDY, E. S. C.
1927 Polynesian Religion: B. P. Bishop Mus., Bull. 34.
HADDON, A. C.
1920 The Outriggers of Indonesian Canoes: Roy. Anthrop. Inst., Vol. 50, pp. 69-134.
HADDON, A. C. and HORNELL, J.
1936 The Canoes of Polynesia, Fiji, and Micronesia, Canoes of Oceania Vol. I, Hawaii.
1937 The Canoes of Melanesia, Queensland, and New Guinea, Canoes of Oceania Vol. III. Hawaii.
1938 Definition of Terms, General Survey, and Conclusions, Canoes of Oceania Vol. III Hawaii.
HEYERDAHL.
1952 American Indians in the Pacific.
LING ROTH, H.
1896 The Natives of Sarawak and British North Borneo, Vol. II.
HORNELL, J.
1946 Water Transpost: Origins and Early Evolution, Combridge, England.

VI. THE DECK CANOES OF ANCIENT CHINA AND THE OCEANIAN AREA

1. INTRODUCTION

China is bounded on the east by the Pacific Ocean and on the south by the Indian Ocean. The area where the Pacific and the Indian Ocean join comprises more islands than any other one single area in the world. There are, from the west to the east, the Indonesia, Melanesia, Micronesia and Polynesia. These four archipelagoes together make up the Oceania, which is often referred to as the South Seas by Chinese (Plate I). Water traffic had been carried on amid these numerous islands since the pre-historic times. In one of my previous papers, "The Ancient Chinese Cultures in the Pacific Ocean," it was mentioned as follows about the widely used deck canoes: "Since the foregoing rafts, outriggered canoes, and double canoes were apt to be smitten by the waves and winds, while sailing over the sea, high cabins or towers were built upon them to prevent drenching by water; this was how the deck canoe had come into being. The building on a deck canoe could be built several stories high to increase its carrying capacity and such deck canoes were often used as battleships in ancient China. Canoes of similar type were still used as battleships over the Indian Ocean even in modern times. It therefore can be imagined that such deck canoes with great carrying capacity had made possible the large-scale movements and long voyages of the peoples of the Pacific and Indian Oceans." (Ling, 1961: 27–31)

It may be said that the above four types of water transport all could trace their origins in ancient China, or at least it is true that records of the existence of rafts, outriggered canoes and double canoes in the legendary periods were already contained in ancient history of China. This chapter will be devoted to a detailed discussion of the deck canoes, as the other three types of watercraft have already been discussed in the previous chapters. The so-called 'Lou Chuan' is named 'deck canoe' in English. Whether a raft, an outrigger canoe, or a double canoe, it could be made into a deck canoe by adding a one-story or several-storied platform or building on it. Perhaps the 'lou chuan' produced in the early Han Dynasty had become the real deck canoe.

2. THE FORMS AND STYLES OF DECK CANOES

(a) Raft-Styled Deck Canoes:

During the era of the Spring and Autumn, rafts were still used for travel over the sea, as evidenced by the account in Lun Yu 論語 below: "Confucius said: 'In

case I should fail to have my 'Way' carried out in action, I would rather go to drift on the sea on a raft.'" In addition, Ti Li Chih 地理志, Han Shu 漢書 states: "Deploring the failure of his 'Way', Confucius set on a journey on a raft into the sea, wishing to get to the 'Chiu Yi' 九夷 (nine sea tribes)." Besides, both Confucius and Kou Chien 勾踐 (a contemporary of Confucius) mentioned about rafts and lou chuan. Vol 4, Yueh Chueh Shu 越絕書 related: "Having missed the lou chuan so long...they gave way to tears unrestrainedly." Again Vol. 8 of the same book stated: "Upon arrival at Lang Ya 瑯琊, Kou Chien used 2800 lou chuan chu 樓船卒 (soldiers) to fell pine and cedar trees for the purpose of building rafts." The so-called lou chuan 'chu' were simply the trained seamen or sailors. Vol. 28, Han Shu, Ti Li Chih said: "There were lou chuan 'kuan' 官 (officer) at Lu Chiang Chin 廬江郡." The lou chuan kuan recorded here were naval officers as opposed to the lou chuan chu (seamen) in rank. As indicated in above record, the rafts which Kou Chien wanted to be built by use of 2800 men were, in all likelihood, the raft-styled lou chuan.

Shown by Plate IIA was a typical raft-styled deck canoe of Payta, South America, the bottom story of which was used as a cellar, and the second story contained living quarters as well as storage for water and other necessary articles, while a large quantity of cargo could be loaded over the space above the second story (Edward, 1965: 72). The narrative about this deck canoe states: "This is a drawing of the former balsa of Payta, Peru (extracted from Spibergen, 1614–1617), with a note added below saying 'This afternoon the fishermen returned from the sea...in a boat under sail. The boat is built in a strange way. The crew members all look young and strong. They had been away to sea for more than two months.'" As the drawing shows, the central board, which was to be raised or lowered by three sailors, must have played an important part in the navigation of the boat (Heyerdahl, 1952: 530–531). Plate IIB illustrates the Peruvian rafts lying at anchor at the port of Guayaquil (from Paris, 1841–43). Note how the space on the deck was being utilized. Such rafts were formerly used by the native people to travel between Guayaquil and Payta along Sechura or Huanchuco of the northern coast of Peru, and, in many cases, a whole family rode on one raft. This type of South American rafts had not passed out of existence until the later part of last century (Heyerdahl, 1957: 542–543). As mentioned previously, Confucius once intended to go the Chiu Yi by drifting over the sea on a raft; and as we have now found out rafts similar to the rafts of Confucius' time were still seen in use in South America during the later part of the 19th century, so we believe that such rafts played a very important role in the former wide and far emigrations of the islanders of the Pacific Ocean.

(b) Ko-Chuan-Styled Deck Canoes

Ko Chuan was the outrigger canoe. An outrigger canoe, be it single or double-

outriggered, could be converted into a deck canoe by adding a one-story or several-storied platform or tower on it. The deck canoe of Namuka, Tonga furnishes a good example of this. There were many outrigger-canoe-styled deck canoes in Indonesia. As shown in plate II C, the attachment to the outrigger, as Haddon described, was a short, wide and thin wooden board; (A) was called 'coracora', the floating board of some double-outrigger canoes was made up of two wooden boards; (B) King of Ternate's warship, named Karkolla; it had as attachment a Y-shaped board; and (C) a warship of Madura. All of these three boats were several-storied deck canoes. Plate II D displays a Maluccan canoe by the name of Cora-Cora Van Titaway, with a seat for its oarsman built at its end with either wooden strips or boards (Haddon, 1920: 87–88). Fig. 1 shows a warship of Dayak, named Prahu, sailing on the Skerang River (Ling Roth, 1896: 247).

(c) Double-Canoe-Styled Deck Canoes

The raft-styled deck canoes were good for long voyage, whereas the Fang Chow or double canoes were normally used for travels of short distance. Double canoes could also be converted into deck canoes. Plate III A shows the Tongan double canoes; two of them are of the Tongan and Kalian mixed style, and all the others belong to the peculiar Tongiaki style, with the main rear mast situated at the starboard side (extracted from Cook, 1777, Vol. 2). Plate III B shows the last deck canoe of the alia style built by the Samoan people, which had been intended as a gift for the German Kaiser, but it could not be sent to him due to transportation problem at that time; thus, it had been laid out there on the sea-shore ever since (Haddon, 1936: 242). Displayed by Plate IV A was the Tongan double canoe Tongiaki seen in 1616 at Tafahi, which represented the simple prototype of the double-canoe-styled deck canoe. And shown by Plate IV B was an outrigger canoe with several crossbeams, seen in 1643 at Namuka, Tonga (Haddon, 1936: 261).

(d) The Lou Chuan of Chin and Han Periods

During the early years of Western Han Dynasty Lou Chuan forces were used by China for the punishment or conquest of the Nan Yueh 南越 (Southern Yueh), Tung Yueh 東越 (Eastern Yueh) and Chao Hsian 朝鮮 (Korea). With respect to the distribution of the Lou Chuan forces, most people in the past thought that they were all stationed in areas south of the Yangtze and Huai Rivers. But Ignatius I. P. Pao said: "Lou Chuan also existed in areas north of the Yangtze River." (Pao, 1966: 20–21). This author thinks that the distribution of ancient Chinese Lou Chuan covered the following three area: (1) The States of Yen 燕 and Chi 齊 in the north; (2) the States of Wu 吳 and Yueh 越 south of the Yangtze River; and (3) the Mien 閩 and Yueh 越 in the south. Historical records of the existence of Lou Chuan in certain areas generally emphasized the time when the people of Chung

Yuan 中原 (ancient China Proper) came in contact with the maritime people along the coastal areas. For instance, Shih Chi 史記, Chi Chieh 集解, Ying Shao 應劭 states: "For the purpose of attacking the Yueh 越, large Lo Chuan were built as the only way to get to Yueh was by water." In order to carry out water battles, the ancient Chinese had to build large Lou Chuan and train naval forces. In view of this, it may be said that boats for water combat had been in existence during the very ancient times among the Yen 燕, Chi 齊, Wu 吳, Yueh 越, Mien 閩, Yueh 粵 and other maritime peoples of the coastal areas of China.

3. THE LOU CHUAN ROUTES AND PORTS IN THE CHIN AND HAN PERIODS

During the ancient times, the majority of the inhabitants of the Pacific coast of China belonged to the East Yi (東夷). The East Yi people, in accordance with the results of our research, consisted chiefly of peoples from Polynesia and Micronesia, who worshipped 'Taaroa' (Tai Hao or Fu Hsi Shih 伏羲氏) as the God of Creation. Based on legend, Fu Hsi was the first Emperor of ancient China. Loh Hsin's (羅欣) Wu Yuan 物原 states: "Fu Hsi began the use of the raft." Rafts were used in ancient China from the remotest periods until the Spring and Autumn (Warring States) epoch and the Lou Chuan began to be widely used during the Chin and Han times.

The "Lou Chuan Routes and Ports" written by Ignatius Pao consists of four sections as follows: (1) Sea Routes; (2) Northeastern Coastal Routes; (3) Southeastern Coastal Routes; and (4) Ports. Since his paper, based primarily on materials from literary works and documents, deals mainly with the Lou Chuan of Chin and Han periods, the navigation over the Pacific Ocean by the Nine Yi (九夷) and over the Indian Ocean by the Hundred Yueh (百越) will be a subject for extensive study from the Maritime Ethnology's point of view.

4. THE FORM AND STYLE OF THE LOU CHUAN OF HAN PERIOD

As for the form and style of the Lou Chuan of Han Time (Approx. 206 B.C.—220 A.D.), Shih Chi state: "In an attempt to attack the Yueh 越, large boats were built since the only way to get to Yueh was by water. Lou (tower or storied building) was erected on such boats, therefore they were called Lou Chuan." This is the most clear explanation about the form and style of the Lou Chuan. A similar explanation is also contained in the Wu Ti Chi 武帝紀 of Han Shu 漢書.

A more concrete record about Lou Chuan was made by Szu-Ma Chien 司馬遷. In Shih Chi, Ping Tsun Shu 平準書, he said: "...The Lou Chuan, as high as over a hundred feet, with flags raised on its top, was indeed magnificent in appearance." The Shih Huo Chih 食貨志, Han Shu also contains a record same as this. From these records we learn that not only were towers built on the Lou Chuan but many

of them were over 100 feet in height. However, the above record in the Ping Tsun Shu indicated only the height of the Lou Chuan, but did not make any mention as to how many stories it had. In addition, a record in Kung Sun Shu Chuan 公孫述傳, Hou Han Shu 後漢書 related: "Again built the ten-storied red-tower-po-lan 帛蘭 boat." These two records, put together, can really present a very definite picture of the ancient Lou Chuan. (Po-Lan 帛蘭 boat is similar in sound to Prahu,.a warship of Dayak. See Fig. 1). It may now be inferred, based upon the foregoing data and information, that the Lou Chuan of Han Dynasty consisted of ten stories, over one hundred feet high.

The tremendous height of the Lou Chuan of Han period which sometimes consisted of as many as ten stories seems quite incredible. However, there are two factors which may help explain why they were built so high and in so many stories. First, the more stories a boat had, the more passengers it could carry. Chiang Sui 江水, Sui Ching Chu 水經注 states: "Sun Shu 孫叔 loaded a big boat, named Chang An 長安, also known as Ta Chu 大舸, which could carry 3,000 people." Second, a record in Chin, Peng Chuan 岑鼓傳, Hou Han Shu relates: "A pontoon bridge was set up across the river with defense towers built on it...in order to resist the Han soldiers. After Peng (Chin Peng) had failed to break through it after several attacks, he had a great number of high Lou Chuan built in order to attack the enemy again." These Lou Chuan were built for the purpose of attacking the high defense towers on the river as well as on the bank, it may be ascertained that they must have been very tall themselves. In the author's opinion, the ancient Lou Chuan, i. e., deck canoe with a storied building on its deck, was simply a general name for the large passenger and cargo-carrying vessel.

As a result of a study based on historical records and writings, I. P. Pao concluded: "The typical Lou Chuan was a canoe with a building, often consisting of as many as ten stories, erected on its deck, measuring generally over one hundred feet in height. As for the common Lou Chuan, although they also had a tower or building on their decks, their height varied very much from each other." (Pao, 1966: 21–24). Practically, it was possible and not exaggerated that a Lou Chuan was often built as high as ten stories, counting from the bottom hold to the roof-top platform.

In the field of archaeology, a sample of the wooden boats of the Han period has been discovered. However, it could possibly be an outrigger canoe, but can not be regarded as a Lou Chuan, if the factor of the construction of a building or tower on the deck is taken as the basis for judgement. Fig. 2 exhibits an outrigger-sail-boat of Sinhalese, India which, likewise, can hardly be said to be a Lou Chuan.

5. THE LOU CHUAN IN ARCHAEOLOGY

To be called a Lou Chuan, it has to be a boat with a tower or a building

installed on its deck. Given below are three examples in modern archaeology of the ancient Lou Chuan designs or figures which were engraved in old bronze-ware and city-wall bricks:

(a) A Drawing of the Warships of the Period of the Warring States

The oldest artifact consisting of boat designs that has survived in the world is the picture of the warships of the period of the Warring States (Fig. 3). This picture is now kept at the Sinica Academia. As shown in the picture, the author thinks the boat at the left was a one-storied Lou Chuan. Four men were rowing on the deck and four others were fighting the enemy with halberds or spears from the floor of the superstructure. Additionally, flags were raised on top of the superstructure, a long one of which could possibly be a wind-sail. The last of the four fighting men was holding a halberd in his left hand and beating a drum with his right hand. The warship on the right is similar to the one at the left, except that a line linking the superstructure and the deck was missing. The four men below were all rowing with both hands, while two of the four men above held long spears; the third was shooting an arrow and the fourth was beating a drum with two drumsticks. This picture reminds us of the Dayak warship Prahu, mentioned earlier (Fig. 1), sailing on the Skerang River. As Prahu is similar in sound to the Po-Lan (帛蘭) contained in Ling Wai Tai Ta 嶺外代答 by Chow, Chu-fei 周去非 of Sung Dynasty, it is reasonable to believe that there were certain relations between them. Further, there were, in ancient China, the Pa Lu (八櫓 eight paddles or oars) boats. Pa Lu was also close in sound to 'Prahu', the common Malay word for boat. The name 'Pa Lu' had been in use in ancient China from Western Tsin (西晉) until Ming Dynasty. Based on a picture drawn by Marryat, an inference from the ethnological point of view indicates that Lu Hsun (盧循) of Tsin Dynasty built a 4-storied Pa Lu, over one hundred feet in height. There were big and small Pa Lu boats in the Sung time, and they were later all called Pa Lu boats during the Ming time. The Malay word, Prahu, Po-Lan, the name of a boat of a savage tribe of ancient China, and Pa Lu, the name for the Pa Lu type boats of Tsin, Sung and Ming periods are all alike in pronunciation. In addition, the above-mentioned designs of the warships of the Warring States' period also seem to be in close resemblance to the Dayak Prahu. These two points lead us to believe that these similarities could not have occurred simply by coincidence, and that the ancient maritime cultures of the Southeast Asia must have had a very long history and a very wide distribution.

(b) The Lou Chuan Engravings in Ancient Bronze Drums

With regard to the designs of Lou Chuan engraved in ancient bronze drums, Loh, Hsiang-lin remarked: "The ancient Yueh 越 people were good at handling boats, therefore, the boat designs were often used by the Yueh craftsmen or artisans

in their productions as well as in many religious implements. The above-mentioned bronze drums excavated from the remains of Lo Yueh 駱越 at Hanoi, Vietnam (The Yu Lu 玉侶 and Huang Hsia 黃下 bronze drums shown respectively by Fig. 4 a, b and c, d) both had clear decorative boat designs on their side." (Loh, Hsiang-lin, 1955: 142). Besides, the engravings on above two drums also include designs of Lou Chuan, i. e., boats with superstructures on the deck.

(c) Lou Chuan Figures in the City-wall Bricks of Han Dynasty

Loh, Hsiang-lin, in his book entitled "The History of the Pai Yueh 百越 and their Culture," said: "Some of the city-wall bricks of the Han Dynasty which I collected at Kuang Chow 廣州 are also decorate with Lou Chuan designs. Although such early citywall bricks might possibly be manufactured at those remote places by order and direction of the then officials sent there from Chung Yuan 中原, the ancient China proper, yet the skill and design of the artisans who made them must have been influenced by the traditional handicraft and artistry of the Yueh 越 people in that no bricks or tiles made in Chung Yuan during the Han time were decorated with Lou Chuan designs." (Loh, Hsiang-lin, 1955: 142). Fig. 5 is a sketch drawn based on the ancient city-wall bricks of Kwang Chow (Canton) as shown in Plate V. As demonstrated by this sketch, the Lou Chuan had a low bow and a high stern. A big helm was located at the stern. The port side of the boat seems to consis of ten stroies including the hold. There was a big bell (or something like a sail) at the center of the boat. On the right-hand side of the deck there seems to be some hat-shaped sails and some flages. Also seen is a kind of wooden outrigger attached to the boat below the water. A comparison of this Lou Chuan and similar boat designs engraved in the stonewall of the 9th century Buddhist Shrine of Boro Budur in Java, as displayed in Fig. 6, reveals that most ancient sea-going boats were equipped with huge and complicated outriggers. As we know, the city-wall brick of ancient Canton is also referred to as the brick of the Han Dynasty, which covered 470 years from 306 B. C. to 264 A. D., thus it may be ascertained that it is a relic of the third century. It is also certain that a further comparative study of the Lou Chuan designs in the ancient Canton city-wall brick and the ships sculptured on the stone walls of Boro Budur, the ninth century Buddhist shrine in Java will bring much more of the ancient Lou Chuan origin and style to light. In other words this brick is considered to be a rare article in the research of the Lou Chuan of Han time (Ling, Shun-sheng, 1968: 18–19).

6. THE LOU CHUAN IN MING AND CHING LITERARY AND ILLUSTRATED WORKS

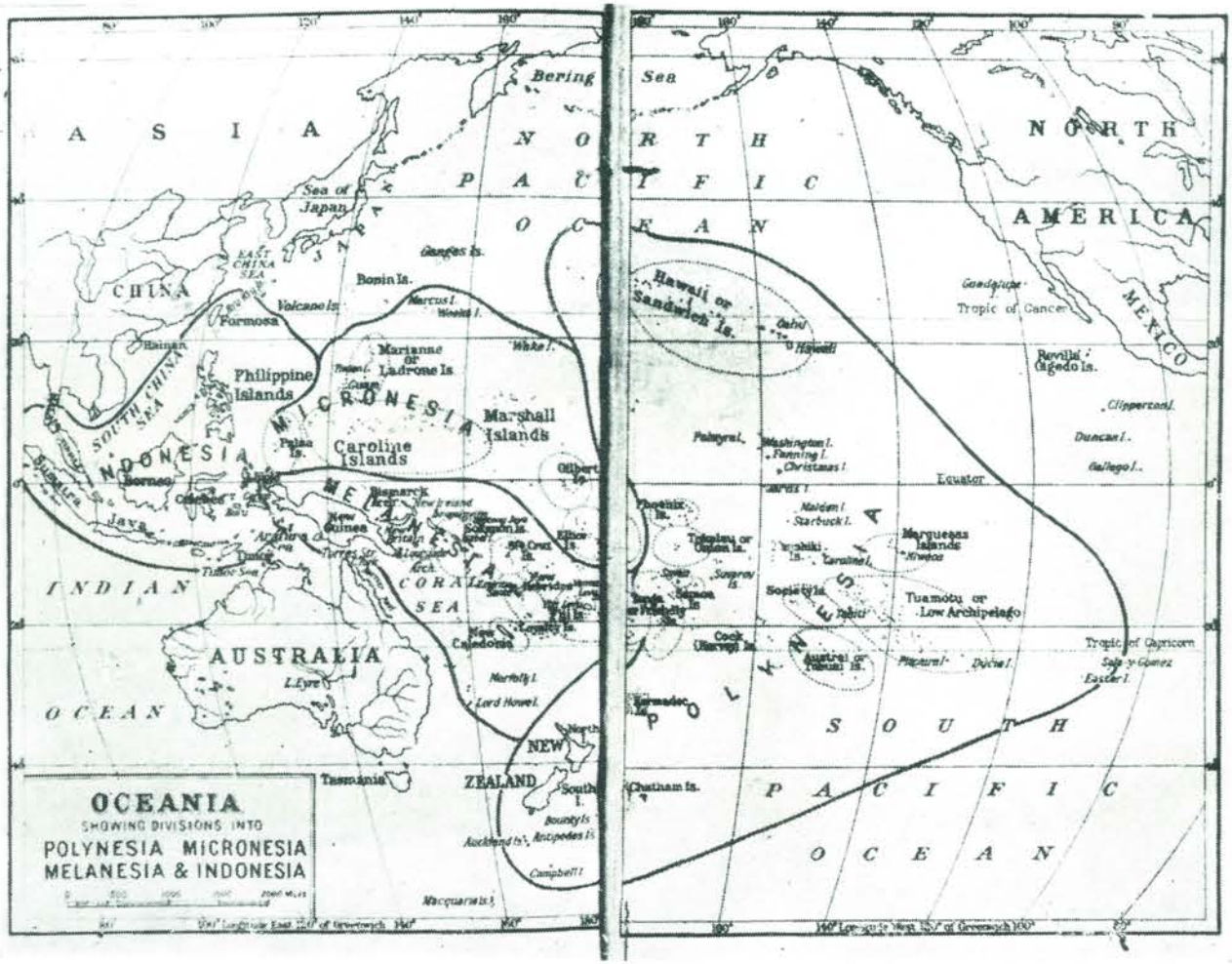
Subsequent to the Han Dynasty, many records had been made concerning water transportation and water battles which took place during the Tang, Sung, Yuan and early Ming periods; however, these records were not illustrated with pictures,

therefore, no enlightening knowledge can be gained as to the forms and styles of the various boats or ships described. Illustrated works in this area had not been accomplished until the middle Ming period when the San Tsai Tu Hui 三才圖會 was published in the 37th year of the rule of Wan Li 萬曆 (1609) and the Wu Pei Chih 武備志 published in the beginning year of Tien Chi 天啓 (1621). In 1957, Andemard published his work entitled "Histoire de la Jongue" 中國帆船史, which also contains two pictures of Lou Chuan; a translation of the relevant descriptive notes from Wu Pei Chih was used to explain one picture, and the other picture was extracted from the Szu Ku Chuan Shu 四庫全書 (See Plate VI A & B). In addition, the San Tsai Tu Hui and Tu Shu Chi Cheng 圖書集成 also each contain a picture of the ancient Lou Chuan (See Plate VI C & D).

In all probability, records of the forms and styles of sea-going vessels in ancient Chinese books and documents began with the account of the Fu Chuan 福船 by Fang, Chieh-jen 方杰人 in the time of Chia Ching 嘉靖 of Ming Dynasty. He said the Chou Hai Tu Pien 籌海圖編 compiled in 1562 by Hu, Chung-hsien 胡宗憲 was the earliest and most detailed work of ancient watercraft and illustrated with pictures. It consisted of 13 volumes and contained seventeen different types of ancient war-boats, the largest of which were the Kwangtung Chuan 廣東船 (Fig. 7) and the Ta Fu Chuan 大福船 (Fig. 8). Nevertheless, it contained no record of the ancient Lou Chuan. With regard to the Lou Chuan, both San Tsai Tu Hui and Wu Pei Chih stated: "When encountering big windstorms, they often became uncontrollable by human strength, and therefore had, in most cases, been replaced by the Ta Fu and Kwangtung boats." The Lung Chiang Chuan Chang Chih 龍江船廠志, published in 1553, contained records of Lou Chuan Hou Hu No. 1 後湖一號 (Fig. 9) and Lou Chuan Hou Hu #2 後湖二號 (Fig. 10). In accordance with the records, they were boats used for carrying government officials, not the Lou Chuan used for water warfare as explained in Shih Chi.

Both the Ta Fu and Kwangtung boats were junks of huge size. They were used as merchant vessels during the time of peace, and were utilized as warships in the time of war. Such junks of ancient China had prevailed over the Indian and the Pacific Ocean during the 14th and 15th centuries.

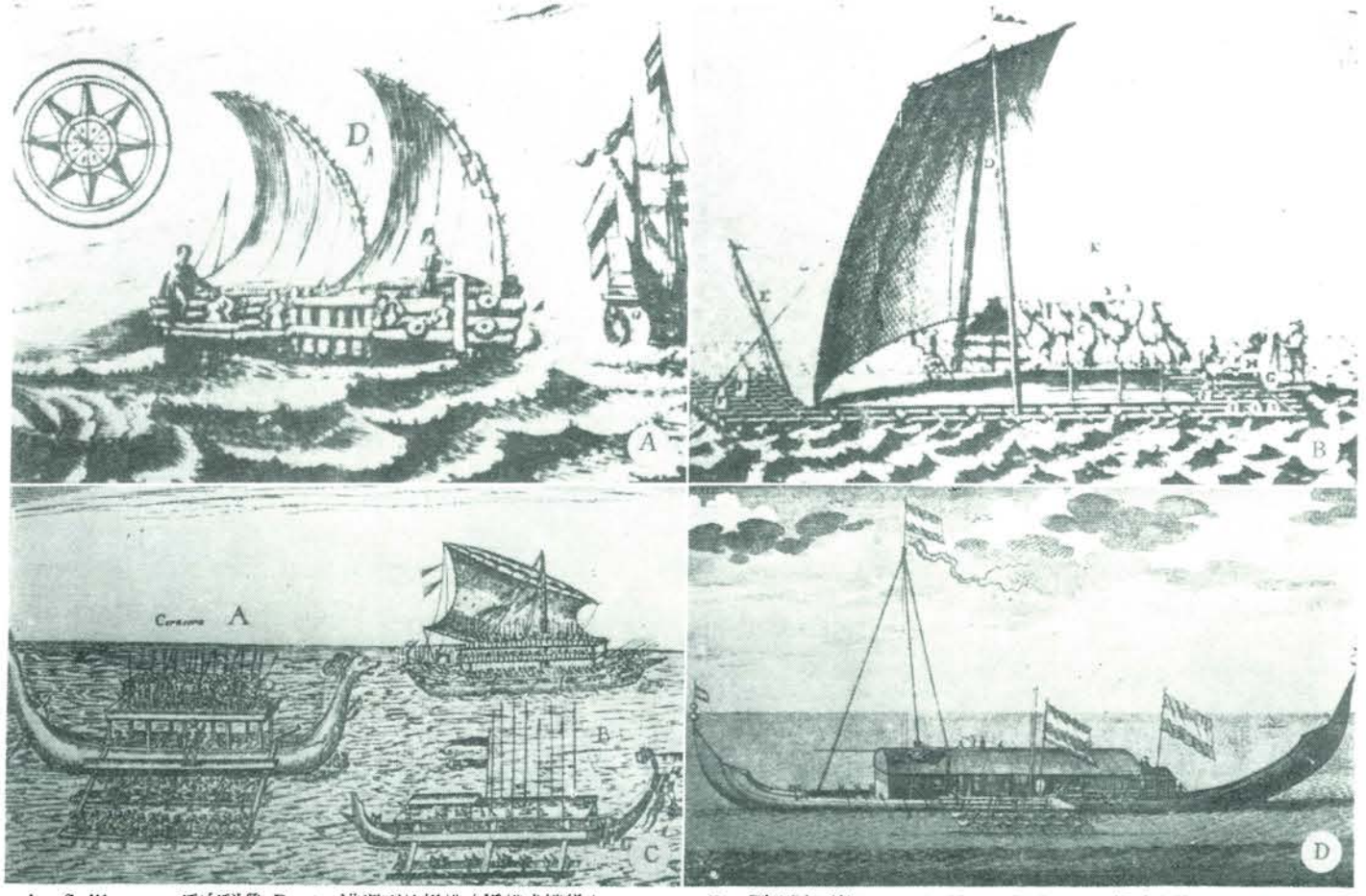
It is not too much to say that the Chinese maritime ethnology is still a piece of virgin soil. Few Chinese scholars have made any comprehensive studies in this area. Nishimura, a Japanese scholar, did direct some efforts to studies in this aspect. It is too late now for us to undertake any extensive research work in this area, since the relevant data and materials have almost all vanished. Fortunately, there have been some foreign scholars who were interested in this area and have preserved considerable pertinent materials. In addition to Domelly and Shinji, there are Andemard and Needham, Wang lin and others. All of them have made great contributions to the academic world.



海洋洲全域圖

Oceania

圖版壹
Plate I

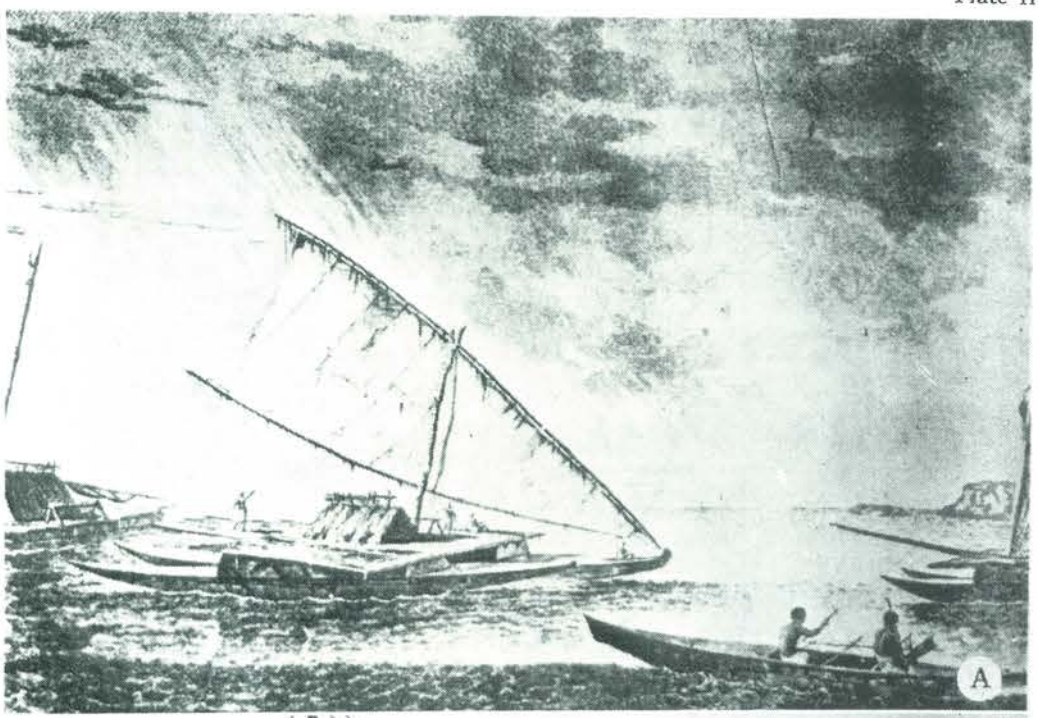


A. Spilbergen 氏在秘魯 Payta 港遇到的帆桅（桴桅式樓船）
Drawing of a Peruvian raft (From Spilbergen, 1619)

B. 西班牙軍官 Juan 和 Ulloa 對 *balsa* 的構造所繪的圖（桴桅式的樓船）
Drawing of a raft Guayaquil (From Juan and Ulloa, 1718)

C. 雙邊架艇式的樓船（戈船式的樓船）
"Cora cora A" The Double outrigger Has a Float Consisting of two Planks.

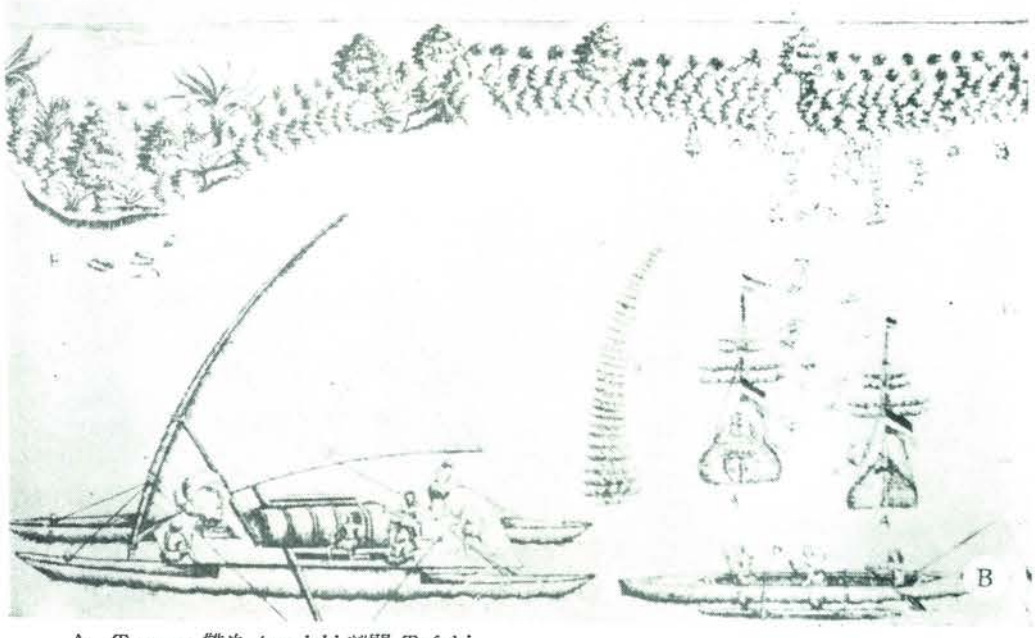
D. Maluccan 船，名叫 Cora-cora Van Titaway.（戈船式的樓船）



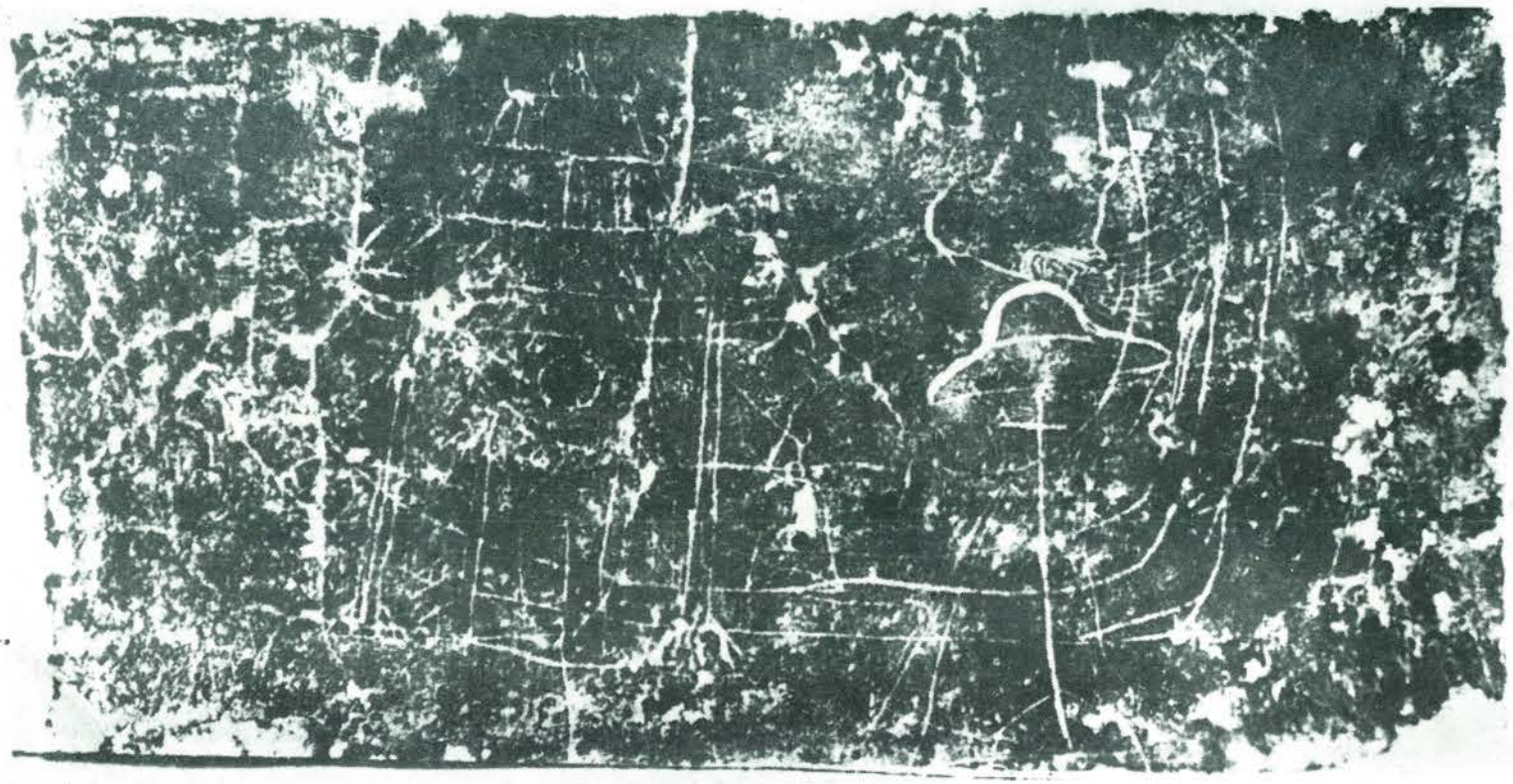
A. Tongan 的雙舟
Tongan double Canoes; Two seen to combine features of the ***kalia*** with others peculiar to the ***tongiaki*** (from Cook, 1777, Vol. 2.)

B. Samoan 人最後的 *ália* 式的雙舟樓船

圖版肆
Plate VI

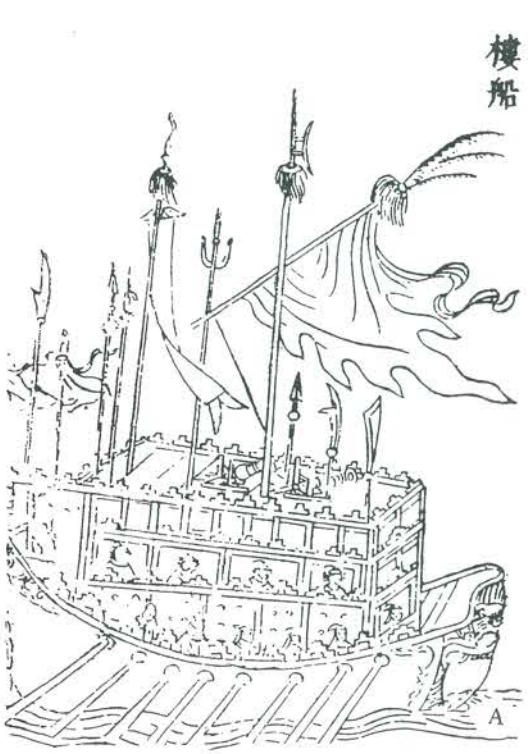


A. Tongan 雙舟 *tongiaki* 離開 Tafahi.
Tongan *tongiaki* seen off Tafahi in 1616 (from Schouten 1619)
B. 多根橫杠邊架艇
Tongan *tongiaki* See off Tongatabu in 1643, (affter Tasman. 1898)

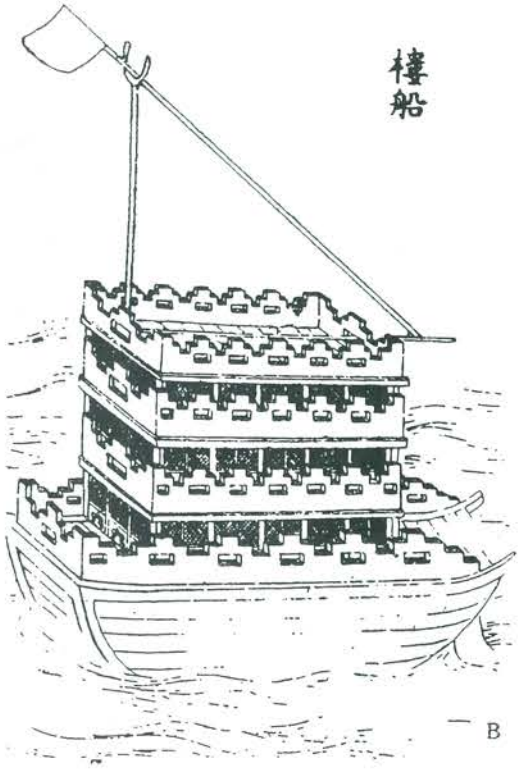


羅香林氏所藏廣州漢代城磚，上刻繪樓船形

圖版伍
Plate V



A



B

樓船

樓船者船上建樓三重列女墻戰格樹幡幟開弩窓矛穴外施鐕革卻火置砲車檑石鐵汁狀如壘

C

D

A. 武備志上之樓船
B. 四庫全書上之樓船
C. 三才圖會上之樓船
D. 圖書集成上之樓船

柒、中國帆船和舢板的起源

中國帆船英名 junk，法名 jonque，西葡均名 junco。此名的源起迄今未能確定，有的作者認爲葡萄牙字 junco，乃音譯爪哇語 djong 或馬來 adjong 而縮名 jong 的，係指海船或大船而言。有的則以爲 junk，不過是中國話船字 tch'ouan 字的變音，因爲厦門方言稱船爲 ch'un，福州語稱 chiong，爪哇及馬來亞有很多閩粵僑民，葡人東來譯名 junco，英人乃名之曰 junk(1)。則係中國帆船的通稱。

中國遠古水運工具有桴桅、戈船、方舟和樓船四種，而其中的樓船卽 Hornell 氏所指的帆船，Hornell 氏說：

> 昔日中國人從事水戰所用的大型帆船，多漆成紅色，並配以金黃色的龍形裝飾，光彩耀目，莊嚴壯麗，但此種船隻今已不復存在，代其位而起者爲歐洲式的鋼造巡洋艦和砲艇；同樣地，那些在馬可勃羅時代和更久以前就已經航行印度和波斯灣的華麗商用帆船，也隨之絕跡了。這些船隻在當時所具有的很多特色中，有許多略經改創後，都成了現代化歐洲船舶構造上的特徵。從橫隔艙的採用以及爲富商巨賈所設置的個別優等艙房，亦爲諸特色中的一部份。
>
> ……可是今日中國的航運船隻，雖多爲製造粗陋，被風吹雨打得又黑又髒，却仍保有昔日帆船的主要特色。船上裝的釘扣板的橫帆（battened lugsail）——經常配飾繩纜索具或用各色材料(如用布時)綴補而成——其如畫般的美麗，任何其他地方的船隻，皆無法與之比擬，這些船，看起來雖然非常的笨拙，但是遠勝過我們的裝有膨脹西式帆的船隻，因爲她們能够靠近風行駛。若能熟練的操縱，她們實在是適於航行，並能向風行駛的船舶。耆英號（Keying），典型的深海帆船，一八四八年航行至英國一例，可爲有力之證明(2)。

上面引文所說的耆英號，如圖版壹A, B所示，是第一艘中國帆船在1846年航行橫渡大

(1) Audemard. 1957, p. 19.

(2) Hornell, 1946, p. 86.

西洋的。耆英號於1846年十二月六日離開香港(1)。這艘中國帆船的航行祇有前半的航程遇到好天氣，但停泊六個禮拜在爪哇海，在馬來海峽又遇到了逆風，過好望角海岬時在1847年三月二十二日和二十三日遭遇到極大風浪，還好船艦毫無損失。這隻帆船，英人宣稱是作爲中國美術海上博物館。這艘船曾前後兩次橫渡大西洋，當時（十九世紀中葉）曾轟動歐美，一時報章雜誌競相刊載，並鑄有紀念章，紀念章的正面爲耆英船形（圖版壹B），反面有紀念詞（圖版貳A），詞云：

> 第一艘中國帆船來到歐洲，曾繞道好望角。她的長有160呎，寬33呎，深達16呎，載800噸。主桅用鐵樹木製，90呎高，篷帆爲强蓆織成，主帆重近9噸。她的錨亦用鐵樹木，舵重7噸。她是一艘極好的船，自 Boston 到 Jersey 航行21天，在1848年3月廿七日到達英國(2)。

耆英號之所以被人重視是她的堅固，而不在速度。Audemard 氏以爲 Keying 一名是音譯中文耆英二字而來的，圖版壹A上，船尾上部畫一大鷹，該船若命名爲耆鷹二字，似更恰切。

十九世紀中葉，耆鷹號經印度洋，兩次橫渡大西洋，大西洋雖比太平洋洋面較狹，但其中少有島嶼，不如太平洋上小島星羅棋布橫跨容易，因此大可以補充海氏（Heine-Geldern）的說法，海氏的理論是：

> 這是恐懼太平洋的典型例子——我們也可稱其爲一種恐水病（hydrophobia）——許多人類學和考古學者好像都身受其苦。……在我們的學術著作中，可看到很多有關早在公元前五世紀的時候，中國沿海地區，在造船和航海方面就有高度發展的記述，同時，中國的資料明白指出，在公元前五百年的一段時期中，南亞的船隻比哥倫布和麥哲倫所用的那種船隻，在體積和裝備兩方面都較爲優越。此外，我們也不應忘却那許多在歷史早期中，平均每五年一隻，駛抵美洲大陸沿岸的東亞帆船(3)。

東亞帆船平均每五年有一艘抵達美洲，惜海氏未註明其根據的出處。但有東亞帆船橫

（1） Moniteur Universal, 1947, p. 2096.

（2） Audemard, 1960, p. 34.

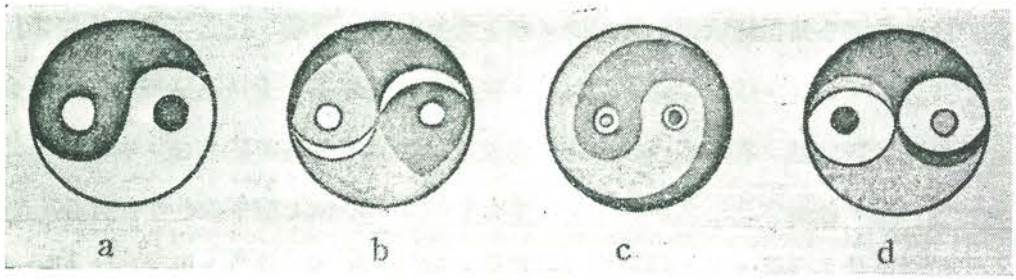
（3） Heine-Geldern 1965, p. 280.

渡太平洋航抵美洲西岸，則是事實。舉一例而言，達鑑三氏著法顯首先發現美洲考證書中附有中國帆船紀念碑，見圖版貳B、至於此圖帆船到達年代達氏考證有云：

> 紀念碑，雖立於一九三六年，究係紀念何年代之事？茲以中、墨史實言之：(1)余受之謂：'在一千四百年以前，曾有一艘中國帆船駛抵墨西哥亞卡布哥港'(見余受之墨西哥史話第七頁，)正合佛國記所載法顯到達墨西哥之年代(東晉安帝義熙八年，第五世紀四一二年)。(2) 南史東夷傳宋大明二年(紀元四五八年)罽賓國嘗有比丘五人游行扶桑國，就是佛國記由罽賓來的法顯五比丘。(3) 哈斯保 (Louise S. Hasbrauck) 云：'墨國較上層之印第安人，每每感念或稱述彼輩所有之事物智識，得自韓荻嘉人 (Tolteca) 時代之神人歸薩克，歸薩克乘蛇形舟而去'(見墨西哥通史十章八十九節)。韓荻嘉人時代，是第五世紀，歸薩克乘蛇形舟(中國帆船)而去，亦是第五世紀，正合法顯乘中國帆船漂到耶婆提國(墨西哥亞加布谷)之年代(1)。

此紀念碑係紀念中國帆船到達亞加布谷港 (la Nao——西班牙文義爲帆船——China a Acapulco) 所立，立碑日期爲1936年11月20日。除此資料外，別無可考。達氏謂余受之氏說1400年前，曾有一艘中國帆船駛抵墨西哥亞卡布谷港，未知余氏所據爲何？如余氏依據可靠，則達氏的法顯漂到墨西哥的年代則是相當，至於法顯是否爲神人歸薩克，作者未敢置評。本文祇求證明中國帆船的航行能力，余達二氏言能在第五世紀時中國帆船橫漂太平洋兩次，則在哥倫布千年前，中國人早已到過新大陸。

Audemard氏也認爲中國人發現美洲(2)，他的根據是在中美宏都拉斯(Honduras)



插圖一 太 極 圖

(1) 達鑑三，1969, pp. 69-75.

(2) Audemard, 1957, p. 91.

的 Copan 省[1]，省會 Santa Rosa 附近有一廢城在考古學上發見有一荒廢的紀念物，雕刻有中國的太極圖[2]（插圖一）。中國人視太極爲最尊敬的符號。依中國宗教的奧義言，太極是萬物的根源，或萬物的精華，也是某種的主神。這一圖記，刻在美洲的紀念物上，可證明亞洲文化，早年在秘魯和墨西哥已起了影響。

假定 Copan 的紀念物是公元第十三世紀建立的，則在公元十三世紀時中國人已到達美洲。M. de Quatrefages 曾發表意見：美亞兩洲的關係，源自一隻帆船漂流到加利福尼亞，見于舊金山新聞報導。這隻帆船並非直接橫渡太平洋的，而是先朝北順洋流航行到阿拉斯加半島，再循阿留申羣島沿海岸南下，在古代若干記錄中可證明中國海外開拓精神實不亞於於任何西方國家。

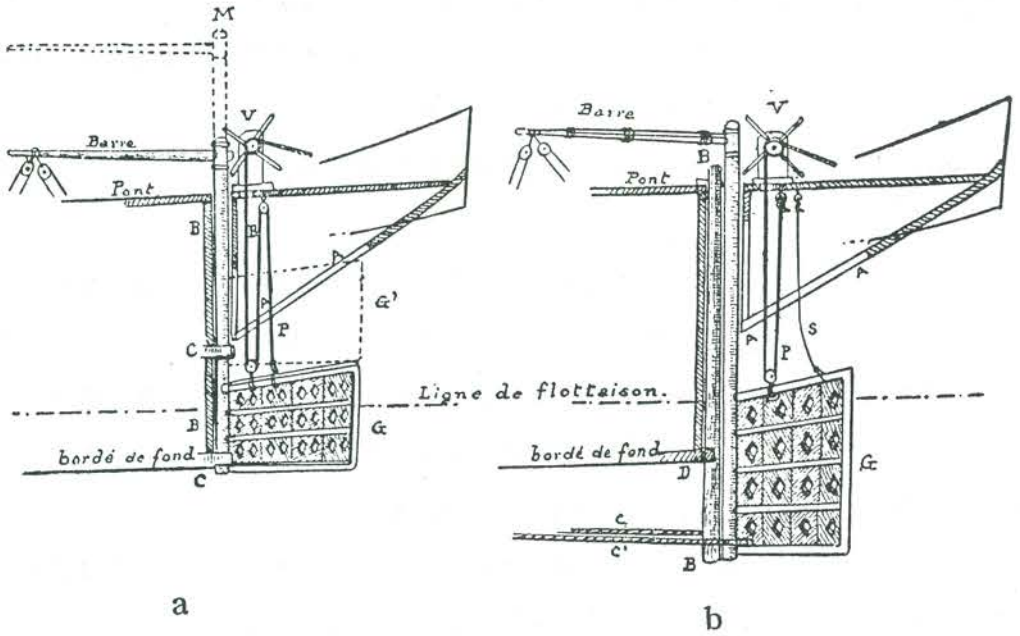
上引海氏說：在歷史早期中，平均每五年就有一隻東亞的帆船橫渡太平洋駛抵美洲西岸。1846年耆鷹號經印度洋取道好望角，兩次橫越大西洋而到美英兩國。凡此皆可證明中國帆船在古代世界各國帆船航海史上也是性能優越的船舶。這優越性能的中國帆船，是由帆筏、戈船和雙舟三者源遠流長慢慢演進來的。據 Hornell 氏說：

> 我所認爲屬於最古老形式而變化最少的船隻中的帆船式樣，……她沒有龍骨，也沒有船尾，而是最典型未經任何現代改革的帆船，連前端的一支中間支材式船頭都沒有。邊板，一般是橫的，兩端相攏合而使船有橫頭和一橫尾；此種橫頭和橫尾，也可以分別說是許多隔艙中的第一個，和最末一個。這些隔艙將船的內部分隔成許多防水的小隔間。
>
> ……中國帆船的舵是經由一在船尾突出部的中央所開的井孔或槽穴所懸掛着的；它完全是用繩索固定繫牢的。在正常航行的位置時，舵之下邊伸進船底數尺以下，如是，除指掌船之航向外，它還有像低垂龍骨或活動插板一樣的減少風壓的副功能。在淺水中航行時，它就被拉高到不會碰河底爲止。它非常奇特的一點，就是它是三角形的，上面穿有數排菱形小洞，據稱這些小洞能使在波浪之中較易操縱，且能使舵之功用更爲有效（見插圖二）[3]。其理由，和提倡

（1） I'Illustration 30, Octobre, 1886.

（2） Audemard, 1960, p. 12.

（3） Audemard, 1959, p. 25.



插圖二 舵圖 a. 香港式
b. 海南式

在普通帆船的帆布上加穿許多眼孔的義大利人所說的無異(1)。此外，航海的大型帆船和港灣所用的舢板，都在船頭上飾有大而顯明的眼睛。據中國人說這種船眼，能使船在渡海時認清她的航路。又中國帆船之帆與索具的特點，雖然也很奇異，但因與起源的問題無密切關係，在此從略。

中國水運工具的演進是由航海的帆筏、戈船、雙舟、舢板和帆船而來的，現由帆船的型式和構造可以清楚的推知其來源。中國帆船最單純的形式，可在每個中國港口的粗陋舢板身上看出。舢板身上有中國帆船的主要或基本特性，只是太簡化了一點，而且又在那些增添的許多附屬物件左右、毫無遮掩的坦露着、致不爲人所注意，但經一語道破後，她們頓成一目瞭然了！典型的舢板是無甲板的小艇，輪廓成粗鈍楔形，船身淺，無龍骨，後端船幅很寬，在船尾兩側的舷邊橫欄伸出到船尾以外，並朝上彎曲形成面向後方的兩隻大角。舢板船夫通常是站着，面朝前方，用兩隻長把的槳划他的船，有時也用一隻短槳在船尾後側划。在後一種划行方法中，我們不難看出，後來

(1) Hornell, 1946, p. 87.

導致中國帆船的懸吊中間舵的發明，或者最好說是演進的初期概念，正像船尾後面伸出的兩隻大角間的空間接合後，而直接形成較大船隻的船尾空懸突出部份一樣。由上述的分析，中國航海的大型帆船是由構造簡單的舢板船演進而來的。

中國帆船的前身是舢板，再推向前則舢板又源於雙聯獨木舟(即方舟)據 Hornell 氏說：

> 中國帆船的寬濶，平齊的船頭和船尾，沒有龍骨，都是代表其自雙聯獨木舟的型模演化而來的證明。雙聯獨木舟有兩個船身，平行排列，中間隔著少許距離此間隔之空間用木板接合；遂形成一浮橋形的船；船首與船尾寬濶，船身內分爲兩縱直的大間隔，猶如古老式帆船的顯著特色之一的縱直隔艙一般無二(1)。

舢板是由雙舟演化而來，前在方舟與樓船一文曾引淮南子氾論訓云：

> 乃爲簰木方版，以爲舟航。高誘注曰：簰，空也。方，竝也。舟相連爲航也。

兩棵空心樹木，加上一塊方板，即成爲舟航。淮南子主術訓又云：

> 大者以爲舟航柱梁。高誘注曰：舟，船也。方兩小船並與共濟爲航。

在民物學上來說，前清時代，東北地方尙存雙舟渡河之法。西清黑龍江外紀有云：

> '威呼'，獨木船也。長二丈餘，闊容膝，頭尖尾銳，載數人，水不及舷嘗寸許，而中流蕩漾，駛如竹箭，此眞刳木爲舟也。遇河水暴漲，則聯二爲一，以濟車馬。余來時，奉天、吉林道中數乘之。中流瞑目不敢視，其險可想。

上錄中有云："聯二爲一，以濟車馬"。舟航之大，可以想見。航行深海和長江的大型帆船，船大的帶幾隻舢板，大船不能靠岸時，亦多用舢板船以載人或運貨。

據 Hornell 氏說中國帆船上又有一獨特的中間舵。(the peculiarity of the median rudder)(2)。所謂中間舵，即現代的下風板 (Lee board)，明代稱爲腰舵，宋應星天工開物卷中舟車海舟條有云：

> 中腰大橫梁出頭數尺，貫插腰舵，則皆同也。腰舵非與梢舵形同，乃闊板鏟成刀形，插入水中，亦不捩轉，蓋夾衞扶傾之義。其上仍橫柄栓于梁上，而遇淺則提起，有似乎舵，故名腰舵也。

---

(1) Hornell, 1946, p. 88.

(2) Ibid.

腰舵由邊架艇遞變而來，明三才圖會卷四載有船名海鶻者云：

> 海鶻者，船形頭低尾高，前大後小，如鶻之形。舷上左右置浮板，形如鶻翼翅，助其船，雖風濤怒漲而無側傾。

又海物異名記云："越人水戰，有舟名海鶻，急流浴浪不溺"。如係指古代越人，則可能在春秋時代已用海鶻戰船。在民族學上的海鶻即雙邊架艇，清代雍正乾隆時期臺灣尚存有邊架艇。黃叔璥番俗六考中所云："蟒甲，獨木挖空，兩邊翼以木板，以藤縛之"。就是我們所稱的邊架艇。最早見之於甲骨文中的𠂤𠂤𠂤𠂤𠂤等形，實皆雙邊架艇的象形。作者已在戈船考一文詳言之[1]。中國帆船構造上遺留的下風板（Lee board），乃是中國遠古的戈船，即現代民族學上的雙架或單架的遺蹟。

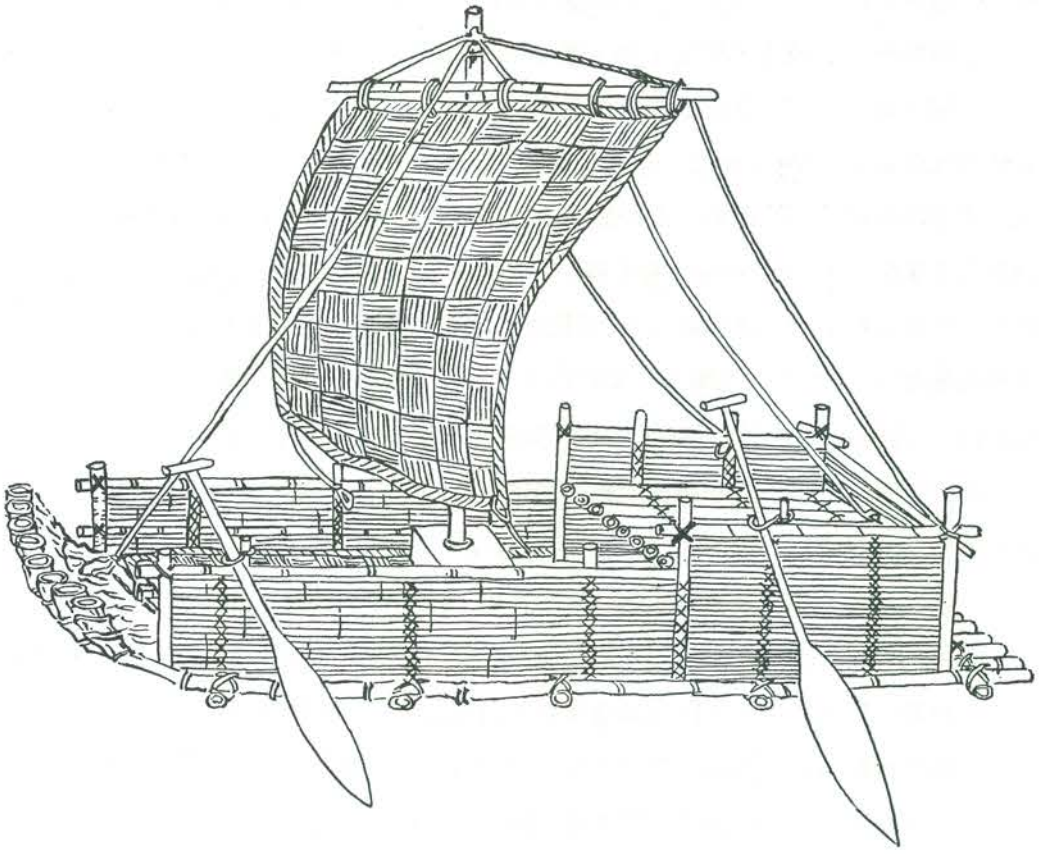
再往上推，中國帆船和舢板的起源問題，又不能不推到臺灣的航海竹筏或中國北方的木桴。我很贊同 Hornell 的見解，他說：

> 但是更爲苦心精製者爲臺灣的航海竹筏，這種筏子的面由許多根可能找到的最粗的竹子所做成。這些竹子都是並排的捆綁在一起，間隔著用彎曲的竹子橫著束緊，以使之牢固，筏面兩端成朝上翹起之勢。因爲竹子愈朝向梢部愈細，臺灣竹筏製造者，遂在做筏子面時，使竹子並排而列，並使竹梢均朝向一點捆紮，這樣做成的筏子很明確地向一端逐漸變窄；筏首看起來雖寬，但很明顯地，較筏尾爲狹窄。筏首和筏尾爲平截形的，除一般在每邊最外的一根竹子讓它突出尾部頗遠以外，其他的竹子一律削齊。筏子是靠一隻長槳划行的。
>
> 在這種航行用的筏子之設計中，不難想像出舢板構造的基本要點。用木板替代竹子，使兩邊彎曲成一半圓筒形，再用橫板蓋起兩端敞露部份，再加上一個甲板後，中國帆船的船身就形成了。把前端的木板綁攏起來，就成了港口行駛的舢板的尖頭，這或許是較老式的；以截平船頭爲表徵之型式，是較近的變形。因爲，直到最近，大型帆船所携載作爲附屬小艇的小舢板，多半是屬於這種獨特構造的船隻；還有很多內河航行的舢板也保有這種截平，木板交叉（cross-planked）而成的獨物形式的船頭[2]。

上錄中 Hornell 氏說明中國帆船是由舢板遞變而來，則舢板和帆船都源於竹筏。文字

（1） 凌純聲，1968, p. 5.

（2） Hornell, 1946, pp. 89-90.



插圖三　1803年日人秦貞廉所記臺東秀姑巒帆筏

的描述和說明，費詞而不易使讀者信服。茲舉出插圖三加以說明，此爲1803年日人秦貞廉氏所著漂流臺灣秀姑巒島之記書中插圖，爲臺東秀姑巒的帆筏，竹篾編織成帆篷，竹子紮高成船舷，船之後身船舷較高，再舖一方竹製的甲板，可以坐臥，筏身掛有兩支長槳，如此筏用木造卽成爲舢板，有甲板再加一篷蓋，卽爲小型的帆船了！

Hornell 氏的理論謂中國的帆船起源於航海帆筏，的確中國航海水運工具除帆筏外，戈船和雙舟都能航行深海，凡此均足以證實 Hornell 氏的理論是正確的。茲列中國原史和歷史時代所記載航海水運工具的遞變如下：

1. 太昊（Taaroa）伏羲氏（33rd Cent. B. C.）始乘桴。
2. 黃帝軒轅氏（2697 B. C.）變桴筏以造舟楫。
3. 少昊氏（2597 B. C.）乘桴泛於海上。

4. 殷商時代(1384–1111 B. C.)甲骨文字中的舟泔ㄔ爲雙架艇，ㄔ爲單架艇[1]。其中以雙架艇佔大多數。

5. 越王勾踐（5th Cent B. C.）使樓船卒二千八百人伐松柏以爲桴。

6. 孔子（551–479 B. C.）欲之九夷，乘桴浮於海。

7. 春秋時代（6th Cent B. C.）爾雅釋水："大夫方舟"。謂併兩船也。

8. 史記南越尉佗列傳：元鼎四年(113 B. C.)呂嘉反，令江淮以南樓船十萬師，往討之。

上述爲中國上古時代，航海水運工具的桴筏、戈船、雙舟和樓船發展的簡史。戈船演進爲帆船的腰舵，雙舟的隔艙和寬度遞變成舢板和帆船，惟有原始桴筏，據傳說在西元前三十三世紀太昊（Taaroa）氏，才開始乘用，直到目前爲止，這一文化在中國活存了五千多年。作者在臺灣的帆筏及其起源一文中有云：

根據民國四十三年臺灣農業年報的統計，臺灣的無動力漁船共計 21,541艘，其中竹筏有 13,808隻，幾佔總數三分之二，餘三分之一爲木船，反比竹筏爲少，臺灣一島現已成爲世界上使用航海竹筏最多之地[2]。

臺灣近十餘年來農漁業隨工商業而發達，捕魚多採動力漁船，竹筏已逐年減少。去年（1970）美國德州大學多倫（Doran）博士來臺考察，在高雄茄萣還找到一隻航海帆筏，他說橫渡太平洋，竹筏可以勝任，因而推論南美文化源自亞洲[3]。遠在哥倫布發現新大陸以前，在世界各海洋航行的中國式的帆船起源，向上追溯可以步步推至舢板，而到雙舟遺留下來的小間隔艙，再到戈船遺跡的腰舵，最後到航海帆筏，而航海帆筏便是中國帆船的老祖宗了！所幸十八年前臺灣尙存竹筏 13,808隻，當時作者從事調查，能有足够的實物材料，可資研究。但近二十年來，社會進步工商業發達，動力漁船已取代了原始的竹筏中國帆船老祖宗的臺灣竹筏幾乎將被時代所淘汰，若調査稍遲了一步，恐怕就會錯失許多可貴的實物資料。

---

(1) 凌純聲，1968, p. 5.
(2) 凌純聲，1956, p. 2.
(3) 吳元熙，1970, p. 3.

中英文參考書目

吳元熙

1970 竹筏橫渡太平洋，臺灣新生報，民國五十九年四月二十日第三版。

凌純聲

1956 臺灣航海帆筏及其起源，民族學研究集刊第一期民國四十五年。

1968 中國古代與印度太平兩洋的戈船考，民族學研究集刊第二十六期，民國五十七年。

達鑑三

1969 法顯首先發現美洲考證，民國五十八年，臺北。

AUDEMARD, L.

1957 Les Jonques Chinoises: Histoire de la Jonque, Rotterdam.

1959 Les Jonques Chinoises: Construction de la Jonque, Rotterdam.

1960 Les Jonques Chinoises: Ornementation et Types, Rotterdam.

HEINE-GELDERN, R. V.

1965 Theoretical Consideratione Concerning the Problem of pre-Columbian Contacts between the Old World and the New, Philadelphia.

HORNELL, J.

1946 Water Transpost: Origins and Early Evolution, Combridge, England.

I'ILLUSTRATION

1886 No. 30, OCTOBRE

MONITEUR UNIVERSAL

1947a Description d'un navire à Ste-Hélène, p. 2096.

1947b La jonque Keying à New York, p. 2390.

VII. THE ORIGIN OF THE JUNK AND SAMPAN

'Junk' is the English word for the ancient 'Chinese large vessel with high poop, prominent stem and battened lugsails', which is called 'jonque' in French and 'junco' in Spanish and Portuguese. The origin of this name still remains to be a question undeterminable. Some scholars believe the Portuguese word 'junco' was perhaps a transliteration of 'jong', the short form of the Javanese word 'djong' or of the Malay word 'adjong', meaning 'sea-going or large ship.' In consideration of the fact that 'tchonan', the Chinese word for common boats, is pronounced 'chun' in Amoy dialect and 'chiong' in the Fuchow dialect, and that there had been many Chinese settlers from Fukien and Kwangtung in Java and Malaya when the Portuguese first arrived on these islands, many other scholars take for granted that the Portuguese word 'junco' was a translation by sound of 'chun' or 'chiong' and the English word 'junk' either a translation of the same or one from the Portuguese 'junco'. However, both 'junco' and 'junk' can be regarded as a variant of the Chinese word 'tchonan'. (Audemard, 1957: 19)

The watercraft used in ancient China may be divided into four different types; (1) raft; (2) outrigger canoe; (3) double canoe; and (4) deck canoe (also known as Lou Chuan). The last type of these, namely the Lou Chuan, was virtually the junk as referred to by Hornell as follows:

> The great war junks used by the Chinese in former days, resplendent in scarlet paint and golden decoration, have all disappeared, giving way to steel-built cruisers and gunboats of European design; so, too, have gone the magnificent merchant junks that voyaged to India and the Persian Gulf in Marco Polo's day and long before, vessels that boasted even then many of the structural features that, re-invented, characterize quite modern European ship design. Among these were the employment of longitudinal and transverse bulkheads and the provision of separate state-rooms for wealthy merchants taking passage by these ships.
>
> But though these finely built junks have accompanied the European-built tea-clipper to the lumber room of Ocean, Chinese sailing craft of the present day, dingy and roughly built as they often are, conserve the essential features of the type. No sea craft elsewhere can compare with them in the picturesque beauty of their battened lugsails, often regged or patched (when of cloth) with material of diverse colour; strangely clumsy to our eyes but enjoying practical advantage over our ships with their bellying Western sails in the way they can lie close to the wind. Skilfully handled, they are

seaworthy and weatherly craft, as witness the voyage of the Keying, a typical deep-sea junk, to England in 1848. (Hornell, 1946:)

As described in above citation, the Keying (as shown in Plate I A & B) was the first Chinese junk that had achieved a trans-Atlantic voyage in 1846. She set sail from Hong Kong on December 6, 1846 (Moniteur Universal, 1947: 2096). After sailing in good weather during the first half of her journey, she rode at anchor in the Java Sea for six weeks. Then she encountered an adverse wind in the Malay Strait. She sailed around the Cape of Good Hope in big winds and high waves on March 22 and 23, 1947, fortunately without sustaining any damages. This ship was declared by the Englishmen as the Chinese Museum of Fine Arts on the Sea. She had traveled twice across the Atlantic Ocean and her successful voyages had become an unprecedented, exciting news in both Europe and America at that time. To celebrate this great achievement, a special memorial badge was issued, one side of which bore a picture of Junk Keying (Plate IB) and the other side was inscribed with the following:

The first Chinese vessel ever brought to Europe or even rounded the Cape. The dimensions are—length 160 ft; breadth 33 ft; depth of hold 12 ft; burden 800 tons. Main mast of iron wood 90 ft long. The sails are made of strong matting. The main sail weighs nearly 9 tons. Her anchors are of iron wood. The rudder weighs 7 tons. She is an excellent sea-boat, and made a voyage from Boston, U. S. to Jersey in 21 days. Arrived at England 27 Mar. 1948. (Plate IIA) (Audemard, 1960: 34)

Keying was highly valued at that time for her solid construction, not because of her speed. Audemard thought Keying was an English translation of the Chinese word 'Chi Ying 耆英'. In view of the big eagle painted on her stern, as shown in Plate IA, this author thinks it would have been much more appropriate if she had been named '耆鷹' (Chi Ying—Old Eagle).

During the middle part of the 19th century, Keying crossed the Atlantic Ocean twice, via the Indian Ocean. Although the Atlantic Ocean is narrower than the Pacific, there are by far less islands in the former than there are in the latter; maybe this could supplement the following theory put forth by Heine-Geldern:

This is a typical case of that terrific fear of the Pacific Ocean—one might almost say that kind of hydrophobia—from which many anthropologists and archaeologists seem to suffer...We have literary indications of the high development of boat building and navigation in coastal China at least as early as 500 B. C., and Chinese sources make it perfectly clear that in the first half millennium A. D. the ships of southern Asia were superior in size and to a certain extent in equipment to those of Columbus and Magellan.

> Nor should we forget the large number of East Asiatic junks which were driven to the shores of America in historic times, on the average of about one every five years. (Heine-Geldern, 1965: 280)

As quoted above, the East Asiatic junks visited America on the average of about one every five years. Unfortunately, Heine-Geldern did not mention the source of this information. However, it is a fact that certain ships of the junk family had sailed from Asia across the Pacific to the west coast of America in the ancient times. For example, there included in Ta, Chien-San's (達鑑三) Fa Hsien's Discovery of America 法顯首先發現美洲 is a picture of a monument which was erected in Mexico to perpetuate the memory of the arrival of a Chinese junk (Plate II B). As to the year in which this junk arrived in Mexico, Ta, Chien-san's research concludes as follows:

> Although the monument in memory of the event was erected in 1936, the year in which the event took place may be ascertained based on the following Chinese and Mexican historical materials: (1) Yu, Shou-chih 余受之 said: 'About 1400 years ago, a Chinese junk reached Acapulco, Mexico (See page 7, Yu, Shou-chih's 'Stories about Mexico')—This corresponds properly with the date of Fa Hsien's arrival in Mexico (the 8th year of Yi Hsi under the rule of Emperor An, Eastern Tsin 東晉安帝義熙八年, 412 A. D.) as contained in Fu Kuo Chi 佛國記; (2) The Tung Yi Chuan 東夷傳 of Nan Shih 南史 states: 'In the second year of Ta Ming 大明 of Sung Dynasty (458 A. D.), there were five monks who traveled from Chi Pin Kuo 罽賓國 (present Kashmir) to Fu Shang Kuo 扶桑國'—These were the five monks, including Fa Hsien, as related in Fu Kuo Chi; (3) Louise S. Hasbranch stated: 'The relatively highly civilized Indian people of Mexico often expressed their gratitude to Quisak, a god of the Toltec, for they believed they originally gained all the knowledge they had from him. And they believed that Quisak had sailed away in a snake-shaped boat (Section 89, Chapter 10, History of Mexico).'—The Toltec people existed in the 5th century. It was therefore also in the 5th century that Quisak sailed away in a snakeshaped boat (Chinese junk). This again coincides with the date of Fa Hsien's arrival at Acapulca, Mexico in a Chinese junk. (Ta, Chien-san, 1969: 69–75)

This monument, for memory of the former arrival of the Chinese junk at Acapulca, Mexico, was erected on the 20th of November 1936. Aside from this, no valid materials concerning this ancient event are available. It is unknown to this author on what material Yu, Shou-chih based his statement that 'a Chinese junk arrived at Acapulca, Mexico about 1400 years ago.' If Yu's information was reliable, the date of Fa Hsien's arrival in Mexico mentioned by Ta, Chien-san would seem

appropriate. This author dare not say whether Fa Hsien was just God Quisak of the Toltec people or not. However, both Yu and Ta stated that the Chinese junk crossed the Pacific twice during the 5th century; if their statements were credible, Chinese people would have reached the New World 1000 years before Columbus.

Audemard also believes that America was first discovered by the Chinese (Audemard, 1957: 91). His belief is based on the finding of an ancient monument engraved with the Chinese Tai Chi Tu (太極 a diagram representing the Yin and Yang elements) (I' Illustration, 30 Oct. 1886) at the ruins of an old city in the vicinity of Santa Rosa, Copan, Honduras (Audemard, 1960: 12). The Tai Chi was regarded with great reverence by the ancient Chinese people, who believed, in their religious tradition, that it was the source of all things, or a god. This discovery of the Tai Chi Tu engraved on an ancient American monument indicates that the influence of the Asian culture had reached Peru and Mexico during the very old days.

Assuming the monument excavated at Copan was erected during the 13th century, it may then be said that some Chinese people must have arrived in America in that century. M. de Quatrefages once expressed: "The relationship between America and Asia began with a junk's arrival in California from Asia. This junk, instead of crossing the Pacific Ocean straightforward, had reached Alaska first after a northward course, then following a southward course, first passed Aleutian Islands and finally reached America. In fact, many records in ancient books and documents reveal that China, same as any other western country, had demonstrated during the ancient times a great spirit for adventurous or exploratory undertakings overseas.

As cited previously from Heine-Geldern, during the early stages of history, on an average, an Eastern Asian ship would come to the west coast of America across the Pacific every five years. In 1846, Keying come to America and England twice by crossing the Indian Ocean and travelling around the Cape. All of these may serve to prove that the ancient Chinese junks were as good as the sailing-ships of any other country, in structure as well as in speed. With regard to such Chinese junks, which had been developed from the rafts, outrigger-canoes and double canoes, the following statement by Hornell is extracted:

> The junk design, which I consider to pertain to the oldest and least modified of ship types...In it there is neither keel nor sternpost, and in the most typical, where modern innovation has been resisted, the fore end is also without a median timber or stempost. Planking, usually transverse, closes in both ends, giving the vessel a transom head as well as a transom stern; these transoms may be taken to represent respectively the first and the last of a number of bulkheads which divide the interior into numerous watertight compartments.

> ...the junk rudder is suspended in a well or trunk left open in the centre of the overhanging stern projection of the upper works of the hull—a form of outsize counter; it is steadied and held in place entirely by rope tackles. In the normal sailing position its lower edge projects several feet below the bottom, and so, besides serving to steer the vessel, it has the accessory function of lessening leeway after the fasion of a drop keel or centreboard. In shallow water it is hoisted up sufficiently high to prevent it from touching the ground. Very characteristic is its rectangular form, perforated by rows of diamond-shaped holes (Fig. 2), which are claimed to render its manipulation easier in a seaway and its service more efficient, (Audemard, 1957: 25), on the same reasoning as an Italian inventor has advocated the use of many eyelet holes in the canvas of ordinary sails. (Hornell, 1946: 87)

Besides, a curious ornament, sported alike by big sea-going junk and harbour sampan, is the large and prominent 'eye' or oculus on each bow, put there, say the Chinese, to enable the vessel to see its way across the sea. The peculiarities of the Chinese sail rig, strange though they be, need no mention here, as they do not enter into the problem of origin.

The ancient Chinese watercraft were developed through the steps as outlined below: raft—outrigger canoe—double canoe—sampan—junk. From the standpoint of its form and structure, we can trace the junk clearly to its origin. The simplest form of the Chinese junk can be seen in the humble sampans that swarm in every Chinese port. In the sampan the essential or basic features of the junk are present but so simplified, so wholly unobscured by the overlay of accessory details and additions, that their significance leaps to the understanding once the key word is suggested. Typical sampans are open skiffs, bluntly wedge-shaped in plan, shallow, keelless and very broad in the beam at the after end; here on each side the gunwale rail is continued beyond the stern as an upwardly curved projection, endowing the craft with great horns, facing astern. The boatman commonly sculls his sampan with the aid of two long-handled oars, worked in the standing position and facing forward; alternatively, by a scull over the stern. In the latter method we see in embryo the idea that led to the invention or rather the evolution of the suspended median rudder of the junk, just as the closing-in of the space between the stern horns would lead directly to the evolution of the overhanging counter of the larger vessel. The above analysis reveals clearly that the ancient Chinese large sea-going junk was evolved basically from the simple sampan.

The predecessor of the Chinese junk was the sampan, which was, in turn, preceded by the double canoe (ie, Fang Chow 方舟). On this point, Hornell said:

> The theory has been advanced that the broad, truncate head and stern of the junk, the lack of keel and the peculiarity of the median rudder, are

> evidence of derivation from a double canoe design where twin hulls, set parallel and a short distance apart, have had the space between them closed in with planking; a pontoon-shaped craft would result, broad at head and stern and with two longitudinal divisions within, comparable with the longitudinal bulkheads which are a striking feature of the old junk type. (Hornell, 1946: 88)

The sampan was evolved from the double canoe, as manifested by the following account from Huai Nan Tze 淮南子, Fan Lun Hsun 氾論訓, which this author previously quoted in his paper, 'The Double Canoe and Deck Canoe':

> To make a boat by hollowing out logs of wood and fastening them together. Kao, You 高誘 explained: 'To hollow out two pieces of logs and fastening them together into a double-canoe'

There were also instances wherein such double-canoes were converted into a ferry-craft by placing a big square wooden board on top. As a matter of fact, ferry-boats made in like manner were still in use not long ago in Northeast China. Quoted below as an evidence is a passage from Vol. 4, Hei Lung Chiang Wai Chi 黑龍江外記 of Si Ching 西清: "How marvelous the canoe is'. It is over 20 feet long, wide enough for the knees to rest in sitting position, its bow pointed and its aft end sharp. It is big enough to carry several people...It runs as fast as a bamboo arrow.—It is truly a dugout hewn out of a log. In the event the river is rising or is in flood, two such dugout canoes can be fastened together to ferry carts and horses across the river." Judging from the remark, 'two such dugout canoes can be fastened together to ferry carts and horses across the river,' in the above quotation, the huge size of such ferry-craft can easily be imagined. Besides, some of the large sea-going junks and many of the large junks that plied up and down the Yangtze River usually carried aboard several sampans for use of transporting passengers and cargoes between the ship and the shore, whenever the ships could not come close enough to the shore themselves.

In accordance with Hornell, the median rudder in the Chinese junk was also one of its peculiarities (Hornell, 1946: 88). The median rudder was simply the lee-board of the modern times. It was called the 'waist rudder' in the Ming time, as the Tien Kung Kai Wu 天工開物 by Sung, Ying-shing 宋應星 relates as follows:

> ...The waist rudder on every junk is placed perpendicularly through a hole made in the main cross-beam. The waist rudder, different in shape from the stern rudder, is made in the form of a broad knife. When lowered all the way down, it has the function of stabilizing the junk. In shallow water it is hoisted up sufficiently high to prevent it from touching the ground.

The 'waist rudder' in above extract, being in essence a median rudder, was developed from the outrigger, as so indicated in the San Tsai Tu Hui 三才圖會 of Ming Dynasty as follows:

> The Hai Ku (海鶻, a migratory bird, here used as the name of a kind of boat) is built with a high and big prow and a low and small stern, resembling a Ku (鶻). There are wooden floating boards attached to both of its sides, like the wings of the Ku in flying, to prevent the boat from capsizing.

Again, Hai Wu Yi Ming Chi 海物異名記 noted: "Of the war-boats used by the Yueh (越) people, there was one type named 'Hai Ku'"—If the Yueh was referred to the ancient Yueh people, then it was possible that the Hai Ku war-boats had been in use during the Spring and Autumn Epoch. From the standpoint of Ethnology, the Hai Ku was merely a type of the outrigger canoe and survivals of which were still observed on Taiwan during the periods of Yung Cheng 雍正 and Chien Lung 乾隆 of the Ching Dynasty. The Mangka 蟒甲, which was mentioned in Huang, Shu-ching's Fan Shu Liu Kao, as being made by hollowing out a single log, with wooden boards fastened at both sides with rattan strips, was nothing but an outrigger canoe. The hieroglyphics, 𠂤, 𠂤, 𠂤, 𠂤, 𠂤, etc. found in the very ancient oracle bone inscriptions, represented, in all probability, the ancient outrigger canoes. A detailed discussion on this subject is contained in this author's previous paper, "On the Outrigger Canoes" (Ling, Shun-sheng, 1968: 5). In fact, the lee board on the early Chinese junk could well represent a vestige of the double-outrigger or single-outrigger of the much more ancient outrigger canoes.

Further back, we can not help tracing the origin of the Chinese junk and sampan to the sea-going bamboo rafts of Taiwan and the log rafts of North China. In this regard, I completely share the view expressed by Hornell below:

> Still more elaborate are the sea-going rafts of Formosa. In these the raft platform is composed of many lengths of long bamboos of the greatest girth obtainable. These are so bound together and secured by curved poles lashed athwart at intervals, that the whole structure has a considerable sheer toward each end. As bamboos taper gradually toward the upper end, the builders of Formosan rafts, by lashing them side by side with the upper ends directed toward the same point, are able to give a decided taper to the structure, the fore end though wide being distinctly narrower than the stern. Head hnd stern are truncate, the bamboos cut off flush except that it is usual for the outermost one on each side to project, curving, a considerable distance beyond the stern. A long steering oar is used.
>
> To see in the design of this sailing raft the rudiments of that on which the sampan is constructed entails little strain upon the imagination. Substitute

> planks for bamboos, curve in the sides to form a half-cylinder, close the open ends with transverse planking, and a deck, and the essentials of a junk's hull are obtained. By bunching together the planks at the fore end we obtain the pointed prow of the harbour sampan, probably a comparatively recent modification of the older type distinguished by the truncate form of the fore end, for, until recently, small sampans carried as ship's boats by large junks were usually of this peculiar construction; there are also a number of river types of sampans which retain this peculiar form of truncate, cross-planked head.

Hornell's opinion, as expressed in above quotation, was that the Chinese junk was evolved from the sampan. Accordingly, both the sampan and the junk should have been developed from the bamboo rafts. In order to prove and convince the readers of this theory, a sketch of the Taiwan bamboo raft (Fig. 3), originally contained in "A Voyage to the Island of Chi-Po-Ran, Formosa", written in 1803 by Hata, S. N., a Japanese scholar, is extracted below. This sketch shows that, except the two wooden oars, every part of the raft was made of bamboo and it could easily be converted into a small junk by building a shelter or a cabin over the sternpost.

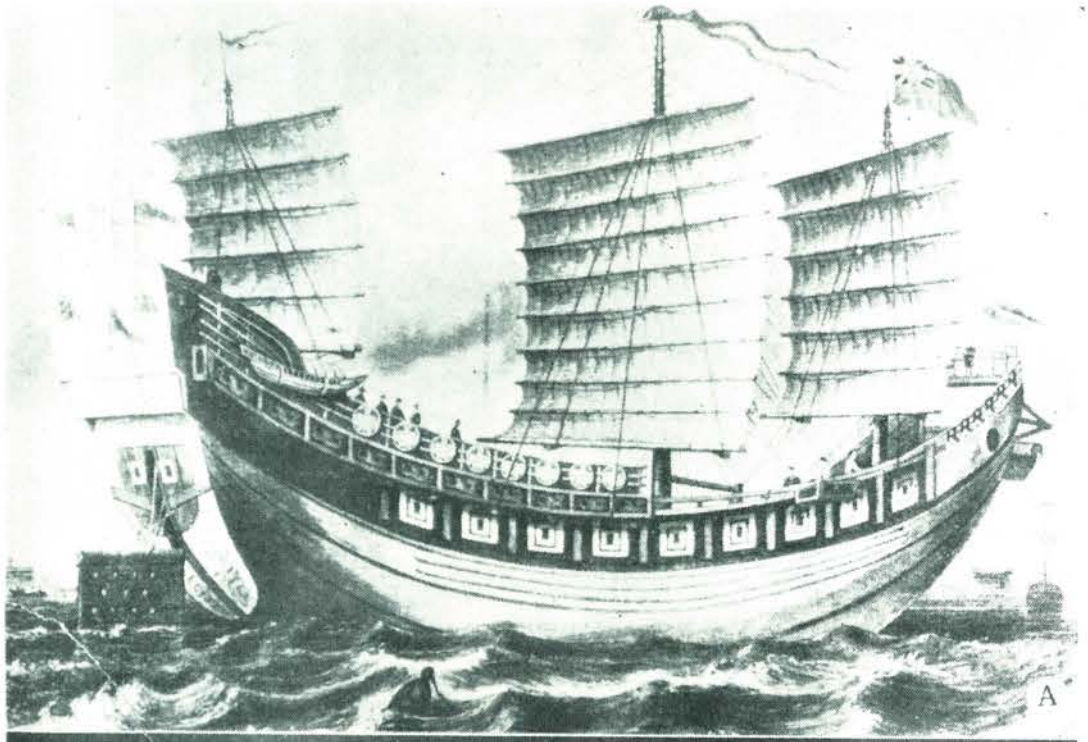
In addition to the sail-rafts, other ancient Chinese watercraft, including the outrigger canoe and the double canoe, were all capable of voyaging over the ocean. This can well testify to the veracity of Hornell's theory. Given below is an outline, in chronological sequence, of the stages of development of Chinese watercraft, based on records in ancient Chinese writings and volumes:

1. Taaroa (太昊) or Fu Hsi Shih (伏羲氏) (33rd cent. B. C.)—'Began to ride on rafts'.
2. The Yellow Emperor or Hsuan Yuan Shih (軒轅氏) (2697 B. C.)—'Converted the raft into the boat'.
3. Shao Hao Shih (少昊氏) (2597 B. C.)—'Riding on a raft and drifting on the sea'.
4. Yin-Shang period (1384–1111 B. C.)—The '𠂤' and '𠂤' in the oracle bone literature represented respectively the double outrigger and single outrigger canoes (Ling, Shun-sheng, 1968:5)
5. Kou Chien (勾踐), the King of Yueh (5th Cent. B. C.)—'Ordered 2800 sailors to cut down cedar trees to build rafts.'
6. Confucius (551–479 B. C.)—'Wanted to reside amongst the Nine Barbarians and to go by drifting on a raft over the sea.'
7. The Spring and Autumn Epoch (6th Cent. B. C.)—Er Ya 爾雅, Shih Shui 釋水: 'Tai Fu Fang Chow'—meaning the double-canoe.
8. Nan Yueh Lieh Chuan 南越列傳, Shih Chi 史記: the 4th year of Yuan

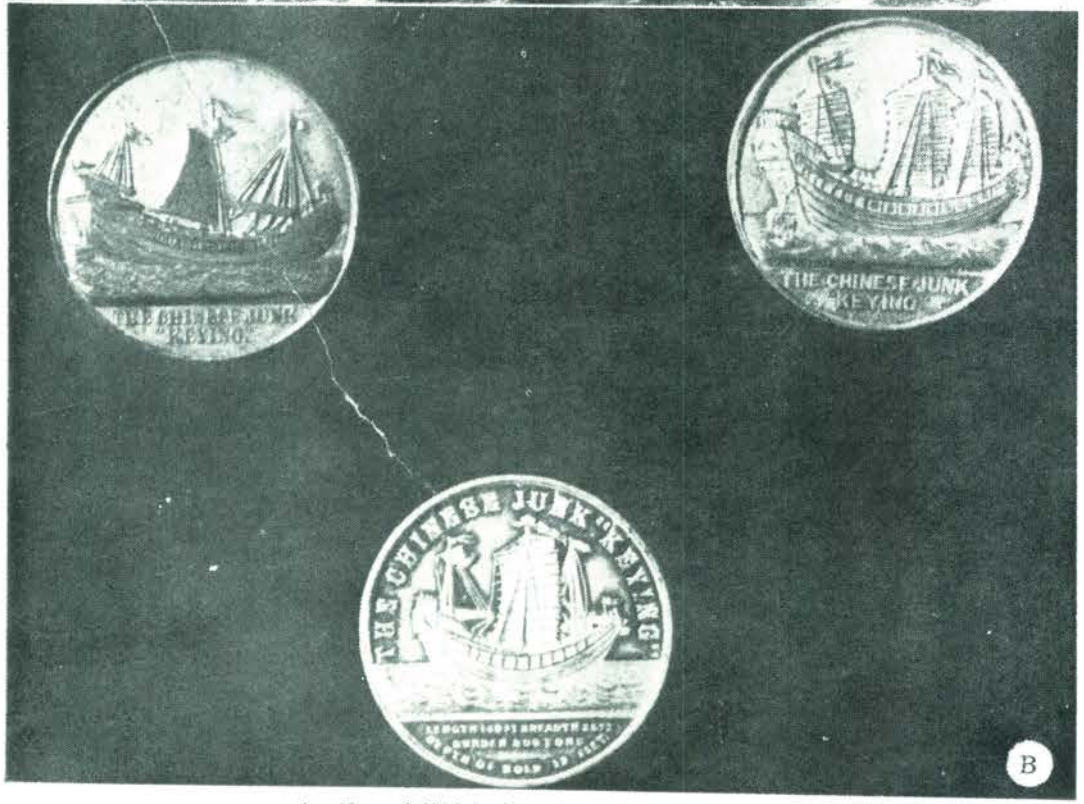
> Ting (113 B. C.)—'Lu, Chia rebelled, one hundred thousand men of the Lou Chuan Fleet south of the Yangtze and Huai Rivers were ordered to go to suppress him.'

The above is a brief history of development of the very ancient Chinese watercraft, to include the rafts, outrigger canoes, double canoes and deck canoes. The outrigger was later developed into the median rudder of the junk and the double canoe turned into the bulkheads. The rafts, beginning in the time of Taaroa (33rd Cent. B. C.), has continued in existence in China over 5000 years. Extracted below is a passage from this author's previous paper, "Formosan Sea-Going Raft and Its origin in Ancient China": "According to the Annual Report of Taiwan Agriculture for 1955, the fishing boats without mechanical power in Formosa amount to 21,541, of which 13,808 are bamboo rafts and the remaining one-third are plank boats. So far as the author knows, the sea-going bamboo rafts are more extensively used in Formosa than anywhere else in the world." (Ling, Shun-sheng, 1956: 2)

With the great development of commerce and industry in Taiwan during the past decade or so, agriculture and fishery have also thrived. Power-propelled fishing boats have almost completely replaced the bamboo rafts. Dr. Doran from the University of Texas, came to Taiwan in 1970 for an inspection visit. He found a sea-going bamboo sail-raft at Chieh Ting 茄萣, Kaohsiung 高雄. He said the bamboo raft should have been capable of crossing the Pacific Ocean; and for this reason, he further inferred that the culture of South America was most probably originated from Asia (Wu, Yuan-hsi 吳元熙, 1970: 3). The Chinese junk, which had sailed over every ocean in the world long before the discovery of the New World by Columbus, could trace its origin, through the double canoe, outrigger canoe and the sampan to the ancient sea-going bamboo sail-raft. Fortunately, there were still 13808 bamboo rafts in existence in Taiwan eighteen years ago, and this author was therefore able to complete a study then based on surveys and investigations of substantial materials.



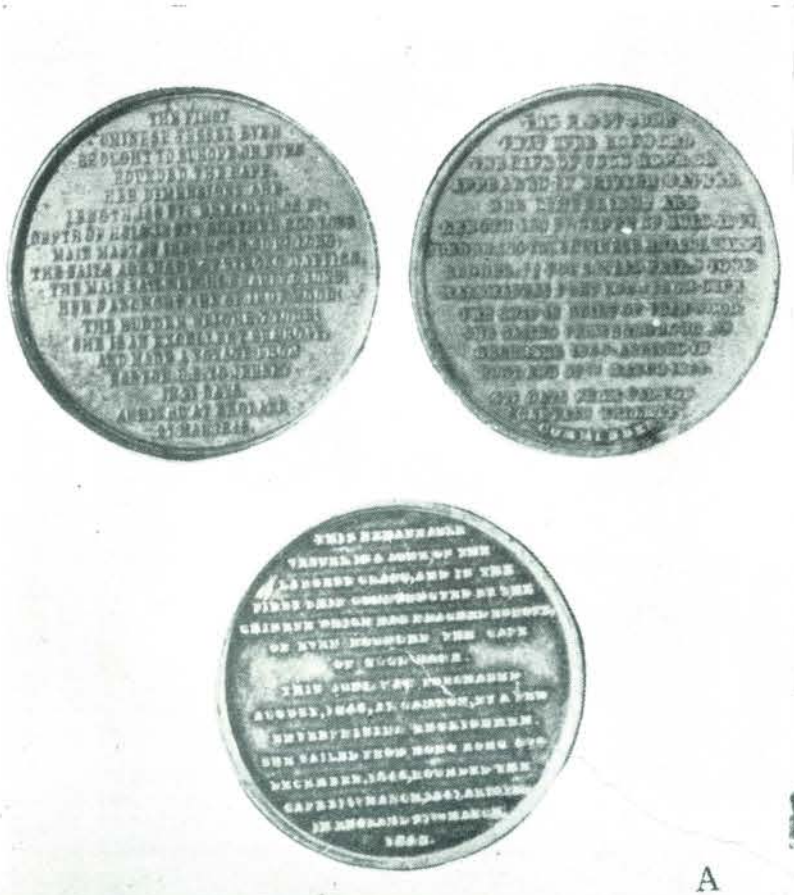
A



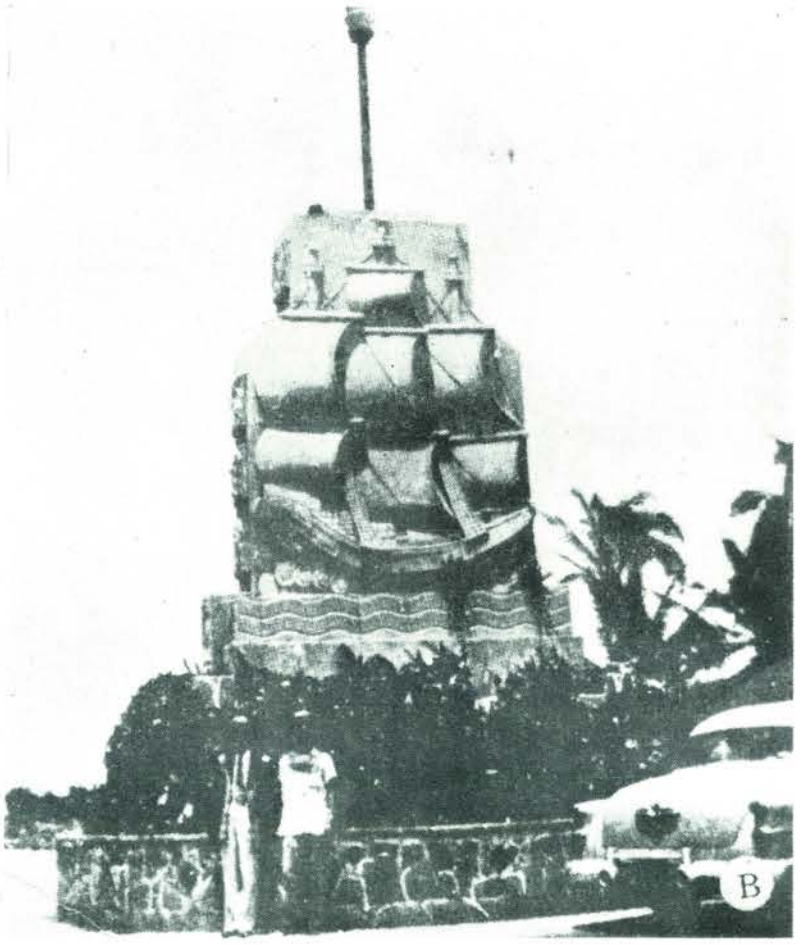
B

A. 於1846年橫渡大西洋的第一艘中國帆船耆英號

B. 鑄刻耆英號船形的紀念章正面



A



B

A. 耆英號船形紀念章反面鐫刻的紀念詞

B. 中國帆船到達紀念碑墨西哥亞卡布哥港

捌、論夷越的民族

在中國遠古時代，居於亞洲大陸東岸的海洋民族，中國史書概稱之爲'夷'，越絕書卷三："習之於夷，夷、海也"。解釋爲居於沿海或海島的民族。又因所居的方位不同，在東北者曰東夷，在東南者曰南夷或蠻夷。他的種類甚爲複雜，大抵隨世異名，因地殊號。見於經傳者有嵎夷、萊夷、淮夷、徐夷、和夷及島夷(或作烏夷)。又有九夷之名，卽畎夷、方夷、黃夷、白夷、赤夷、玄夷、風夷、陽夷及于夷。至於南夷，詩經閟宮：

> 至於海邦，淮夷來同，莫不率從， 魯侯之功。 保有鳧繹， 遂荒徐宅， 至於海邦，淮夷蠻貊，及彼南夷，莫不率從，莫敢不諾，魯侯是若。

墨子兼愛中第十五：

> 古者禹治天下，……南爲江漢淮汝，東流之，注五湖之處，以利荆楚于越與南夷之民。

書經禹貢載冀州揚州有島夷，徐州有淮夷，青州有萊夷。又揚州之夷亦稱越，史記楚世家："熊渠伐揚粵"。因此呂思勉氏以爲夷與越是同一民族，在他所著中國民族史第九章說：

> 該族(越族)見於古籍者，自淮以北皆稱夷，自江以南則曰越(作粵同)(1)。

呂氏之說，作者經近二十年來的研究太平洋和東南亞及印度洋的民族文化，贊成他的學說，但較呂氏進一步說，古代的夷越卽今之南島語系（Austronesian）或稱馬來玻利尼西安(Malayo-Polynesian)語系的民族。古代之夷卽今玻利內西安(Polynesian)和米克羅內西安（Micronesian），越爲今之印度尼西安（Indonesian）及一部份的美拉尼西安（Melanesian）人。今自非洲東海岸起，散布在印度和太平兩洋中各島嶼幾達南美西岸，在此一遼濶區域屬於同一語言的民族，在民族學上研究其文化，至今尙保古代夷越的文化。

（1） 呂思勉，1934, p. 212.

夷越民族自古以來卽以航行造舟著稱。茲先講'夷'，越絕書曰：夷，海也。'夷'又稱'貉'，周禮夏官賈疏引鄭志云："九貉卽九夷"。卽孟子所說："子之道，貉道也"。貉又作貊，詩經大雅皇矣："貊其德音"。鄭玄箋云："貉本作貊"。據劉節氏著中國古代宗族移殖史論第三章有云：

> 貊族的發明是'造舟'。所以貊貉的貉字，可以從舟，作貈。其字音却又讀下各切。與貊、貉字同一聲類。從舟旣不讀舟聲，必定別有意義。我們看創造的造字，也是從舟，告聲，作艁。正是告訴我們，作舟是很古的人一種創造。詩經大雅大明篇說太姒嫁給文王的時候：'文定厥祥，親迎于渭；造舟爲梁，丕顯其光！'造舟爲梁，原是古代人一種最重要的典禮，這是從'貈人'那裏傳下來的。'貈人'，也作'舟人'。國語鄭語：'禿姓舟人，則周滅之矣'。韋昭說："禿姓彭祖之別"。可見注家承認'舟人'是很古的民族。詩經小雅大東篇：（舟人之子，熊羆是裘）。而陳風防有鵲巢作(誰侜予美)。可見舟人就是侜人。呂氏春秋恃君覽。'舟人送龍，突人之鄉'都可以證明，'侜人'確指一古民族(1)。

劉氏認爲貉貊是中國最古的民族，古之九夷亦稱九貉，夷貉之中有貈人也是最古發明造舟的民族。呂思勉氏著中國民族史第六章貉族有云：

> 北方諸族傳中國之文明最早者，莫如貉。貉，又作貊，亦稱濊貉。又單稱濊。濊，亦作薉，作穢。
>
> 此族見於經典者：詩'王錫韓侯，其追其貉，奄受北國'。

上述'其追其貉'，呂氏謂追爲何種不可考。陳奐氏毛詩傳疏謂'追濊聲相近，疑追貉卽濊貉(2)。陳氏說追濊聲相近，疑追卽濊。蒙文通氏也就韓奕"其追其貊"加以解釋，認爲'濊'就是'追'(3)。陳蒙兩氏意見相同，大致可以信服。

至於濊貊族的地理的分佈，文崇一氏說：

> 就一般而論，大都以爲貊在東方、北方或東北方，其實西北方也有的。有人認爲貊最初的發祥地在北方，後來才'稍稍東遷'；也有人認爲貊是東北方渡海而

（1） 劉　節，1948. p. 41.
（2） 呂思勉，1934, p. 134.
（3） 蒙文通，1937, p. 35.

到中國東海岸的(1)。

傅斯年氏也說：

詩魯頌閟宮篇云：'至於海邦，淮夷、蠻、貊'。是春秋時山東半島之南濱海處，猶有貊人之遺。然則黃河流域諸部族未混合而成中國民族之前，貊人之分布或兼有山東、遼東、朝鮮三半島之一部。中國民族既混成之後，其東部當以貊遺民爲一重要本質也(2)。

傅氏又說：

現在假定，凡在殷商西周以前，或與殷商西周同時所有今山東全省境中，及河南省之東部，江蘇之北部，安徽之東北角，或兼及河北省之渤海岸，並跨海而括遼東朝鮮的兩岸，一切地方，其中不是一個民族，見于經典者，有太皞少皞有濟徐方諸部，風嬴偃諸姓　全叫做夷。論語有九夷之稱，明其非一類(3)。

根據上錄傅氏之貊卽夷，周禮夏官賈疏引鄭志有云："九貉卽九夷"。呂思勉氏著中國民族史一書中祇言貉族不及東夷且說能傳中國文明者，當以貉族爲第一，他說：

東方諸族，能傳中國之文明者，固當以貉族爲第一。抑貉族之功績，尙有大足自豪者，則以予所考，發見新世界者，實當以貉爲首是也。案宋書四裔傳載：'文身國在倭東北七千餘里。大漢國在文身國東五千餘里。扶桑國，在大漢國東二萬餘里'。其道里雖不可信，而其國則必在今南北美洲。……扶桑必貉人之浮海而東者矣(4)。

呂氏所指的貉，實卽爲夷，他又說："越族見於古籍者，自淮以北皆稱夷，自江以南則曰越"。古史多稱夷越，亦可名貉越，後漢書稱的駱越，亦卽雒越，也是百越之一支(5)。

徐炳昶氏著中國古史的傳說時代第二章云："風偃集團就是古人所說的夷。傳說中最早的人物，或者是太皞或蚩尤(6)。太皞或太昊卽今太平洋各民族的 Taaroa 或稱

(1) 文崇一，1958, p. 139.
(2) 傅斯年，1932, p. 112.
(3) 陳　槃，1970, p. 34.
(4) 呂思勉，1934, p. 148.
(5) 羅香林，1955, pp. 68-69.
(6) 徐炳昶，1943, p. 36.

Tangaroa 的文化(1)。可見在元前三十三世紀太昊或伏羲時代玻利尼西安和美克羅尼西安人尚在中國大陸東部沿海。這許多夷貉民族的古代文化，在古史傳說時代的文化特質尚有若干記載，至於語言方面古籍中亦可找到隻字片言，希望專攻南島語系的中國學者，將古籍遺存的夷言越語，作一科學的研究，南島系語與中國古代夷越語言的關係，至何程度？張光直氏假設的未分化的漢藏南島文化羣 (Undifferentiated Sino-Tibetan/Autronesian Complex)，究竟如何？(2)在史前考古方面，近年發挖甚多，又望史前學者，能多讀古史，或可將傳說中的史跡，與史前遺物發生若干連繫。例如傅斯年氏說：

> 可惜太史公當眞不是一位古史家，雖羿浞少康的故事，竟一字不提，爲其作正義者所譏。求雅馴的結果，弄到消滅傳說中的史跡，保留了哲學家的虛妄(3)。

我曾將傅氏上錄的意見和文崇一氏討論，他說太史公在當時可說是一位近代史家，此語可說確當。我們再舉一例而言，如太平洋各島民間盛道的太昊 (Taaroa) 神明或宗神的傳說，在中國古史傳說時代太皞族的地理分佈，傅斯年氏曾說：

> 太皞族姓之國部之分配，西至陳，東括魯，北臨濟水，大致當今河南東隅，山東西南部之平原，兼包蒙嶧山境，空桑在其中，雷澤在其域。古代共認太皞爲東方之部族，乃分配於淮濟間之族姓(4)。

至於少皞氏的分佈，又如傅氏說："其地望大致與太皞同，而位于空桑之野之曲阜，尤爲少皞之本邑"。他以太皞和少皞的太少二字，金文中本卽大小二字，大小可以地域大小及人數衆寡論。太平洋上的 Taaroa 和東夷的太昊氏的住地分佈，在年代學上的問題，是恐須要靠考古學上的鋤頭未解決。夷越的文化基本上是海洋文化 (Maritime Culture)，自其成立以後，卽不斷遠航出洋，當卽爲今日南島語族移民太平洋之始。張光直氏曾說：

> 迄今太平洋史前遺存之有確定年代可據的，其早期者有：
>
> Saipan (Marianas): 1527 B. C. ± 200 (Libby 1925)

---

(1) Handy, 1927, p. 127.
(2) 張光直，1959, p. 69.
(3) 傅斯年，1933, p. 62.
(4) 傅斯年，1933, p. 73.

Nuku Hira (Marquesas): 124 B. C. ± 150 (Shapiro and Suggs 1959)

Easter Island: A. D. 380 ± 100 (Shapiro and Suggs 1959)

Oahu (Hawaii): A. D. 1004 ± 180 (Libby 1951)

換言之，西元前十六世紀，當中國的殷代，Micronesia 已有南島語族的祖先居住，到西元前二世紀，亦卽漢初，新石器時代居民已移居到 Polynesia 中心的 Marquesas 到西元四世紀的晉代，已達到 Polynesia 的東端的 Easter Island(1)

由上所述：在考古學上至少可以證實，夷貉原住中國沿海的民族發明航海工具，逐漸移居至太平洋中各島嶼之上。

中國在夏商周之時，卽傅斯年氏所謂夷夏東西之爭(2)，到了秦漢之後，就成南北越漢之戰了。越卽今之南島語系中主要的印度尼西安（Indonesian）和一部份的美拉尼西安（Melanesian）民族。越卽戉，爲斧鉞之鉞。又於越卽虞越，亦卽吳越(3)。饒宗頤"殷卜辭屢見之戉方名，名其字作𢦏，亦稱戉方。"古稱百越亦言其種類之多，漢書地理志顏師古注云："臣瓚曰：自交趾至會稽，七八千里，百粵雜處，各有種姓，不盡少康之後也。"饒宗頤氏著吳越文化一文也說：

> 至於越的種姓，或曰似姓，或曰芈姓，以其煩雜，故總稱百越。芈出於楚，而似則夏後，春秋戰國以來，越爲夏後之說，已極流行，故會稽之越，號爲禹後，史公獨取是說，采入越世家，其由來甚古。
>
> 楚世家言：周天子命楚成王："鎭爾南方夷越之亂，無侵中國，於是楚地千里"。這裏'夷越'一名，所指的範圍很廣，常璩華陽國志南中志云：'南中在昔蓋夷越之地：滇、濮、句町、夜郎……以十數'。是所謂'夷越'，不專指吳、越，之越可視爲西南民族的大共名了(4)。

夷越豈僅爲西南民族的大共名，如上引薛瓚曰：自交趾至會稽，七八千里，百粵雜處。可見東南的百越，亦是與夷越同族，呂思勉氏又謂越族見於古籍者，自淮以北皆

（1） 張光直，1959, pp. 67-68.

（2） 傅斯年，1933, p. 31.

（3） 衞聚賢，1937, pp. 5-6.

（4） 饒宗頤，1969, pp. 609-610.

稱夷，自江以南則曰越。鄭志云：'九貉卽九夷'，則東北沿海的夷貉，亦卽東南與西南的夷越，是屬於南島 Austronesian 語系同一民族。我們假定夷爲玻利尼西亞島人越乃印度尼西亞島人。百越自秦漢以後，見於史籍者，有於越、甌越、閩越、揚越、山越、蠻越[1]、南越、駱越等等。此許多越族在秦漢時皆住在長江以南及越南、後華夏民族南遷，越族部份涵化或退居南洋羣島散佈在印度洋及西南太平洋。

近年在東南亞考古發掘工作做得很不少，張光直氏說華南在理論上仍可能是青銅文化的"原產地"，並可證明夷越文化在年代的古老，他說：

> 美國夏威夷大學的蘇爾瀚（Solheim）氏最近報告，在泰國東北的 Non Nok Tha 遺址，產青銅斧的文化層次已經碳素十四鑑定的年代斷於公元前 2,300年左右[2]。在1968年同一遺址更早的層次裏仍有青銅斧遺跡出土，其年代經蘇氏擬定在公元前 3,000 年前後。青銅器在東南亞可以早到如此，是學者所未嘗料到的，但泰國的材料並不是唯一的證據。法國 Edmond Sourin 在西貢附近的 Hang Gon 1 號址也找到鑄銅的遺跡，其碳素十四年代經定在 2,000 ± 250 B.C.[3]根據這些新的材料，蘇爾瀚氏覺得東南亞很可能便是華北青銅文化的來源[4]。

上錄泰越考古發掘遺址所得的青銅器遺物，能早到三千和兩千年左右，華南的海洋文化（Maritime Culture）在遠古就如此發展，眞是出人意料，蘇爾瀚最近在遺忘遠古的新光(New Light on a Forgotten Past)，他根據 Non Nok Tha 遺址發掘，得到九種假定其中與遠古水運及航海有關者凡三：

> 1. 獨木舟於公元前 5,000 年航行在東南亞的河川中。可能在 4000 B. C. 邊架（outrigger）在東南亞已發明，利用邊架的平穩（stability）而能汎舟海上。我相信此區域由海道移民，約在 4000 B. C. 之初，或漂流到臺灣和日本，帶至日本的有芋頭及其他穀物的種植。
>
> 2. 有時當公元前三千年時，善航海的民族自東南亞地區移至印尼羣島和菲列濱

（1） 羅香林，1955, p. 102.
（2） Solheim, 1963, pp. 59-62.
（3） Saurin, 1968, pp. 1-17.
（4） 張光直，1960, p. 168.

鞏島。他們帶有幾何圖形：螺旋形和三角形及長方帶形，用在陶器、木刻、文身、樹皮布與後來的毛織品上的花紋。這許多同樣的幾何圖形見於東山青銅器上，並可假設它們來自東歐。

3. 東南亞人向西航行，到達 Madagascar約 在公元前兩千年時。他們似乎貢獻若干重要的植物栽培，影響到東非的農業經濟(1)。

蘇爾瀚氏在泰國的考古用碳素十四斷定年代之古，超出吾人想像以外。著者前在東南亞古文化研究發凡一文中，分東南亞爲大陸的、半島的與島嶼的三區，百越民族由大陸而半島而島嶼向南遷移的路線，已有科學的考古證據，證實其不誤(2)。

夷越之民能利用桴筏、戈船、雙舟與樓船的航海工具在遠古之時，早已航行太平與印度兩洋之上。夷人的桴栰稱 *vaka*，越人的箄筏則稱 *paepae*，栰與箄在海洋洲 *vaka* 和 *paepae* 成爲筏與船的通稱。紀元一世紀的說文卽如此說："檥，海中大船，从木發聲"。可見今日南島語系民族昔日住大陸，而後半島，後日逐漸散佈在太平和印度兩洋上各島嶼的。

(1) Solheim, 1971, p. 339.

(2) 凌純聲，1950, pp. 1-3.

中西文書目

文崇一

1958 濮貊民族文化及其史料，民族學研究所集刊第五期民國四十七年。

呂思勉

1934 中國民族史，民國二十三年，世界書局，上海。

凌純聲

1950 東南亞古文化研究發凡，民國三十九年，戲主義與國策，第四十四期。

陳　槃

1970 春秋時代之貊國，壽羅香林教授論文集，民國五十九年，香港。

張光直

1959 華南史前民族文化史提綱，民族所集刊第七期，民國四十八年。

1960 中國南部的史前文化，史語所集刊第四十二本第一分册，民國四十九年。

徐炳昶

1943 中國古史的傳說時代，重慶，民國三十二年。

傅斯年

1932 東北史綱，上海，民國二十二年。

1933 夷夏東西說史語所集刊外編第一種，祝蔡元培先生六十五歲論文集，本文所註頁數根據傅孟眞先生集第四册。

羅香林

1955 百越源流與文化，中華叢書本，民國四十四年臺北。

蒙文通

1937 古代民族移徙考，禹貢第七卷六、七合期，北平。民國二十六年。

劉　節

1948 中國古代宗族移殖史論，重慶，民國三十七年。

饒宗頤

1969 吳越文化，史語所集刊第四十一本，第四分册，民國五十八年。

衞聚賢

1937 吳越文化論叢，民國二十六年，上海。

HANDY, E. S. C.

1927 Polynesian Religion, Honolulu.

SAURIN, E.

1968 Nouvelles observations prehistoriques à l'Est de Saigon, Bulletin de la Societè des Étu des Indochinoises, no, 0.43, 1-17.

SOLHEIM, W. G.

1963 Early bronze in northeastern Thailand, Current Anthropology, Vol. 9 pp. 59-62.

1971 New light on a Forgotten Past, National Geographic: The Lands and Peoples of Southeast Asia.

VIII. THE YI AND YUEH PEOPLE

The maritime people who inhabited the east coast of the Asian continent during the remotest ages had been generally referred to, in the historical books of ancient China, as the 'Yi' 夷 (savage people). Vol. 3 of the Yueh Chueh Shu 越絕書 explains as follows: "Familiar with the 'Yi' and 'Yi' means the sea." This explanation indicates 'Yi' as a people that lived on the seacoast or on islands in the sea. According to the different locations of their habitats, those 'Yi' people who lived in the northeast were called the 'Tung Yi' 東夷 (Eastern Yi), while those who dwelt in the southeast were named the 'Nan Yi' 南夷 (Southern Yi) or 'Man Yi' 蠻夷 (Wild Yi). In fact, the Yi people, consisting of many different groups, had been known by different names with the changes in time and in location. Records in ancient Chinese classics and other historical works indicate that there had been the 'Yu Yi' 嵎夷, 'Lai Yi' 萊夷, 'Huai Yi' 淮夷, 'Hsu Yi' 徐夷, 'Ho Yi' 和夷 and 'Tao Yi' 島夷 (or Wu Yi 烏夷). Also found in above literary works is the name of 'Chiu Yi' 九夷 (nine Yi), a general term for the 'Chuan Yi' 畎夷, 'Fang Yi' 方夷, 'Huang Yi' 黃夷, 'Pai Yi' 白夷, 'Tzu Yi' 赤夷, 'Hsuan Yi' 玄夷, 'Feng Yi' 風夷, 'Yang Yi' 陽夷 and 'Yu Yi' 于夷. In connection with the Nan Yi, the Mi Kung 閟宮 of Shih Ching 詩經 relates:

> Following the Huai Yi, all of the maritime tribes came to offer their allegiance. For this, the credit should be given the Marquis of Lu 魯侯... As for the maritime tribes, the Huai Yi, Man Mai and the Nan Yi had all vowed their fealty and would obey whatever the Marquis of Lu said.

The following account is found in Chapter 15 of Micius's 墨子 Chien Ai 兼愛:

> During the ancient time when Yu 禹 was doing his utmost to save the country from the crisis of the flood...the Yangtze, Han, Huai and Ju Rivers in the south were guided to flow eastwards to the Five Lakes, to benefit the people of Ching Chu 荊楚, Yu Yueh 于越 and Nan Yi.

Again, records in Yu Kung 禹貢 of Shu Ching 書經 indicate that there were the Tao Yi 島夷 at Chi Chow 冀州 and Yang Chow 揚州, Huai Yi 淮夷 at Hsu Hsu Chow, and Lai Yi 萊夷 at Ching Chow. The 'Yi' of Yang Chow were also referred to as the 'Yueh' 越, as evidenced by the following account in the Chu Shih Chia of Shih Chi 史記楚世家: "Hsung Chu 熊渠 conquered the Yang Yueh 楊粵 (the Yueh of Yang Chow)." In view of this, Lu, Shih-mien 呂思勉 held that the 'Yi' and the 'Yueh' were of one and the same people. He said, in Chapter Nine of his "History of the

Chinese People": "Based on records concerning that people (Yueh 越) in ancient books and documents, those who lived north of the Huai River were called 'Yi' 夷 and those who inhabited south of the Yangtze River were called 'Yueh' 越 (also written as 粵)." (Lu, Shih-mien, 1934: 212). After an extensive study during the recent twenty years on the various cultures of the ancient peoples of the Pacific Ocean, Southeast Asia and the Indian Ocean, this author, in addition to sharing Lu's view, further believes that the 'Yi' and 'Yueh' of the old times were ancestors of the present Austronesian or Malayo-Polynesian people. The ancient 'Yi' people have become today's Polynesians and Micronesians, and the ancient 'Yueh' today's Indonesians as well as a part of the Melanesians. As a matter of fact, distributed at the present time over the vast area from the east coast of Africa, through innumerable islands in the Indian and Pacific Oceans, to as far as the west coast of South America, are a people of one language family, and ethnological studies reveal that they have preserved many cultural characteristics and features of the ancient 'Yi' and 'Yueh' people in their present cultures.

The ancient 'Yi' and 'Yueh' people had long been noted for their skill in navigation and boat-building. As the Yueh Chueh Shu 越絕書 explained, 'Yi means the sea'. The 'Yi' were also called the 'Mo' 貉 as testified by the remark, 'The Chiu Mo 九貉 (Nine Mo) were but the Chiu Yi 九夷 (Nine Yi)' in Hsia Kuan 夏官 of Chow Li 周禮. Also, Mencius 孟子 said: "The 'Way' taught by Confucius was also the 'Way' for the Mo 貉." The word '貉' was also written as '貊' (Mei). For proof, the following passages are quoted: "貊其德音 mei chi teh yin (The fame of his virtue grew silently)" from Ta Ya 大雅 of Shih Ching 詩經; and "貉本作貊 (貉 (Mo) was originally written as 貊 (Mei))" from Cheng Hsuan's Chien 鄭玄箋. In Chapter III of his 'History of the Movements of the Various Peoples of Ancient China', Liu, Chieh 劉節 stated:

> The 'Mai' 貊 people invented the are of boat-building, therefore, the word 'Mo' 貉 in the term 'Mai Mo' 貊貉 may also be spelled with the radical '舟' (chowmeaning boat) as '貑' (pronounced Ku). However, although the word '貑' was spelled with the root '舟' its pronunciation was not dominated by the sound of 'chow'. There must have been some reason for this. Likewise, the word '造' (Chao—to create) was also written with the radical '舟' as '艁' in the ancient times and pronounced as 'Kao'. Thus it dawns on us that boat-building was an invention by the very ancient people. The Ta Ming Pien 大明篇 of Ta Ya 大雅, Shih Ching, in describing the occasion of the marriage of Tai Shih 太姒 to the King of Wen 文王, narrated: 'After the period of engagement was over, the King of Wen went himself to Wei (渭) to meet his bride; a bridge was built with boats to show the glory of this auspicious occasion.'—'To build bridges with boats' was an important ritual

> to the ancient people, which had originally been handed down from the '貑人' (Ku people). Thus, the '貑人' was also written as '舟人' (Chow (boat) people), as reflected by the following account from Cheng Yu 鄭語 of Kuo Yu 國語: 'The 舟人 surnamed '禿' (Tu) had been vanquished by Chow (周 Chow Dynasty).' This indicates clearly that the '舟人' were a very ancient people. '舟人', based on records in other ancient books, was also written as '侜人'. (Liu, Chieh, 1948: 41)

Apparently, Liu, Chieh presumed that the 'Mo Mai' 貉貊 were the most ancient people of China; the old 'Chiu Yi' 九夷 were also called the 'Chiu Mo' 九貉, and the '貑' tribe of the 'Yi Mo' 九貉 people were the earliest inventors of boat-building. Chapter Six, The Mo People, of Lu, Shih-mien's 'History of the Chinese People' states: "Of all the tribes in the north, the 'Mo' 貉 people were the earliest to receive the Chinese civilization. '貉' was sometimes written as '貊'. '貉' was also called 'Hui Mo' 濊貉 or simply 'Hui' 濊. '濊' could also be written as '薉' or '穢'. Records concerning this tribe are also found in ancient classics. Quoted below for evidence is an account from the Shih Ching: "The King conferred a favor on the Marquis of Han 韓侯 by empowering him to hold immediately the northern state of the '追' (Chui) and the '貉' (Mo)."

Lu said there was no way to find out what tribe the '追' in the phrase of 'the 追 and the 貉' in above quots was. Chen Huan 陳奐, in his Mao Shih 毛詩, Chuan Shu 傳疏, assumed the '追貉' to be the 濊貉 as 追 and 濊 are close in pronunciation. (Lu, Shih-mien, 1934: 134). In addition, Meng, Wen-tung 蒙文通 explained that the '追' in the term 'the 追 and the 貊', as contained in Han Yi 韓奕, was just the word '濊' (Meng, Wen-tung, 1937: 35). Considering that both Chen and Meng were of the same opinion, their view should be fairly credible."

As for the geographical distribution of the '濊貊' people, Wen, Tsung-yi 文崇一 says:

> Generally speaking, it is believed that the '貊' were in the east, north or northeast, while, in fact, there were also '貊' people in the northwest. Some believe that the '貊' people originally grew in the north, and had subsequently moved eastward. And others believe that they came originally to the east coast of China from some place to the northeast across the sea. (Wen, Tsung-yi, 1958: 139)

Also, Fu, Ssu-nien 傅斯年 remarked:

> The Mi Kung 閟宮 of Lu Sung 魯頌, Shih Ching stated: 'As for the maritime tribes, there were the Huai Yi 淮夷, Man 蠻 and Mai 貊. Down to the Spring and Autumn Epoch, there were still some descendants of the Mei 貊 people on the southern seacoast of the Shantung Peninsula. Prior to the

integration of the various tribes along the Yellow River into the Chinese people, the 'Mei' 貊 people had been scattered over parts of the Shantung, Liaotung and Chao Hsien Peninsulas. After the blending of the various tribes, the 'Mei' people became an important constituent part of the Chinese population in the east. (Fu, Ssu-nien, 1932: 112)

Again Fu added:

Now supposing prior to or during the Yin-Shang and Western Chow periods, the many tribes that inhabited the areas covering today's Shantung Province, East Honan, North Kiangsu, Northeast Anhui, possibly the coastal area of Hopei, and the coastal areas of Liaotung and Chao Hsien Peninsulas, did not belong to one people, there had been, as seen in ancient classical works, the Tai Hao 太皞, Shao Hao 少皞, Yu Chi 有濟 and Hsu Fang 徐方 tribes, as well as the surnames of Feng 風, Yind 嬴 and Yen 偃, which were commonly known as the 'Yi' 夷. The term 'Chiu Yi' in Lun Yu 論語 reflects clearly that the 'Yi' people comprised a few different groups.

In the above extract, Fu, Ssu-nien pointed out that the 'Mei' was just the 'Yi' 夷. His opinion can serve to ascertain that the record in the Hsia Kuan of Chow Li which says: 'The Chiu Mo 九貊 were just the Chiu Yi 九夷.' However, Lu, Shih-mien's 'History of the Chinese People' discussed only the Mo 貉 people, but made no mention about the 'Yi'.

Further, Lu, Shih-mien added:

Of all the tribes in the east, the Mo 貊 tribe was the first that had been able to accept and spead the Chinese civilization. In fact, they had achieved more remarkable feats, which they should be proud of. For example, the Mo people were actually the first that had discovered the New World. Szu Yi Chuan 四裔傳 of Sung Shu 宋書 narrates: 'Wen Shen Kuo 文身國 is located about 7,000 Li (里 Chinese unit of distance) to the northeast of Wo 倭. Ta Han Kuo 大漢國 is about 5,000 Li east of Wen Shen Kuo. Fu Shang Kuo 扶桑國 is situated about 20,000 Li east of Ta Han Kuo.' Although the distances given may be not trustworthy, the Fu Shang Kuo must have been in today's South or North America...The Fu Shang Kuo must have been formed by the 'Mo' 貉 people who arrived there by sailing eastward over the ocean. (Lu, Shih-mien, 1934: 148)

The 'Mo' 貉 referred to by Lu were virtually the 'Yi' 夷. Again, he said: "As indicated in ancient books, those of the 'Yueh' 越 people inhabiting north of the Huai River were called 'Yi' and those inhabiting south of the Yangtze River called 'Yueh' 越. In ancient books and documents, these wild tribes were often called the

'Yi' and 'Yueh' 夷越 and sometimes also referred to as the 'Mo' and 'Yueh' 貊越. The Lo Yueh 駱越, mentioned in the Hou Han Shu 後漢書, also called 'Lo Yueh' 雒越, were a branch of the Pai Yueh 百越. (Lo, Hsiang-lin, 1955: 68–69).

In Chapter Two of Hsu, Ping-chang's 徐炳昶 'The Legendary Periods of Ancient Chinese History', it is stated: "The Feng Yen Group 風偃集團 meant just the Yi 夷 people referred to by ancient people. As indicated by legends, either 'Tai Hao' 太皞 or 'Chih Yu' 蚩尤 may have been their earliest ancestor. (Hsu, Ping-chang, 1943: 36). 'Tai Hao' 太皞 or 'Tai Hao' 太昊 was virtually the 'Taaroa', a god widely worshipped by the numerous tribes of the Pacific area, which is often referred to as the Tangaroa Culture (Handy, 1927: 127). Judging from the above, it seems apparent that the Polynesian and Micronesian people had still remained along the east coast of China Mainland in the time of Tai Hao 太昊 or of Fu Hsi 伏羲 during the 33rd century, B.C. Brief narratives in connection with the primitive cultures of these various Yi and Mo tribes can still be found among records of the cultural characteristics of the legendary ages contained in ancient historical works. In addition, fragmentary data about their languages can also be found in some of the ancient books. It is the author's sincere hope that some Chinese scholars specialized in the Austronesian languages will make a scientific study of the Yi and Yueh languages based on the data and materials in available ancient books, to determine the extent to which the Austronesian language system and the Yi and Yueh languages of ancient China had been related. At the present time, there is no telling what would result from the 'Undifferentiated Sino-Tibetan/Austronesian Complex' put forward by Chang, Kuang-chih (Chang, Kuang-chih, 1959: 69). On the other hand, many excavations have been made during the recent years in the field of prehistoric archaeology; thus this author again hopes some scholars of prehistory to exert some efforts in this area, perhaps some links could be found out between the legendary events and the pre-historic relics. To further this point, the following passage is quoted from Fu, Ssu-nien:

> Unfortunately, Tai Shih Kung 太史公 was really not a scholar of ancient history, as he made no mention at all of the story about Yi Chu 羿浞 and Shao Kang 少康, and the writer who completed the Cheng Yi 正義 for him made this omission an object of ridicule. For the sake of attaining refinement, some episodes in legendary history were discarded, whereby only the philosopher's delusion had been preserved. (Fu, Ssu-nien, 1933:62)

This author once discussed Fu's opinion as quoted above with Wen, Tsung-Yi and he said Tai Shih Kung could well be called a scholar of modern history at his time. Wen's comment seems accurate and appropriate. Cited below as an additional example is the legend about the ancient Tai Hao 太昊 tribe. The legend about

Taaroa (太昊) either as a god or an ancestor is very popular on many islands in the Pacific Ocean. With respect to the geographical distribution of the Tai Hao tribe of the lengendary periods, Fu, Ssu-nien stated:

> The territory of the Tai Hao 太昊 people, bordering on Chen 陳 in the west, covering Lu 魯 in the east, and reaching Chi Shui 濟水 in the north, consisted of approximately the eastern corner of today's Honan province, the southwestern plain of Shantung province, to include the Meng and Che 蒙嶧 mountain area, Kung Shang 空桑 and Lei Che 雷澤. During the ancient times, the Tai Hao people were generally regarded as a tribe in the east, scattered over the area between the Huai and Chi Rivers. (Fu, Ssu-nien, 1933:73)

As for the Shao Hao 少昊 tribe, Fu again said: "Its sphere of distribution was almost the same as that of the Tai Hao 太昊 tribe, with its capital at Chu Fu 曲阜 in the Kung Shang 空桑 area." As a matter of fact, the question as to the chronology of the distribution of the Taaroa tribe of the Pacific area and the Tai Hao people of the Tung Yi 東夷 remains yet to be solved by archaeologists. The Yi and Yueh culture was basically a maritime culture, which, after having developed into its full growth, had continued incessantly to move abroad, resulting in large-scale settlements of the Austronesian people on the various islands in the Pacific Ocean. Chang, Kuang-chih once said:

> At the present time, as indicated by available records with definite dates, the islands of the Pacific Ocean that have remained in existence since the early stage of the prehistoric period include:
>
> Saipan (Marianas): 1527 B.C. ± 200 (Libby, 1925); Nuku Hiva (Marquesas): 124 B.C. ± 150 (Shapiro and Suggs, 1959); Easter Island: A.D. 380 ± 100 (Shapiro and Suggs, 1959); and Oahu (Hawaii): A.D. 1004 ± 180 (Libby, 1951)
>
> In other words, the ancestors of the Austronesian people had already lived in Micronesia during the 16th century B.C., at about the time of Yin-Shang of ancient China. Down to the 2nd century, coincident with the Early Han period, people of the Neolithic Age had settled on the Marquesas in the center of Polynesia, and had reached the Easter Island of Eastern Polynesia. (Chang, Kuang-chih, 1959: 67–68)

Based upon the foregoing, it may at least be ascertained, from an archaeological standpoint, that the Yi 夷 and Mo 貉 people had originally resided in the coastal areas of ancient China, and, subsequent to their invention of the watercaft, had gradually moved to the various Pacific islands.

During the Hsia, Shang and Chow periods of ancient China, a war went on between the Yi of the east and the Hsia (Chinese) of the west---the 'Yi-Hsia War' called by Fu, Ssu-nien (Fu, Ssu-nien, 1933:). Then there had been the continuous war between the Yueh of the south and the Han (Chinese) of the north subsequent to the Chin and Han periods. Then the Yueh 越 people were composed primarily of Indonesians and a part of Melanesians of today's Austronesian family. The Yueh 越 was also written as '戉' (Yueh, same as '鉞'—a battle-axe). Also, the Yu Yuen 於越, or Yu Yueh 虞越 were nothing but the Wu Yueh 吳越. (Wei, Chu-hsien, 1937: 5-6) Jao, Chung-yi 饒宗頤 once said: "The name of '戉' (Yueh) was seen frequently in the oracle-bone inscriptions of Yin time, which was written as '𢦏', also referred to as the 'Yueh Fang' 戉方. The ancient term of 'Pai Yueh' 百越 (hunred Yueh) most probably implied the great number of different tribes it comprised. Han Shu 漢書, Ti Li Chih 地理志, Yen, Shih-ku 顏師古 Chu 注 comments: "Hsueh Chan stated: Within the stretch of about seven or eight thousand li, from Chiao Chih 交趾 to Kuai Chi 會稽, there inhabited, in a mingled manner, the 'Pai Yueh' 百粵 tribes, each with its own tribal name, some of them being not Shao Kang's 少康 descendants." Also, Jao, Chung-yi in his 'The Wu Yueh Culture' states:

> As to the tribal surnames of the Yueh 越 people, there had been '似', '芈' and many others. Later, in order to avoid the complexity, they were generally referred to as the 'Pai Yueh' 百粵. The tribe by the name of '芈' originated in 'Chu' 楚 and that by the name of '似' descended from 'Hsia' 夏. Since the Spring and Autumn/Warring Kingdoms' periods, the belief that the Yueh 越 people were the descendants of Hsia 夏 had become very popular. Thus, Shih Kung 史公 chose to include in his Yueh Shih Chia 越世家 the theory that the Yueh 越 at Kuai Chi 會稽 were the offspring of Yu the Great 大禹. Chu Shih Chia related: "The Emperor of Chow gave to the Prince of Chu 楚成王 the following order: 'Suppress the disturbances caused by the Yi Yueh 夷越 in the southern area under your control, and prevent them from invading the territory of China....'" The term 'Yi Yueh' in above extract represented a very vast area, as evidenced by the following passage in Chang, Chu's 常璩 Hua Yang Kuo Chih 華陽國志 (Nan Chung Chih 南中志): 'In the former days, the southern region was entirely the Yi Yueh's territory; tien 滇, Pu 濮, Chu Ting 勾町, Yeh Lang 夜郎... over ten in all.' In light of the foregoing, it may be said that the so-called Yi Yueh did not merely mean the Yueh 越 as in the term of Wu Yueh 吳越, but represented commonly all the tribes in the southwestern area. (Jao, Chung-yi, 1969: 610)

As quoted above, Hsueh Chan remarked: "Within the stretch of about seven or eight thousand Li, from Chiao Chih to Kuai Chi, there lived, in a mingled manner,

the Pai Yueh tribes." Thus, the term Yi Yueh was a common name not only for all the tribes in the southwestern area of ancient China, but also for the Pai Yueh in the southeastern area. Further, Lu, Shih-mien said, based on records in ancient works: "Those tribes north of the Huai River were called Yi 夷 and those south of the Yangtze River called Yueh 越." Cheng, Chih 鄭志 also said: "The Chiu Mo 九貉 were just the Chiu Yi 九夷." Accordingly, the Yi Mo 夷貉 of the northeastern coastal area and the Yi Yueh 夷越 of both the southeastern and southwestern areas were, in fact, of one people, belonging to the Austronesian language family. Supposing the Yi 夷 were Polynesians, then the Yueh 越 should have been the Indonesians. The tribes of the Pai Yue 百越 found in existence down from the Chin and Han periods in ancient historical books include the 'Yu Yueh' 於越, 'Cheu Yueh' 甌越, 'Mien Yueh' 閩越, 'Yang Yueh' 揚越, 'Shan Yueh' 山越, 'Chi Yueh' 雙越 (Lo, Hsiang-lin, 1955: 102), 'Nan Yueh' 南越, 'Lo Yueh' 駱越, etc. All of these various tribes of the Yueh people had lived in areas south of the Yangtze River and in the former area of today's Vietnam during the Chin and Han periods. Later, in the face of the southward movement of the Hua Hsia people (name for the ancient Chinese people), part of them were absorbed by the Chinese people and part of them retreated to the various islands in the South Seas, subsequently scattered widely over the Indian and the Southwest Pacific Ocean.

Much has been done during recent years in the area of archaeological excavation in Southeast Asia. Chang, Kuang-chih said that theoretically South China might have been the 'original place of growth' of the ancient bronze culture, which, in turn, would serve to prove the antiquity of the Yi Yueh culture. He stated:

> Solheim of the University of Hawaii of America recently reported that the cultural stratum which produced the bronze axe at the Non Nok Tha ruins in Northeast Thailand was identified by the factor of Carbon 14 to have a date of approximately 2300 B.C. (Solheim, 1963: 59–62). In 1968, some bronze axes of an earlier stratum were excavated at the same ruins, which Solheim suggested to be productions of about 3000 B.C. It has never been anticipated before that the date of the bronze-ware of Southeast Asia could be so early. However, the specimens discovered in Thailand are not the only evidence, as Edmond Saurin, French archaeologist, has also found at Hang Gon Site #1 near Saigon some cast-bronze remains which has a Carbon 14 date: 2,000 B.C. ± 250 (Saurin, 1968: 1–19). Based upon these new materials, Solheim felt that Southeast Asia might possibly have been the source of the ancient bronze culture of North China. (Chang, Kuangchih, 1960: 168)

As quoted above, the bronze implements excavated in Thailand and Vietnam were dated as early as 3,000 or 2,000 B.C. implying that the maritime culture of South

China had been well developed during the most antiquated times. In his recent paper, 'New Light on a Forgotten Past', Solheim put forward nine hypotheses, drawn from the excavations at Non Nok Tha. Three of which concerned with the watercraft and sea travels of the ancient times are extracted below:

> Dugout canoes had probably been used on the rivers of Southeast Asia long before the fifth millennium B. C. probably not long before 4000 B. C. the outrigger was invented in Southeast Asiaa, adding the stability needed to move by sea. I believe that movement out of the area by boat beginning about 4000 B. C., led to accidental voyages from Southeast Asia to Taiwan and Japan, bringing to Japan taro cultivation and perhaps other crops.
>
> Sometime during the third millennium B. C. the now expert boat-using peoples of Southeast Asia were entering the islands of Indonesia and the Philippines. They brought with them a geometric art style-spirals and triangles and rec-tangles in band patterns that was used in pottery, wood carvings, tattoos, bark cloth, and later woven textiles. These are the same geometric art motifs that were found on Dongson bronzes and hypothesized to have come from eastern Europe.
>
> The Southeast Asians also moved west, reaching Madagascar probably around 2,000 years ago. It would appear that they contributed a number of important demesticated plants to the economy of eastern Africa. (Solheim, 1971: 339)

It is beyond our imagination that the cultural relics which Solheim excavated in Thailand were evaluated by virtue of the medium of Carbon 14 to be so antiquated. This author, in his previous paper entitled 'The Development of the Ancient Culture of Southeast Asia', divided Southeast Asia into three areas, namely, the Mainland, Peninsular Area and the Islands and said thhat the 'Pai Yueh' 百越 people had moved southward from the mainland through the peninsular area to the various islands (Ling, Shun-sheng, 1950:) The accuracy of this belief can now be proved by the archaeological discovery Solheim made in Thailand.

The Yi and Yuen people, possessing such watercraft as the rafts, outrigger canoes, double canoes and deck canoes, as well as the skill to navigate them, had often sailed over the Indian and Pacific Oceans during the very ancient times. In the early days, the raft of the Yi was called 'Vaka' and that of the Yueh called 'Paepae'. Later, vaka and paepae had become the general names in Oceania for both rafts and boats. The Shuo Wen 說文, completed in the first century, B. C., stated: "Fa 橃, large sea-going boat." In summary, it may be concluded that today's Austronesian people originally lived in the Asian mainland, particularly in ancient China, and had subsequently moved through the peninsular area to the numerous islands in the Pacific and Indian Oceans.

A STUDY OF THE RAFT, OUTRIGGER, DOUBLE, AND DECK CANOES OF ANCIENT CHINA, THE PACIFIC, AND THE INDIAN OCEANS

CONTENTS

Published by

THE INSTITUTE OF ETHNOLOGY
ACADEMIA SINICA

NANKANG, TAIPEI, TAIWAN
REPUBLIC OF CHINA

1970

中央研究院民族學研究所專刊之十六

中國遠古與太平印度兩洋的帆筏戈船方舟和樓船的研究

著作者　凌純聲

出版者　中央研究院民族學研究所

發行者　中央研究院民族學研究所

印刷者　九鼎彩色製版印刷品有限公司
台北市西園路二段261巷20弄32號三樓

定價：新臺幣300元

中華民國五十九年初版
中華民國八十三年二刷