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THE SALT INDUSTRY OF CHINA, 1644-1911: A
STUDY IN HISTORICAL GEOGRAPHY.

University of Hawaii, Ph.D., 1975
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THE SALT INDUSTRY OF CHINA, 1644-1911:
A STUDY IN HISTORICAL GEOGRAPHY

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE
UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY
IN GEOGRAPHY

August 1975

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THE SALT INDUSTRY OF CHINA, 1644-1911:
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By Tao-chang Chiang

A dissertation submitted to the Graduate Division of the
University of Hawaii in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy
in Geography

ABSTRACT

As a daily necessity and also as a taxed commodity, salt played an important part in the economic, political and social development of Ch'ing China. It was a leading imperial revenue source, a major industry, and an important factor in historical events. It was also an indicator of the spatial organization of the traditional Chinese economy. Ch'ing China's complicated system of salt administration was an historical inheritance from the past. Because of its inability to engage directly in the production and distribution of salt, the Ch'ing administration controlled the industry by assigning the production of salt to small producers and by subcontracting the distribution of salt to licensed merchants. Thus, the government, merchants and

producers constituted the three components of the industry. The producers made the salt, the merchants distributed it, and the government supervised the production and distribution, prevented salt smuggling and, above all, collected a tax. Yen-ch'ang (saltworks) were the lowest administrative units. Their organization and composition varied with localities as well as with production methods. A saltworks might consist of only a few salt-producing households or as many as ten thousand or more. Ch'ing China's sources of salt were widespread. More than four-fifths of the salt produced came from the seacoast. The diffusion and spread of the production of salt in China paralleled China's territorial expansion and population movement. The industry reached its maturity in terms of areal extent and the system of public control in the Ming period (1368-1644).

After that time, a better natural resource base stimulated the more rapid growth of the industry along the North China seacoast than elsewhere in the nation. Several different production methods were used to adapt diversified natural environments and varied raw materials. The methods were primitive and inefficient. The simplicity of the boiling method favored its wide use, but as fuels became scarcer year after year, the solar evaporation method gradually replaced this system. Geographical changes in the quantity of salt production through time also reflected basic differences in regional population growth. Among other variables, the

consumption of taxed salt by geographical region was associated with the spatial distribution of population, cultivated land, land tax quotas, population density and saltworks.

The salt industry in Ch'ing China was characterized by state control through six systems: the certificate system (yin-fa), the group system (kang-fa), the ticket system (p'iao-fa), the salt ration-tax system (kuei-ting-fa), the official transport system (kuan-yün), and the taxation at the saltworks (chiu-ch'ang cheng-hsui). Each of these was employed to cope with a different situation in order to maximize government revenue by eliminating the trade in untaxed salt. In the course of time, privileged salt merchants became so powerful financially that the public salt administration could only cooperate with them to ensure easy tax collection. The networks of the salt trade and the spatial organization of the market areas responded mainly to the geographical distribution of salt sources and inland waterways. Water transport was used mostly as it was the cheapest means through which the flow of salt could be controlled. As a quasi-government business, administration of the salt trade was influenced greatly by the structure of the civil administration, and the system of salt distribution paralleled closely with the administrative hierarchy.

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Chapter I

INTRODUCTION

This study attempts to describe, analyze, and interpret the salt industry of Ch'ing China (1644-1911) in its geographical context. It stresses five aspects of the industry: the significance of the salt industry, state control of the industry, production and consumption of salt, structure of the marketing and shipping systems of salt, and factors that affect the industry. It is the writer's hope that this study will contribute to the understanding of the spatial organization of an important economic activity in traditional Chinese society.

Reasons for the Study

For centuries, salt-making has been a major industry in China for three reasons: first, salt is readily available in many parts of the country; second, salt has been a major source of government revenue; and third, the industry has had a huge domestic market with a generally inelastic demand. As salt is used regularly by all people as both a seasoning and a preservative, its annual consumption is largely predictable. In the seventh century B.C. salt was first considered as an economic commodity and was handled by

a state monopoly. A tax on salt in the form of a head tax provided the government with a reliable source of revenue.¹

Throughout Chinese history various factors have contributed to the continual increase in the number of sources of salt; the most important have been first the growth of the population and the changes in its distribution and secondly the lack of a good nation-wide transportation network. Among old producing areas, the proportion of the total salt produced by each has also changed over time. Sources of salt were widespread in Ch'ing China, but the bulk of the salt output came from only certain favorable areas, each of which had its own market area. Furthermore, because of diverse regional physical settings, the salt industry was characterized by regional differentiation. This in turn constitutes a useful topic for spatial analysis and therefore offers a great challenge to historical geographers.

As the chemical industries based on salt as a raw material were little known in Ch'ing times, the production of salt was almost exclusively for human consumption. Therefore, there was a high correlation between the size of population and the amount of salt consumption of an area.

¹During the seventh century B.C., Duke Huan of the Ch'i started the salt monopoly system advised by his Premier Kuan Chung. See Lewis Maverick, ed., Economic Dialogues in Ancient China: Selections from the Kuan-tzu, translated by T'an Po-fu and Wen Kung-wen (Carbondale, Illinois, 1954), pp. 113-115.

Studies of the regional distribution of salt consumption would throw light on the regional growth and distribution of population of China during the Ch'ing dynasty. In other words, the yet little known spatial pattern of the population of Ch'ing China could be interpreted in terms of salt consumption. In fact, it has been said that attempts have been made to estimate the total population of China based on salt consumption.² However, the writer has found no reference detailing such relationships. It is also to be noted that so far no attempt has been made to reconstruct the geographical distribution of population in Ch'ing China by using the salt consumption statistics.

The structure and organization of the transportation system of Ch'ing times are matters that are still not fully understood. A study of the marketing and shipping systems of salt would greatly increase our knowledge of the pattern of transportation in Ch'ing China since salt was shipped throughout the country and involved all types of transportation available during that time.

The salt industry also played an important role in social development of the Ch'ing dynasty. For example, the salt merchants of Yangchou, thanks to the monopoly of salt granted them by the imperial government through the group

²See George B. Cressey, Land of the 500 Million, a Geography of China (New York, 1955), pp. 146-147.

system (kang-fa),³ boasted of some large individual fortunes. Certainly these merchants possessed the largest aggregate capital of any single commercial or industrial group in China during the eighteenth century. It has been estimated that during their period of high prosperity the total capital owned by these merchants was about 75,000,000 taels of silver.⁴ Many of these merchants used their wealth to patronize scholars and poets or to cultivate such expensive hobbies as book and art collecting. The amount of money so spent appears to have been unusually large, attributing greatly to the splendid cultural and intellectual development that characterized the lower Yangtze area during that time.

Since the salt industry had been a state monopolized business, a study of it would certainly throw important light on the character of the industry as well as the administrative system of the Ch'ing dynasty. Because of the paramount importance of salt, there is a vast amount of literature in Chinese, particularly for the Ch'ing period. Chinese historiography, being essentially practical and strongly politically-oriented, has provided us with an almost unbroken stream of information on the production,

³The system will be elaborated under Marketing Systems in Chapter VI.

⁴One tael equal to 1.333 ounces.

marketing and taxation of salt. Many of these publications, some dating back to the sixteenth century, are available in the Library of Congress and in several university libraries well-known for their Oriental collections.

In spite of the importance of the salt industry, its wide geographical distribution, and the abundant literature on salt in the past, however, little geographical analysis of the industry during the Ch'ing dynasty has ever been done. Furthermore, despite one historical research project in progress,⁵ one historical monograph,⁶ one unpublished Ph.D. dissertation in economics,⁷ and scattered articles in British and American periodicals dealing with certain phases

⁵It has been reported that Joseph Needham of Cambridge University, England, is working on the technology of salt production in China as a part of his monumental work on Science and Civilization in China, of which several bulky volumes have been already published.

⁶S. A. M. Adshead, The Modernization of the Chinese Salt Administration, 1900-1920 (Cambridge, Massachusetts, 1970). Adshead's work deals with salt administration in the early twentieth century.

⁷Sun I-hsuan, Salt Taxation in China, unpublished Ph.D. dissertation in economics, University of Wisconsin, 1953, 230 typewritten pages. Sun's work, however, deals with the period of the Republic.

of the salt problem,⁸ a thorough geographical presentation of the problem is lacking in any language.

In view of this wide gap, there is a need within the framework of historical geography to present a systematic treatment of the salt industry under state control in Ch'ing China.

Theoretical Framework

Whether geographers are concerned with "accurate, orderly and rational description and interpretation of the

⁸Among these articles, important ones are: Esson M. Gale, "Public Administration of Salt in China: A Historical Survey," Annals of the American Academy of Political and Social Sciences, Vol. 152 (1930), pp. 241-251; Ping-ti Ho, "The Salt Merchants of Yang-chou: A Study of Commercial Capitalism in Eighteenth-Century China," Harvard Journal of Asiatic Studies, Vol. 17 (1954), pp. 130-168; Alexander Hosie, "The Salt Production and Salt Revenue of China," Nineteenth Century, Vol. 75 (1914), pp. 1119-1143; Thomas A. Metzger, "T'ao Chu's Reform of the Huai-pei Salt Monopoly," Papers on China, Vol. 16 (1962), pp. 1-39 and "The Organization Capabilities of the Ch'ing State in the Field of Commerce: the Lianghuai Salt Monopoly, 1740-1840," in W. E. Willmott, ed., Economic Organization in Chinese Society (Stanford, California, 1972), pp. 9-45; Edward H. Parker, "The Salt Revenue of China," Journal of the North China Branch of the Royal Asiatic Society, New Series, Vol. 22 (1887), pp. 67-80; Tomi Saeki, "Economie et Absolutisme dans la Chine Moderne: le Cas des Marchands de Sel de Yangchow," Revue Historique, Vol. 238 (July-September, 1967), pp. 15-30; and Joseph E. Spencer, "Salt in China," Geographical Review, Vol. 25 (1935), pp. 353-366. Spencer is the only geographer among these authors and his article deals with the geography of salt in the early 1930's. He gathered data for his paper while he worked with the Inspectorate of Salt Revenue of China.

variable character of the earth surface,"⁹ or "the study of spatial organization expressed as patterns and processes,"¹⁰ they are interested in knowing how geographical characteristics related to spatial organization came to be what they are and what they were like in the past. The geographical landscape is not static. It changes continuously and shows varied and cumulative effects of historical development in the recent and remote past. The character of the landscape in a region is the result not only of the physical elements of the region, but also of the use of these elements by successive generations of inhabitants in the region. Therefore, any geographical analysis which ignores such historical factors is meaningless. Indeed, geography has an historical dimension. "The rationale of historical geography," wrote Andrew H. Clark, "is that through its study we may be able to find more complete and better answers to the problems of the world both as it is now and as it has been at different times in the past."¹¹

⁹Richard Hartshorne, Perspectives on the Nature of Geography (Skokie, Illinois, 1959), p. 21.

¹⁰Edward J. Taaffe, ed., Geography (Englewood Cliffs, New Jersey, 1970), pp. 5-6.

¹¹Andrew H. Clark, "Historical Geography," in American Geography: Inventory and Prospects, edited by Preston E. James and Clarence E. Jones (Syracuse, 1954), pp. 70-105; reference on p. 95.

As a subfield of geography, historical geography has from time to time shifted its focus of interest among a series of inquiries that include local gazetteers, accounts of the influence of geography upon history, reconstructions of past geographies, studies in sequent occupance, chronicles of geographical change through time, retrogressive narratives, investigations of relict features, critical appreciation of the perceptions of the past, and essays in theory. Among these studies, the investigation of geographies of the past and research in geographical change were and still are major activities of historical geographers.¹² The study of geographies of the past involves the reconstruction of geographies of previous periods while the study of geographical change emphasizes the sequential change of geographical phenomena.

To reconstruct the geographies of past times is the most orthodox and, indeed, is an unexceptionable theme in

¹²H. C. Prince, "Progress in Historical Geography," in Trends in Geography, an Introductory Survey, edited by Ronald U. Cooke and James H. Johnson (Oxford, England, 1969), pp. 110-122; reference on p. 110.

historical geography.¹³ Past geographies are studies through an approach in which the data are historical but the method is geographical. These are temporal cross-sections. When a series of past geographies have been reconstructed for an area, the relationships of man and land in the area may then be examined by a comparative study in which it is possible to view over a long period of time the way in which such factors as geographical position, mineral and biotic resources, soils, and climate have been utilized under different conditions of technology, social structure, population trends and so on. Geographies of past periods must be reconstructed before relationships between the past and present can be properly understood. Therefore, the purpose of historical geographers is to reconstruct the geography of

¹³See Carl C. Sauer, "Foreward to Historical Geography," Annals of the Association of American Geographers, Vol. 31 (1941), pp. 1-24, reprinted in Land and Life: a Selection from the Writings of Carl Ortwin Sauer, edited by John Leighly (Berkeley, California, 1967), pp. 351-379; Clark, loc. cit., footnote 11; Richard Harshorne, loc. cit., footnote 9, pp. 81-107; H. C. Darby, "Historical Geography," in Approaches to History, edited by H. P. R. Finberg (London, 1962), pp. 127-156; reference on pp. 127-140; C. T. Smith, "Historical Geography: Current Trends and Prospects," in Frontiers in Geographical Teaching, edited by Richard J. Chorley and Peter Haggett (London, 1965), pp. 118-143; reference on pp. 128-132; Prince, loc. cit., footnote 12, pp. 110-111; and Alan R. H. Baker, et al., "Introduction," in Alan R. H. Baker, et al., eds., Geographical Interpretations of Historical Sources (Newton Abbot, England, 1970), pp. 13-25; reference on p. 13.

the past. In other words, the task is to restore the "historical present," that is, the present as it existed at some moment in the past. While geography itself cuts through the contemporary period, historical geography cuts through time at some preceding period.¹⁴ The study of geographical change is approached by a vertical method in which emphasis is thrown upon the process that has produced the present geography.

Geography has a distinctive point of view, i.e., geographers see together the complex of factors that make up the character of places or landscapes. In other words, this characteristic point of view is the breadth of synthesis. Central to the idea of synthesis in geography is an interest not so much in parts as in wholes.¹⁵ Thus, to understand thoroughly the salt industry in Ch'ing China, a synthetic approach is of prime importance, as the industry itself embraces a complex of relationships bearing on the character of the industry. These relationships involve spatial interaction, cumulative causation and spatial organization. The study of the salt industry in Ch'ing China as treated in this dissertation is not a compendium, but a synthesis.

¹⁴H. C. Darby, "On the Relation of Geography and History," Transactions and Papers (Institute of British Geographers), No. 19 (1954), pp. 1-11.

¹⁵Cole Harris, "Theory and Synthesis in Historical Geography," Canadian Geographer, Vol. 15 (1971), pp. 157-172.

In studying the geographical patterns of the salt industry in Ch'ing China, one must ultimately search for an understanding of the general design of these patterns. Understanding the design requires analysis into individual components of the industry, but the utility of the design rests upon the integration of these components in a functional model. In sociology, Parsons has suggested a concept of functional change. He has proposed that when a social system is being affected by endogenous or exogenous forces, the system will undergo a structural change so as to balance these forces in order to maintain itself in a stable condition.¹⁶ To adopt this model, the salt industry of Ch'ing China can be considered as a system which makes changes temporally and locationally in response to impact from internal or external sources in order to achieve its aim as a source of imperial revenue. The industry continued to make structural changes within its system to cope with forces from outside and from within. The whole system of the salt industry can be divided into two subsystems, production and

¹⁶Alan R. H. Baker, "Rethinking Historical Geography," in Alan R. H. Baker, ed., Progress in Historical Geography (Newton Abbot, England, 1972), pp. 11-28. Talcott Parsons, "Some Considerations on the Theory of Social Change," Rural Sociology, Vol. 26, No. 3 (1961), pp. 219-239. For a general introduction of the application of sociological models in geography, see R. E. Pahl, "Sociological Models in Geography," in Richard J. Chorley and Peter Haggett, eds., Socio-Economic Models in Geography (London, 1967), pp. 217-242.

distribution. On the production side, the geographical patterns of salt-making methods and of salt production show clearly the impact of variable natural environments and of changing human conditions. There were sixteen different methods of production, each practiced under specific conditions. On the distribution side, although the basic marketing device was the certificate system (yin-fa), several variations were devised to cope with different situations so as to maintain stable conditions under which a flow of revenue could be ensured. These variations involved both temporary and locational changes.

Research Procedures

Basic data for this study were provided by the multi-volumed official and semi-official compendia on salt administration for each salt region as well as for the whole country, together with memorials on salt affairs and field reports. These types of source materials are reviewed briefly here. A comprehensive bibliography has been appended.

Important are the ten available compendia on salt administration of the Lianghuai salt region published since the late seventeenth century. For example, in the 1693 edition, there are twenty-eight chüan under sixteen headings, including a general description of saltworks, the distribution of salt, and collections of memorials by salt

officials. In addition, there are also more than forty traditional Chinese maps showing the locations of saltworks and salt marketing areas. This work, bound in four volumes and included in a large collection on Chinese history, was recently reprinted in Taipei. The author has consulted more than forty compendia of this type. These contain rich raw materials suitable for geographical analysis awaiting use by modern scholars. The statistics on taxed salt, among other items, moreover, are highly reliable.

Memorials written by salt administrators and by civil officials of high rank are also available in published archives on salt administration and in various editions of collected works on government affairs during the imperial dynasty. These memorials are comparatively unused and contain rich and reliable source materials on salt administration. Field reports are not many, but the few that are available contain a full assortment of first-hand source materials. The field reports by Chang Liu and Hu Chün-t'ai on the salt industry in Chekiang, for example, contain detailed accounts for each saltworks in terms of their general physical character, production methods, and the packing of salt and its by-products.

For mapping the distributions of geographical phenomena, a base map showing prefectures as the basic mapping units of Ch'ing China has had to be constructed. Two works have provided basic information for such a task.

Ch'ing-tai ti-li yen-ke-piao (Tables of the Evolution of Civil Administration Divisions of the Ch'ing Dynasty) by Chao Ch'uan-ch'eng, which provides a most comprehensive coverage of boundary changes of all provinces (sheng), prefectures (fu), and districts (hsien, chou or t'ing) throughout the Ch'ing domain. The Chia-ch'ing Ta-Ch'ing i-t'ung-chih (Comprehensive Gazetteer of Ch'ing China during the Chia-ch'ing Reign) contains a general geographical description of all prefectures of Ch'ing China, including population and land tax statistics. For each prefecture there is also a map and a table showing boundary changes. Additional information was provided by a number of provincial and local gazetteers whenever further knowledge was needed to locate the boundary of an administrative division. Naturally, information and ideas were also drawn from such other sources as books, articles and unpublished works.

Documentary study and traditional map analysis have also been employed throughout this study. Included as well are descriptive, inferential and nonparametric statistical methods. As mentioned in the preceding paragraph, a base map, never before constructed, was first prepared. On this, distributions were subsequently mapped to reveal national and regional spatial patterns. These include sources of salt supply, salt production and consumption, the flow of salt, salt administrative regions, marketing areas for salt, navigable inland waterways, salt taxes and other information.

Salt consumption was plotted against population among other variables, in scatter diagrams, to show the direction and strength of the relationships between them. Comparisons of map patterns were made in order to reveal directional and positional relationships between geographical variables. As cartographic analysis is no longer adequate in geographical studies, descriptive, inferential and nonparametric statistical methods were also employed. In analyzing the direction and strength of correspondence among two or more spatially distributed variables, correlation and regression techniques were used. A simple regression equation was first developed to express the relation between salt consumption and population. Regression residuals were then mapped and analyzed in order to suggest further relationships.

To summarize, the importance of the salt industry in traditional China, the rich sources of Chinese literature and the geographical character of the industry seem to justify a study in historical geography of this subject. The general framework of this study is based on factors related to notions of time, functional change, spatial interaction, cumulative causation and spatial organization. Historical reconstruction of geographical patterns in the past, functional and geographical changes, and forces affecting these patterns and changes have been emphasized. Research methods include documentary study and traditional map analysis, as

well as modern descriptive, inferential and nonparametric statistical techniques. Hopefully, this study should add to our knowledge of economic, political and social phenomena in Ch'ing China.

Chapter II

THE SIGNIFICANCE OF THE SALT INDUSTRY

As a daily necessity for human life¹ and also as a taxed commodity, salt has played an important part in the economic, political and social development of China. In the traditional agrarian society of Ch'ing China, salt was a matter of major concern. It was a leading imperial revenue source, a major industry and an important factor in some major historical events. It also was an indicator of the spatial organization of traditional Chinese economy.

As an Imperial Revenue Source

Since the sources of salt are not ubiquitous, the raw material has to be processed before it is turned into a consumable form, and people have to obtain salt from local markets. Salt was one of the few items in which most rural

¹Common salt is chemically sodium chloride but usually contains iodine which is among the most important chemicals and minerals that serve as human body regulators and as essential constituents of many vital substances within the body. For example, the absence of iodine from foods and drinking water results in the diseased condition called goiter. See Helen S. Mitchel, et al., Cooper's Nutrition in Health and Disease (15th edition; Philadelphia, 1968), pp. 71-72 and 231-233.

villages in China were not self-sufficient and it thus had to be imported from distant places. As salt is used regularly by all people, its annual consumption is largely predictable. A tax on salt in the form of a head tax, therefore, provided the government with a reliable source of revenue. For this reason, it has drawn special attention of statesmen and financiers throughout China's political history.

In modern times, government revenues are often derived from a variety of sources. But this was not the case with imperial China. Imperial China was almost content with only one form of revenue, namely, taxation. Taxes collected by the imperial government include land tax, grain tribute, custom duties, salt tax, and miscellaneous taxes and fees. Before the T'ang dynasty (A.D. 618-907), no figure for each of these taxes was available and it is therefore difficult to know the proportion of salt tax in the government revenue. References show that the share of salt tax varied from one half to eight tenths of the total imperial revenue during the millennium from the T'ang to the Ming period. The share of salt tax in government revenue was reported to be one half of the total revenue in the T'ang² and

²Ouyang Hsiu, et al., T'ang-shu (History of the T'ang Dynasty) (1060; Reproduction of 1773 edition; Taipei, n.d.), chüan 54, p. 627.

Sung³ dynasties. It increased up to eight tenths during the Yüan period.⁴ Finally, in Ming China, the imperial government collected an annual revenue of four million taels of silver, of which one half was derived from salt tax.⁵ Although one should not take these estimates seriously, they do indicate the approximate proportion of salt tax in government revenue for each period.

The salt tax was extremely important to the government finance in Ch'ing China. Originally, there was only the tax levied on saltworks which produced salt and on the salt which was distributed by salt merchants and sold to consumers. Later, surtaxes among other types of salt tax

³T'ot'o (Tokto) et al., Sung-shih (History of the Sung Dynasty) (1345; Reproduction of 1773 edition; Taipei, n.d.), chüan 182, p. 2162.

⁴Sung Lien, et al., Yüan-shih (History of the Yüan Dynasty) (1369; Reproduction of 1773 edition; Taipei, n.d.), chüan 170, p. 1915.

⁵Yüan Shih-chen, "Liang-huai yen-cheng shu-li ch'eng-pien" (Account of the Salt Administration of Lianghuai Region), in Huang-Ming ching-shih-wen-pien (Collected Works on Government Affairs of the Ming Dynasty), edited by Hsu Fu-yüan, et al., ca. 1636; Reprinted edition; Taipei, 1964), Vol. 29, pp. 185-186.

were added.⁶ The total amount of revenue derived from the salt industry increased year after year. Another factor contributing to the steady increase of the salt tax was the rising demand for salt as a result of a growing population. In 1753, a total of 8,768,000 taels of salt tax was collected. One and a half centuries later, a total of forty-five million taels of salt tax was collected in 1908.⁷ Another estimate indicates that by the end of the Ch'ing dynasty, a total of forty-seven million taels was collected annually.⁸

Through the Ch'ing period, the amount of tax derived from the salt industry varied annually from less than one fifth to more than one half of the total revenue that the imperial government collected. One estimate indicates that the annual salt tax collected accounted for one half of the total imperial revenue during the second half of the

⁶See P'eng YU-hsin, "Ch'ing-mo chung-yang yü ko-sheng ts'ai-cheng kuan-hsi" (Financial Relations between Central and Provincial Governments in the Late Ch'ing Dynasty), in Pao Tsun-p'eng, et al., eds., Chung-kuo chin-tai-shih lun-ts'ung (Collection of Essays on Modern Chinese History), 2nd Series (Taipei, 1963), Vol. 5, pp. 15-16. The article was originally published in She-hui k'o-hsüeh tsa-chih (Review of Social Sciences), Vol. 9 (1947), pp. 83-111.

⁷Yeh-chien Wang, Land Taxation in Imperial China, 1750-1911 (Cambridge, Massachusetts, 1973), pp. 74-76.

⁸Chien Chang, A Plan for the Reform of the National Salt Administration (Shanghai, 1913), p. 39. See also Yeh-chien Wang, op. cit., footnote 7, p. 76.

seventeenth century and the early eighteenth century.⁹ The nature of the estimate may need a careful interpretation, but it is obvious that the salt tax was a major source of government revenue. A recent estimate indicates that the salt tax accounted for nearly one eighth of the total national collection of taxes in 1753.¹⁰ This estimate could be too low as preceding estimates and following figures are all larger. However, another estimate shows that the salt tax accounted for one fourth of the total government revenue in the mid-nineteenth century.¹¹ The proportion of salt tax in government revenue had decreased since the middle nineteenth century because two other major sources of revenue were added. The likin system was originated in 1853 in Kiangsu by initiating likin as an internal transit tax on grain passing through the Grand Canal. By 1862 it had been applied to nearly all commodities and had been adopted by

⁹"The Preface" of Wang Shih-ch'iu, et al., Liang-huai yen-fa chih (Compendium on the Salt Administration of Liang-huai Region) (1748), cited in Tomi Saeki, Shindai ensei no kenkyu (The Salt Administration under the Ch'ing Dynasty) (Kyoto, 1956), p. 14. Also see Rhoads Murphey, The Treaty Ports and China's Modernization: What Went Wrong? (Ann Arbor, Michigan, 1970), p. 11.

¹⁰Yeh-chien Wang, "The Fiscal Importance of the Land Tax during the Ch'ing Period," Journal of Asian Studies, Vol. 30 (1971), pp. 829-842; reference on p. 838.

¹¹Sun Ting-ch'en, "Lun yen" (On Salt Administration), in HCCSWHP, chüan 43, pp. 5-6a.

nearly every province.¹² In 1854 the maritime customs started to collect duties on foreign trade. One estimate indicates that later its receipts accounted for nearly one fourth of the total revenue that the imperial government collected. As a source of revenue, it was next only to land tax in value.¹³ In the last few decades of the Ch'ing period, the salt tax accounted for about one sixth of the total imperial revenue and still was the second largest single revenue source next only to land tax in value (Table 1).¹⁴

¹²See Lo Yü-tung, Chung-kuo li-chin shih (History of the likin in China) (Shanghai, 1936); and George E. Beal, Jr., The Origin of Likin, 1853-1864 (Cambridge, Massachusetts, 1958).

¹³George Jamieson, Report on the Revenue and Expenditure of the Chinese Empire, Foreign Office, Miscellaneous Series, No. 415 (London, 1897), cited in Albert Feuerwerker, The Chinese Economy, ca. 1870-1911 (Ann Arbor, Michigan, 1969), p. 66; and J. Edkins, The Revenue and Taxation of the Chinese Empire (Shanghai, 1903), p. 66.

¹⁴Another estimate shows that the imperial budget for the very last year of the Ch'ing dynasty estimated central and provincial revenue at 305 million taels. The salt tax accounted for 15 percent or forty-seven million taels. The percentage showing the share of salt tax in total government-revenue is almost the same as that estimated by Wang for 1908. Chia Chih-fang, Chin-tai Chung-kuo ching-chi she-hui (The Ch'ing Economy and Society) (Shanghai, 1949), p. 40. Later, during the early period of the Republic of China, before the World War II, salt tax still accounted for twenty to twenty-five percent of the total national revenue of the central government. See Chung Ch'ung-min, et al., Tzu-kung chih yen-yeh (Salt Industry of Tzukung) (Chungking, 1942), "Preface," p. 1. Under the Communist Government, the relative importance of the salt tax to China's total state revenue has greatly diminished. In 1955, the salt tax yielded ¥481,220,000, accounting for only 1.6 percent of the total budgetary revenues. See Audrey Donnithorne, China's Economic System (New York, 1967), p. 380.

Table 1.
Estimated Annual Revenue of the
Ch'ing Government in 1908

Sources of Revenue	Annual Revenue	
	Taels	Percent
Land Tax	102,400,000	35.1
Salt Tax	45,000,000	15.4
Likin	40,000,000	13.6
Maritime Customs	32,900,000	11.3
Native Customs	6,700,000	2.3
Misc. Taxes	65,000,000	22.3
Total	292,000,000	100.0

Source: Yeh-chien Wang, Land Taxation in Imperial China, 1750-1911 (Cambridge, Massachusetts, 1973), p. 74.

At the provincial level, tax obtained from salt was the largest single source of revenue in Chihli, Kiangsu, Kwangtung, Szechwan, and Yünnan provinces as late as in the closing years of the Ch'ing dynasty, and was a major local source of revenue in all other provinces.¹⁵ One source even states that in each province more than half of the civil and military expenses came from the salt tax.¹⁶ Still another

¹⁵See Chia Shih-i, Min-kuo ts'ai-cheng shih (Financial History of the Republic of China) (Shanghai, 1917), Vol. 1, pp. 36-38.

¹⁶See Li Chung-kun, tr. (from Japanese source), "Yen-shui tan-pao yü ko-sheng ts'ai-cheng chih kuan-hsi" (Salt Tax as a Guarantee for Foreign Loans and the Finance of All Provinces), YCTC, Vol. 1, No. 11 (January 1914), I-lun, p. 1.

source estimated that in the late nineteenth century, the salt tax accounted for nearly one fifth of the total revenue collected by all provincial administrations and more than half of that collected by all local administrations.¹⁷

As a Major Industry

In terms of economic magnitude, the business of the production and marketing of salt has been a major industry in agrarian China for centuries. Some scholars consider it to have been the largest single economic enterprise in Ch'ing China.¹⁸ This is definitely true if one considers two things. First, the industry had a huge production of this one commodity for a sizable reliable domestic market. Second, the salt business of the whole country was at least nominally directed by a single salt administration, the Board of Revenue (Hu-pu). Later in the closing years of the Ch'ing dynasty, a more centralized administration, the Bureau of Salt Administration (Yen-cheng-yüan) was established to administer the salt industry.

Having a large population, the Ch'ing dynasty had a huge market with a generally inelastic demand for salt.

¹⁷See Srinivas R. Wagle, Finance in China (Shanghai, 1914), pp. 339-340.

¹⁸Albert Feuerwerker, China's Early Industrialization: Sheng Hsuan-huai (1884-1916) and Mandarin Enterprise (Cambridge, Massachusetts, 1958), p. 50.

The total annual salt consumption in China during the nineteenth century was estimated at about 2,664 million catties by one source.¹⁹ However, this was underestimated. If allowing an annual average need of thirteen catties of salt per capita, 430 million people would have had to consume 5,590 million catties of salt a year in the mid-nineteenth century.²⁰

Salt sources were widespread in Ch'ing China. Salt was extracted from seawater along the entire length of China's seacoast. Inland saltworks were found in many localities in Chihli, Honan, Kansu, Shansi, Shensi, Szechwan and Yunnan provinces. There were 160 saltworks of various sizes in 113 hsien in Ch'ing China.²¹ Some 250,000 hectares of land were utilized directly for the production of salt according to a writer.²² However, this estimate seems to be too low. Another source shows that over one million hectares of former tang-ti or reed-growing land attached to

¹⁹See Saeki, op. cit., footnote 9, p. 19.

²⁰For the estimation of the per capita salt consumption in Ch'ing China, see Chapter V of this dissertation.

²¹"Ch'üan-kuo ch'an-yen ch'ü-yü so-tsai-ti i-lan-piao" (A Table of Saltworks in China), YCTC, Vol. 1, No. 4 (April 1913), Tiao-ch'a pp. 1-8 and No. 5 (May 1913), Tiao-ch'a pp. 9-17.

²²Li Chien-ch'ang, Kuan-liao tzu-pen yü yen-yeh (Bureaucratic Capitalism and the Salt Industry in China) (Peking, 1963), p. 25.

saltworks were converted to farm land in the Huainan area alone during the Republic period.²³ The total land area of the twenty Huainan saltworks east of the Fan-kung-ti was about 850,000 hectares in ca. 1905 (Figure 17). If we consider this was about a fifth of the grand total land area for salt production along the whole seacoast of China Proper, the grand total would be over four million hectares. Based on this, five million hectares of land used for salt production in China Proper as a whole would be a fair estimate. This accounts for 1.25 percent of the total land area of China Proper.

According to incomplete data, it was estimated that nearly two million people worked directly on saltworks. This is based on the following assumption. Liangche and Lianghuai salt regions together had a total of 785,588 salt workers²⁴ and produced forty percent of Ch'ing China's salt. If one assumes that the ratio between the number of salt workers from these two regions to the total number of salt workers of the whole country was also forty percent, Ch'ing China would have nearly two million salt workers. In addition, there were many others engaged in shipping,

²³Ho Wei-ning, Chung-kuo yen-yeh hsin-lun (New Views on the Chinese Salt Industry) (Tainan, 1952), p. 120.

²⁴YFTC, chüan 42, pp. 16-24.

wholesaling, retailing, tax collecting and the prevention of smuggling. The total population supported wholly or partly by the salt industry must have been very sizable. One writer mentioned in 1913 that there were several millions of salt workers and several hundred thousands of salt merchants in China.²⁵ Another estimated that the salt industry of China gave means of sustenance to some five million persons in the middle twenties of this century.²⁶

As an Important Factor in Some Historical Events

As in France where salt was a contributing factor to the popular discontent which led to the Revolution, salt was an important factor in the development of a number of major events throughout Chinese history.

The development of ancient Chinese culture in the second millennium B.C. along the middle Hwang Ho, the growth of the Ch'i (ca. 1122-221 B.C.) bordering the Gulf of Chihli,²⁷ and the expansion of the Ch'in (221-206 B.C.) all

²⁵Fu-hsün, "Hu Chün chün yen-cheng kai-liang-i chih ping-lun" (Comments on Mr. Hu's Suggestions for the Salt Administration Reform), YCTC, Vol. 1, No. 7 (August 1913), Hsüan-lun II pp. 1-14; reference on p. 7.

²⁶Boris P. Torgasheff, "Salt in China and Elsewhere," Chinese Economic Journal, Vol. 4 (1929), pp. 476-497; reference on p. 476.

²⁷Wolfram Eberhard, A History of China (3rd ed., Berkeley, California, 1969), p. 40.

were partly attributed to their possession of salt resources.²⁸

Salt played an important role in maintaining political independence of an area from the control of the central government in imperial China. Since China was unified for the first time in the Ch'in dynasty, no major region of China Proper without its own salt source had ever gained independence from the jurisdiction of the central authorities. Two major peripheral regions that had maintained independence from annexation by the Chinese central power for a long time in the past were Yunkwei (Yehlang or Nanchao) in the southwest and Fukien (Minyüeh or Yüeh) in the southeast. Both had local salt sources for centuries. Eberhard points out that in the period of political fragmentation, Szechwan was much better off than any other part of China as it was the principal tea-producing region and an important producer of salt during the tenth century.²⁹ In the early 1930's,

²⁸A prominent Chinese historical geographer points out that the purpose of Ch'ih-yu crossed the middle Hwang Ho to attack Huang Ti at Cholu was trying to gain the control of the salt sources in Chiehchih. The legendary Huang Ti, the Yellow Emperor, is the earliest ruler (ca. 2697 B.C.) of China recognized by the historian Ssuma Ch'ien who wrote the first general history of China in the first century B.C. Recent studies in paleography seem to prove the existence of Huang Ti in ancient China. See Ch'i-yün Chang, Chinese History of Fifty Centuries, Vol. I, Ancient Times (Taipei, 1962), pp. 72-75.

²⁹Eberhard, op. cit., footnote 27, p. 200.

one of the factors causing the defeat of the Red Army in southern Kiangsi was its lack of salt supply. The Nationalist Government started a blockade surrounding the Red Army from October, 1933. The inland province of Kiangsi produces no salt. Deprivation of salt undermined the health of the Red Army as well as that of the ordinary inhabitants. After a year, the blockade was so successful that the Communist Army had to break out of Kiangsi or be forced to surrender.³⁰

In the fourteenth century, the heavy salt tax was a contributing factor to the popular discontent which led to the overthrow of the Yüan dynasty. A number of leaders of the malcontents were even directly associated with the salt trade. For example, Chang Shih-ch'eng was a junk master engaged in the shipping of salt in Kiangsu and Fan Kuo-chen was a salt merchant from Chekiang.³¹ Control of salt and its financial gain frequently became an immediate objective

³⁰See Charles P. Fitzgerald, The Horizon History of China (New York, 1969), p. 376. It was said that the tactics of blockade were suggested by the German General Hans von Seeckt. See John Robottom, Twentieth Century China (New York, 1971), p. 61. See also Joseph Needham, Clerks and Craftsmen in China and the West (Cambridge, England, 1970), pp. 24-25 and 33.

³¹Chang T'ing-yü, et al., Ming-shih (History of the Ming Dynasty) (Reproduction of 1739 edition; Taipei, n.d.), chüan 123, Vol. 3, pp. 1408-1413.

of revolutionaries, rebels, brigands, and other organized malcontents in China. In the mid-nineteenth century, one of the purposes of the T'ai-p'ing rebels' advance to Yangchou was to gain control of the salt source in the lower Yangtze area. Yangchou was the leading collection and distribution center of salt for the entire middle and lower Yangtze basin.³² Salt smuggling in fact had formed a major economic basis for banditry in traditional China.³³

The system of kuan-yün or official transport of salt which was instituted in 1877 in Szechwan Province was also a contributing factor to the popular discontent which led to the pro-revolution movement in that province in the very last year of the Ch'ing dynasty.³⁴

The salt industry also played a leading role in Chinese foreign relations in late Ch'ing times. The salt tax

³²The T'ai-p'ing rebels made large profits by selling salt obtained from Huainan. A great quantity of the salt was shipped and sold outside the area held by the rebels. See Wang Ting-an et al., Liang-huai yen-fa chih (Compendium on Salt Administration of Lianghuai Region) (Nanking, 1905), chüan 54, p. 31.

³³Ho Hsi-ya, Chung-kuo tao-fei wen-t'i chi yen-chiu (A Study of the Bandit Problem in China) (Shanghai, 1925), pp. 43-44. See also Thomas A. Metzger, "Chinese Bandits: the Traditional Perception Re-evaluated," Journal of Asian Studies, Vol. 33, No. 3 (May 1974), pp. 455-458; reference on p. 457.

³⁴Lin Chen-han, Ch'uan-yen chi-yao (Essentials of the Salt Industry in Szechwan) (Shanghai, 1916; revised edition, 1919), preface p. 1 and preceding p. 437.

served as one of the items pledged for the payment of the Boxer Indemnity.³⁵ It also had been used as a guarantee for a number of foreign loans since the late nineteenth century. The salt tax was first used as a guarantee for the German and British loans of 1895 and later for the loan from the Six Power Banking Syndicate in 1921.³⁶

The salt industry served as an important source of national and regional military expenses since the middle nineteenth century in China. Tseng Kuo-fan, Commander of the Hsiang Army, who directed the sanguinary campaigns which finally led to the suppression of the T'ai-p'ing rebels, and Li Hung-chang, Commander of the Huai Army, who was also well known as a modernizer in the nineteenth century, both obtained a large part of military expenses for their army from salt taxes. The position of the Huai Army, as a protector of the salt trade, made it possible for Li

³⁵See E. T. Williams, "Taxation in China," Quarterly Journal of Economics, Vol. 26 (1912), pp. 482-510; reference on Pp. 505-506. See also Feuerwerker, op. cit., footnote 18, pp. 44-46.

³⁶See Esson M. Gale, "Public Administration of Salt in China: A Historical Survey," Annals of the American Academy of Political and Social Sciences, Vol. 152 (1930), pp. 241-251; reference on p. 241. Also see Hsu I-shen, comp., Chung-kuo chin-tai wai-chai-shih t'ung-chi tzu-liao, 1853-1927 (Statistics of Chinese Foreign Debts, 1853-1927) (Peking, 1962); Huang Feng-hua, Public Debts in China (New York, 1919); and T'ang Hsiang-lung, "Min-kuo i-ch'ien ti p'ei-k'uan shih ju-ho ch'ang-fu ti" (A Study of the Indemnity Payments before 1911), CCCYC, Vol. 3, No. 2 (1935), pp. 262-291.

Hung-chang to supervise the salt monopolies. The Huai Army's income from salt was generally the same year after year. Since a specific amount of that income was earmarked for the Army, it assured the Army of a fairly definite income relatively secure from appropriation by other provincial agencies. Statistics for the late nineteenth century indicate the Huai Army each year received nearly 800,000 taels from salt which accounted for a little more than one fifth of the total income it received from all sources.³⁷ In the late nineteenth century, two fifths of the tax levied on salt in Yünnan Province was appropriated for military expeditions against the Mohammedan risings from 1855 to 1873.³⁸ In Kwantung Province the salt tax was called hsiang which literally means servicemen's pay rather than k'o which means tax, as it was a major source of military expenses there.³⁹

Salt merchants formed a special group. In the old examination system, there was a quota in the selection of

³⁷See Stanley Spector, Li Hung-chang and the Huai Army: A Study in Nineteenth-Century Chinese Regionalism (Seattle, 1964), pp. 93, 125 and 213-217. Also see Chia Chih-fang, op. cit., footnote 14, pp. 58-73.

³⁸Liu Chün, "Ch'ing-tai Yün-nan ti yen-wu" (Development of Salt Administration in Yünnan Province during the Ch'ing Dynasty), CCCYC, Vol. 2, No. 1 (1933), pp. 27-141; reference on p. 130.

³⁹See CYFC, chüan 226, p. 1.

government students (sheng-yüan) for the salt merchants. This separate quota did not show discrimination against them but rather was special favor granted to them in consideration of their financial contribution to the government. For example, in 1858, salt merchants in Szechwan Province were permitted to have separate quotas as a reward for their huge contribution to the military fund. In this way, sons of salt merchants would have a better chance to enter the gentry class than others.⁴⁰

The salt industry also played an important role in the social development of the Ch'ing dynasty. Taking the salt merchants of Yangchou as an example, due to the monopoly of salt granted to them by the imperial government, they boasted of some large individual fortunes and certainly the largest aggregate capital possessed by any single commercial or industrial group in China during the eighteenth century. It has been estimated that during the period of prosperity the total capital accumulated by these merchants was about 75,000,000 taels of silver. Many of these merchants, particularly the ones who had better educations, used their wealth for patronizing scholars and poets or for

⁴⁰During the nineteenth century, the total income of the salt merchants in China was estimated at about 43,500,000 taels annually and this income went mainly to a few hundred salt merchants. See Chung-li Chang, The Income of the Chinese Gentry (Seattle, 1962), pp. 188-190.

cultivating expensive hobbies as bibliophiles and art connoisseurs. The amount of money so spent appears to have been unusually large, accounting in large measure for the splendid cultural and intellectual development that characterized the lower Yangtze area during that time.⁴¹ Gardens of the gentry have been considered as a visible element of Chinese landscape.⁴² The lower Yangtze valley has been particularly well-known for its numerous private gardens, most of which were built during the Ch'ing dynasty by these rich salt merchants.

As an Indicator of the Spatial Organization of Traditional Chinese Economy

Salt production is a geographical phenomenon and deserves geographic study. The sources of salt supply in Ch'ing China were so widespread that the commercial production of salt occurred in every province in China Proper except for three, i.e., Anhwei, Kiangsi and Kwangsi provinces. Sixteen methods of production were employed in different areas because of different types of raw materials of salt and different characteristics of the local physical

⁴¹See Ping-ti Ho, "The Salt Merchants of Yang-chou: A Study of Commercial Capitalism in Eighteenth-Century China," Harvard Journal of Asiatic Studies, Vol. 17 (1954), pp. 130-168.

⁴²Yi-fu Tuan, China (Chicago, 1969), pp. 121-125; and Liu Chin-ping et al., Chung-kuo chien-chu chien-shih (An Outline History of Chinese Architecture), Vol. 1 (Peking, 1962), pp. 244-267.

environment. The distribution of salt involved all types of transportation available in traditional China and these varied from one region to another. Being consumed universally, salt was a common merchandise in every rural market. Its flow was well geared into the national and regional trade in general and in the local marketing structure in particular. The exchange of commodities in rural markets of less populous and prosperous localities was limited to only a few items. Yet salt was one of them.⁴³ As a consumer good, salt was in most cases an imported item and its vertical flow terminated in what Skinner has termed standard markets for peasant consumption.⁴⁴ Numerous salt taxes were levied with different rates in different areas. The absolute total amount of salt consumption varied from area to area and so did the per capita consumption. All these locational characteristics of the salt industry and salt distribution jointly make the salt industry an interesting topic particularly suitable for geographical study.⁴⁵ The

⁴³See Kung-chuan Hsiao, Rural China (Seattle, 1960), pp. 20-24.

⁴⁴G. William Skinner, "Marketing and Social Structure in Rural China," Journal of Asian Studies, Vol. 24 (1964), pp. 3-43; reference on pp. 6-10.

⁴⁵Richard L. Morrill, The Spatial Organization of Society (Belmont, California, 1970), pp. 3-5.

salt industry represents an important topic in the study of the spatial organization of traditional Chinese society.

In sum, the salt industry was of prime importance in Ch'ing China. It was a leading source of government revenue as well as a major industry. In the development of major historical events, salt played an important role. As it varies in time and space, the salt industry provides an interesting topic suitable for a systematic study of the spatial organization of traditional Chinese society in historical geography.

Chapter III

ADMINISTRATIVE SYSTEM OF THE SALT INDUSTRY

The public control of salt in China has had an eventful history that can be traced back to the very remote past. By the Ch'ing period, a complicated administrative system for the salt industry had evolved. Before discussing the spatial structure, an examination of some of the major elements of the salt administration would be appropriate, so that a better understanding of the intricacies of the industry can be achieved.

Evolution of the Salt Administration in China

The whole system of the salt administration of Ch'ing China could be identified as a development of concepts and methods devised and improved upon under certain historical exigencies. During the Chou dynasty (ca. 1122-255 B.C.), salt was taxed at its source, and anyone could engage in salt production and marketing in all the feudal states except for Ch'i. In the seventh century B.C., Premier Kuan Chung of Ch'i implemented a state monopoly of salt. He believed that a poll tax might breed popular discontent, but a salt monopoly would enable a state to collect a revenue

comparable to a head tax, which might remain undetected by its people. Under the Ch'i system, private production was allowed, but distribution was entirely in the hands of the government.¹

The salt industry engaged in free trade in the Ch'in dynasty (256-207 B.C.) and at the beginning of the Former Han dynasty (206 B.C. - A.D. 24). In 119 B.C., a full monopoly of the industry was instituted due to an urgent need for more revenue as a result of Emperor Wu Ti's far-flung campaigns against the Huns. Private saltworks were brought under state control. Public salt-controllers were appointed, private salt-makers and retailers became government employees. In other words, the industry was nationalized. Later, salt merchants who were appointed to high positions in the salt administration proved corrupt, and the salt administration was then reorganized. In 110 B.C., it was put under a centralized administration and a p'ing-chun-fa or a price-balancing system was introduced.² In the Later Han

¹See Lewis Maverick, ed., Economic Dialogues in Ancient China: Selections from the Kuan-tzu, tr. by T'an Po-fu and Wen Kung-wen (Carbondale, Ill., 1954), pp. 113-115; and Marcel Granet, Chinese Civilization (New York, 1930), pp. 87-88.

²In the first century B.C., inspired by Emperor Chao Ti, there was a debate over the state monopoly on salt and iron between government officials led by Sang Hung-yang advocating the monopoly system and a group of Confucian scholars in doctrinaire opposition. See Huan K'uan, tr. by Esson M. Gale, Discourses on Salt and Iron: A Debate on

(A.D. 25 - 220), the monopoly system was abolished, and the industry entered into free trade again. A salt tax was collected at saltworks by thirty-four salt controllers in twenty-eight salt-producing commanderies. The new system opened the trade to free competition.

The following 360 years of division saw relatively little innovation. China was then reunited under the Sui (589 - 618) and the T'ang (618 - 907) dynasties for a flourishing period of three centuries. In A.D. 585, an absolutely free trade system was established and lasted for 112 years. Later, in the middle of the eighth century, a military campaign to quell the An Lu-shan rebellion called for more revenue.³ Yen Chen-ch'ing, then the Commissioner for Pacification of Hopeh, successfully employed a public monopoly over the local salt industry to raise funds for military expenses.⁴ Tiwu Ch'i, then the Commissioner of Salt and Iron, took Yen's idea and introduced a salt reform.

State Control of Commerce and Industry in Ancient China (Leiden, 1931). See also Shun-ming Chang, "The Genesis and Meaning of Huan K'uan's Discourses on Salt and Iron," Chinese Social and Political Science Review, Vol. 18, No. 1 (1934), pp. 1-52.

³Denis Twitchett, "The Salt Commissioners after An Lushan's Rebellion," Asia Major, New Series, Vol. 4 (1954-55), Part I, pp. 60-89.

⁴Chü Ch'ing-yüan, T'ang-tai ts'ai-cheng shih (Financial History of the T'ang Dynasty) (Ch'angsha, 1940), p. 58.

Public salt offices were established to license saltworks and to acquire salt, which was then sold to consumers by government agencies. In A.D. 726, Liu Yen, who succeeded Tiwu Ch'i as the Commissioner, made some changes in Tiwu's scheme. One of these was that after the government added a certain percentage to the price as a profit, free trade would then be permitted. Another was the establishment of the system of ch'ang-p'ing-yen or price-regulating of salt. Under the system of free trade, salt merchants hesitated to ship salt to remote interior areas because it was not sufficiently profitable. The result was a salt shortage and soaring salt prices in these areas. Because of this, public salt storage was instituted in these areas. When the salt supply in an area was scarce and the price of salt high, the government would dump salt to keep the price low.⁵ Liu's second innovation was the establishment of hsün-yüan or salt patrol and inspection stations at strategic points, not only to combat smuggling, but also to gather market intelligence. This was really the original form of a system of the Ch'ing dynasty to prevent smuggling.⁶ Liu's system closely

⁵The system of ch'ang-p'ing-yen was still enforced in the Republican period during the first half of this century.

⁶See YFTC, chüan 85, p. 1. Also see Kaisaburō Hino, "Government Monopoly on Salt in T'ang in the Period before the Enforcement of the Liang-shui-fa," Memoirs of the Research Department of the Toyo Bunko, No. 22 (1963), pp. 1-55.

resembled what has been termed the chiu-ch'ang chuan-mai or monopoly at saltworks, a system that was repeatedly suggested by more modern salt reformers in the early twentieth century.⁷ During Liu's time, salt merchants were registered, and two marketing areas were delimited to facilitate salt distribution and to prevent salt smuggling, yet both measures were loosely practiced. After Liu's time, the trade of salt merchants gradually became a family inheritance; and two major marketing areas became well-defined, one for sea salt and another for lake salt.⁸ This was the origin of the system of chuan-shang yin-an or monopolistic merchants with exclusive marketing areas, a characteristic feature of the salt industry in Ch'ing China.

The salt administration system in the Sung dynasty (960 - 1279) was modified from earlier T'ang period procedures. Salt was collected from saltworks and stored in state warehouses. The salt was then distributed by a system called kuan-pan or government transportation, requiring free corvée from farmers to transport the salt, which imposed a burden on them; and consequently, deep resentment was

⁷S. A. M. Adshead, The Modernization of the Chinese Salt Administration, 1900-1920 (Cambridge, Mass., 1970), pp. 71-82.

⁸Ho Wei-ning, Chung-kuo yen-cheng shih (History of the Chinese Salt Administration) (Taipei, 1955), pp. 101-104.

stirred up among them. Shortly before the turn of the eleventh century, there was heavy military pressure from the Liao and Chin regimes in the north, and the Imperial Treasury fell short of funds. To raise revenue, the che-chung or equal-value system was instituted. Under this system, salt merchants who transported grain to northern frontiers were given a salt certificate called a chiao-yin, which, upon presentation at government salt depots, a merchant was entitled to receive a certain amount of salt as compensation. The che-chung system was the forerunner of the yin system of Ch'ing times. Later, however, the system degenerated as merchants made profit at the expense of the state by raising the price of grain and by lowering that of salt. Obviously, the system lost the spirit of equality. In the mid-eleventh century, Fan Hsiang, then the salt intendant of Chieh Chou, corrected such irregularity by introducing the salt note system (yen-ch'ao-fa), under which both the government transportation of salt and delivery of grain to northern frontiers by merchants, were suspended. Instead, the merchants paid cash for yen-ch'ao (salt notes) which were then presented at saltworks for delivery of salt.⁹ The Yuan dynasty

⁹For a general description of the salt administration and a detailed study of the yen-ch'ao system of the Sung dynasty, see Tai I-hsüan, Sung-tai ch'ao-yen chih-tu yen-chiu (A Study of the Salt Note System of the Sung Dynasty) (Shanghai, 1957).

(1280 - 1368) employed the certificate system (yin-fa) which was similar to the che-chung system of the Sung. During the Ming dynasty (1368 - 1644), the handling of the salt administration was in the k'ai-chung-fa which will be discussed in detail in Chapter VI, for this was closely related to the group system (kang-fa) of Ch'ing China.

Government Monopoly of the Salt Industry

In most traditional societies, governments controlled salt for fiscal reasons, and China was no exception. Chinese officials had exercised partial control from the seventh century B.C. However, neither unregulated trade nor complete government monopoly lasted for more than brief periods.¹⁰ Because of the widespread saltworks and large number of salt-producing households, it was rather difficult for the Ch'ing government to engage directly in the production of salt. The manufacturing of salt had been left to small salt-producing households (yen-hu). The retailing of salt was also left in the hands of small retailers throughout the country. The government could exercise control only

¹⁰A widely-believed myth, which persisted into recent times in Chinese public finance, was that government monopoly could yield much more money than either direct or indirect taxation. See Esson M. Gale, "Public Administration of Salt in China: A Historical Survey," Annals of the American Academy of Political and Social Sciences, Vol. 152 (1930), pp. 241-251; reference on p. 243.

over the wholesale transfer of salt between producers and retailers. One way to accomplish this was to acquire the salt of salt-producing households. The government could then transport this directly to a distribution center or leave this task to transport merchants (yün-shang). Lack of capital ruled out the possibility of the government handling the shipping and distribution of salt for the entire country. But the business was not left entirely to private merchants. The system adopted by Ch'ing to "monopolize" the industry was called shang-chuan-mai (also termed kuan-tu shang-hsiao) or merchant monopoly. This system originated in the Ming and was used throughout the Ch'ing periods.¹¹ It was not a complete monopoly by government because the wholesale and retail prices of salt were not fully controlled by the government, whose regulation of prices was considerably influenced by private salt merchants. Nominally, salt prices were regulated by the government, but exclusive salt agents could always afford to corrupt salt officials by bribing them with money and presents, or even extending such influence to the government itself by offering contributions when funds were urgently needed, thus inducing salt

¹¹Three different versions of the system, i.e., the yin-fa, the kang-fa and the p'iao-fa will be discussed in detail in Chapter VI.

officials to increase the selling price of salt.¹² The business was carried out by a limited number of licensed merchants (yin-shang), each of whom was the sole agent for the sale of salt in his marketing area (yin-ti). Therefore, there was no free trade. The system could be considered a compromise and was characterized by a combination of close official control, with subcontracting to privileged merchants.

Every year a salt-producing household was required to supply the state with a fixed amount of salt which was based on the estimated demand for salt and the production capacity of a given salt-producing household. The salt acquired by the government was stored at public salt depots (kung-yüan).¹³ From there, a licensed merchant was responsible for delivering the salt to secondary merchants in the designated market area.

In 1728, the government instituted a device called huo-fu-fa or the brine-boiling-period system. This system prevented salt smuggling by eliminating extra-production

¹²See China Salt Administration, Reports on the Re-organisation of the Salt Revenue Administration in China, 1913-1917 (Peking, 1919), pp. 35, 80 and 150.

¹³The storage depot was called yüan or chan in Lianghuai and Szechwan, t'o in Ch'anglu and Shantung, liao-t'ai in Hotung, ao in Liangche, and ts'ang in Fengtien, Kwangtung and Yunnan. See YFTC, chüan 39, p. 1.

through the establishment of a fixed boiling-time for a salt-producing household.¹⁴ After this, public salt depots were replaced by shang-yüan or commercial salt depots.¹⁵ The transfer of salt between salt-producing households and licensed merchants at the depots was supervised by salt officials. Licensed merchants paid a tax before the salt could be delivered at a designated depot.¹⁶

Under this system, the only possible advantage was that the government was able to enjoy an easy, quick collection of the salt tax from the licensed merchants who were easily dealt with because they were few in number. But this simplification in tax-collection yielded a very negative result, as the few licensed merchants and salt administrators often collaborated in evasion and corruption for their

¹⁴Saeki Tomi, Shindai ensei no kenkyū (The Salt Administration under the Ch'ing Dynasty) (Kyoto, 1956), pp. 39-44.

¹⁵Hsu Hung, "Ch'ing-tai Liang-huai ti ch'ang-shang" (Yard Merchants in Lianghuai during the Ch'ing Dynasty), Shih-yüan, No. 1 (1970), pp. 13-45.

¹⁶In the case of the Huainan area, the yüan-shang (salt storage merchant) shipped the salt from his salt storage in the vicinity of saltworks to the salt depot at Shiherhwei, on the north bank of the Yangtze southwest of Yangchou. The salt was then sold to yün-shang.

own benefit at the expense of the government and mass consumers.¹⁷ This collaboration, then, resulted in the adulteration of salt at the time of transport, in short-weighting during the transference of salt to retailers, and also in arbitrary increases in salt prices by licensed merchants with the acquiescence of "friendly" salt administrators. The final outcome was thus a low quality of salt at a high price. The victims were the consumers. Furthermore, the salt tax was a regressive tax, unfair to consumers with low incomes. Another victim was, of course, the government itself. Under this system, the government collected less revenue than it might have realized under a free-trade system. There was no competition; hence, the price of salt was high. When this occurred, the demand would also be low, and so were the sales. Higher prices also encouraged smuggling. In other words, if the price were low, the consumption of taxed salt would increase, and the revenue of the government would increase proportionally. But the shang-chuan-mai

¹⁷Big yang-lien-feng (extra salaries) were paid to salt officials in order that they might have no excuse for receiving bribery money from salt merchants. These extra salaries were many times bigger than regular salaries. See YFTC, chüan 16. The existence of these extra salaries indicates that many salt officials must have been corrupt.

system was a complete negation of these conditions.¹⁸ It is quite clear that the Ch'ing system of a partial monopoly of the salt industry was indeed a characteristic feature of the financial and taxation structure of imperial China. Government controls imposed on salt in Ch'ing China were also in sharp contrast to the degree of freedom enjoyed by taxed industries in a modern society.

The Structure and Function of the Salt Administration

For administrative purposes, China Proper was divided into ten salt administrative regions (Table 2, and Figures 1 and 2). These regions were basically delineated by topography and the location of salt-producing centers, but were modified by the structure of civil administrative divisions.

¹⁸Figures for France support the contention that the demand for salt changes with the change in price. In 1790, when the price of salt per kilogram was thirty cents, the per-capita consumption of salt was eight kilograms, while in 1793 when the salt gabelle was abolished and the price was twenty cents, the per-capita consumption of salt rose up to ten kilograms. Again, in 1812, the per-capita consumption of salt was 7.4 kilograms when the gabelle was twenty cents per kilogram; while in the next year, the former dropped to 3.3 kilograms because of a raise of the latter up to forty cents. India's experience also led many people to believe that a high duty, hence high salt price, checks, and a low duty encourages consumption of salt. See Federation of Indian Chambers of Commerce and Industry, Monograph on Common Salt (Calcutta, 1930), pp. 175-176; cited in I-shüan Sun, Salt Taxation in China, Unpublished dissertation, University of Wisconsin, 1953, p. 102. Also see China Salt Administration, op. cit., footnote 12, pp. 79-80.

Table 2.
The Salt Administrative Regions, 1900

Region	Number of hsien	Area Square km	%	Amount of Salt Distributed Million catties	%
Lianghuai	332	690,060	17.0	640	21.2
Huainan	277	533,819	13.2		
Huaipei	55	156,241	3.8		
Szechwan	211	686,317	16.9	550	18.2
Ch'anglu	208	412,419	10.2	400	13.2
Ch'anglu	184	211,442	5.0		
K'oupei	24	210,977	5.2		
Liangkwang	211	543,630	13.4	400	13.2
Liangche	126	146,519	3.6	350	11.6
Shantung	122	173,142	4.3	300	9.9
Hotung	182	362,080	8.9	150	5.0
Hotung	115	175,112	4.3		
Chinpei	54	99,353	2.4		
Suiyuan	13	87,615	2.2		
Fukien	56	99,764	2.5	130	4.3
Shenkan	122	594,952	14.7	50	1.7
Yunnan	76	348,393	8.6	50	1.7
Total	1,656	4,057,276	100.0	3,020*	100.0

*In addition, a total of 360 million catties of salt were distributed in Fengt'ien. It accounted for about one tenth of the national total.

Sources: S.A.M. Adshead, The Modernization of the Chinese Salt Administration, 1900-1920 (Cambridge, Mass., 1970), p. 11; YFTC, ch'uan 6, pp. 1-24; Chao Ch'uan-ch'eng, Ch'ing-tai ti-li yen-ke-piao (Tables of the Evolution of Civil Administrative Divisions of the Ch'ing Dynasty)

Sources (Continued): (Peking, 1955); and China, Nei-cheng-pu (Ministry of Interior), Chung-hua Min-kuo hsing-cheng ch'u-yü chien-piao (A Table of the Civil Administrative Divisions of the Republic of China) (Shanghai, 1947).

Navigable inland waterways provided the framework for these regions, each of which was a combination of a salt-producing center and a market area. As can be seen in Table 2, the sizes of these regions vary considerably. For example, the Lianghuai region, with an area of approximately 690,000 square kilometers, was almost seven times as large as that of Fukien, which had an area of less than 100,000 square kilometers. Since a salt administrative region was created for its own purposes, in territorial extent and function, it was distinguished from a province, the highest level of civil administrative division in Ch'ing China. A salt administration region also had its own jurisdiction. In other words, the former was independent of the latter, as exemplified by the Lianghuai region, which covered about five provinces, plus a substantial part of a sixth.

Ch'ing China lacked a centralized, unified salt administration.¹⁹ Its organization changed with time and varied from one region to another. In general, emphasis was placed on the control of salt distribution rather than on

¹⁹Li Chi-nung, "T'ung-ch'ou chiu-sheng yen-fa-i" (On the Reform of the Salt Administration in Nine Provinces), YCTC, Vol. 1, No. 5 (May 1913), Hsüan-lun pp. 1-6.

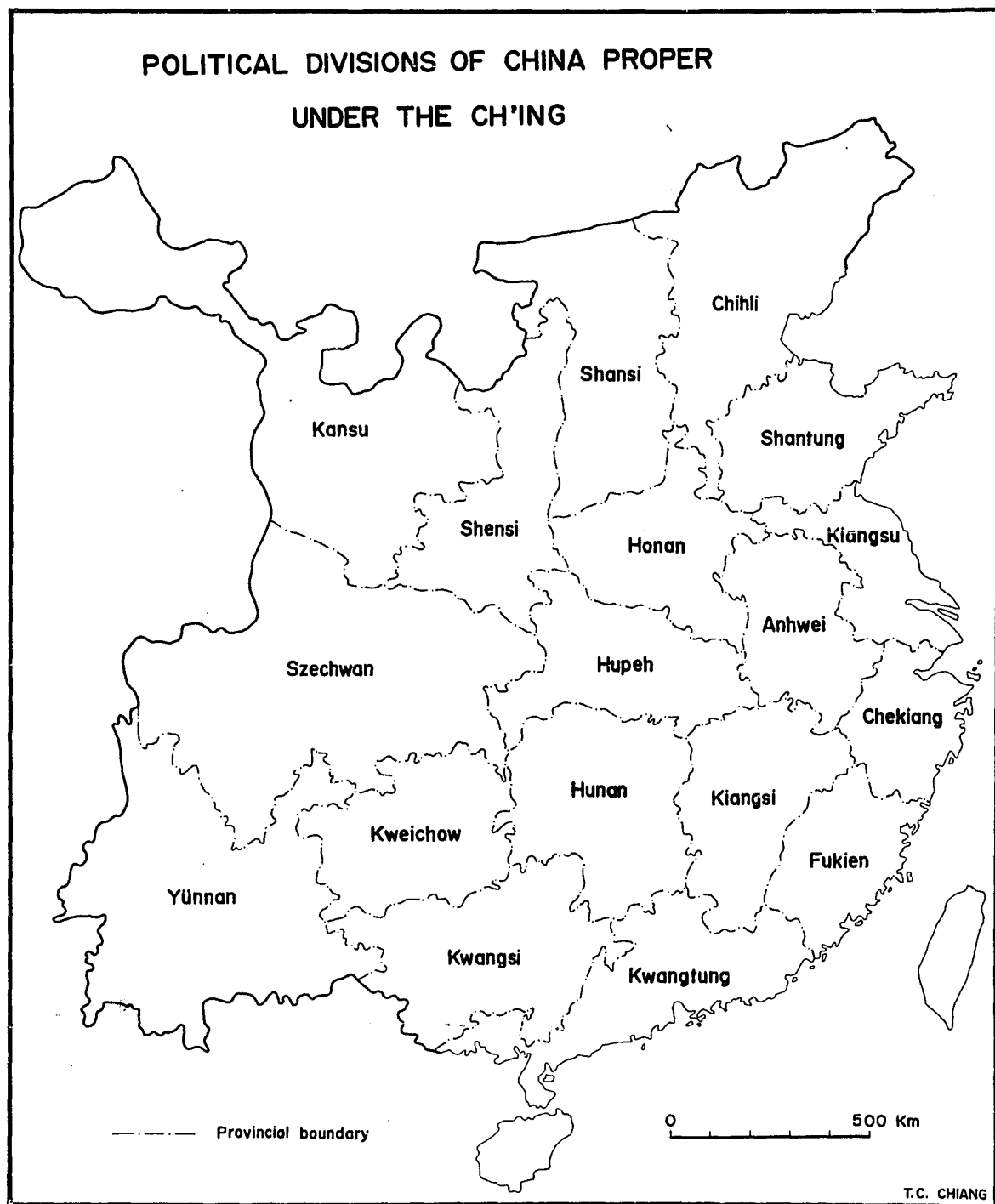


Figure 1

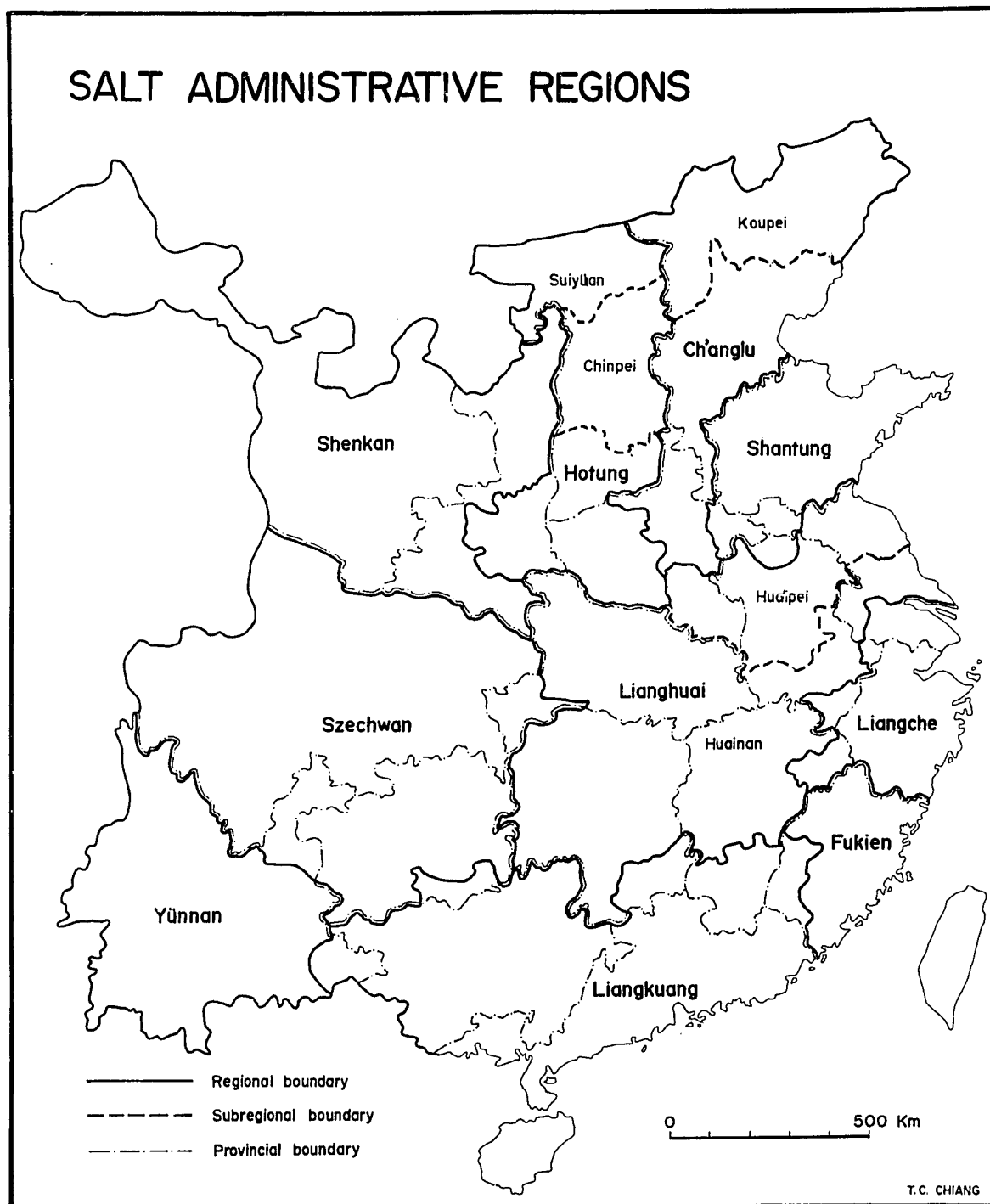


Figure 2

salt production. Consequently, little effort, if any, was made on the part of the salt administration to improve the techniques of salt production. The whole system of salt administration was not distinct from the rest of the Ch'ing bureaucracy in organization, personnel, or methods and shared with all of the bureaucracy a common pre-modern character, a lack of "rationalization" in Max Weber's sense, in that its officials were corrupt and insufficiently specialized, and to compound these inadequacies, they were too much involved in politics.²⁰

For the central government, the collection of salt revenue was a part of the responsibility of the Board of Revenue (Hu-pu). The Bureau of Shantung (Shan-tung ch'ing-li ssu) under the Board was in charge of auditing the accounts of salt for the whole country. In early Ch'ing times, for the whole country, the salt industry was actually administered by a number of salt controllers (tu-chuan yün-yen shih) and salt intendants (yen-fa tao). The duties of the salt controller or intendant concerned the livelihood of the salt workers, the supply of and demand for salt, retail prices, and the conditions of salt transportation. In addition, salt controllers and intendants were under the

²⁰ Adshead, op. cit., footnote 7, pp. 29-38. Also see Max Weber, Economy and Society, edited by Guenther Roth and Claus Withich, and translated by Ephraim Fischhoff et al. (New York, 1958).

surveillance of a salt censor (hsün-yen yü-shih) in each region or province, who were appointed annually by the Censorate (Tu-ch'a yüan). Later, in 1680, the system of salt censors was abolished, and in each region a salt commissioner (yen-cheng) was appointed in charge of the salt administration. In the Ch'anglu and Lianghuai²¹ salt administrative regions, the commissioner was a full-time employee; in others, this was a concurrent duty of the governor-general (tsung-tu) as in the Fukien, Shenkan, Szechwan and Liangkwan regions; or of a governor (hsün-fu), as in the Liangche, Yünnan and Hotung regions. Clearly, until 1909 when the Supervisory Bureau of the Salt Administration (Tu-pan yen-cheng-ch'u) was established, there was no central organization to administer the industry for the whole country. Two years later in 1911, in the very last year of

²¹Due to the inability of the salt commissioner of the Lianghuai salt region in handling salt smuggling cases involving local civil governments, by the end of 1830, the office of the salt commissioner was abolished. The salt administration of the Lianghuai salt region was then put under the governor-general of Liangkwan. The governor-general was also a salt commissioner. This was mentioned by an imperial endorsement of a memorial submitted by Governor-General T'ao Chu. See T'ao Chu, "Hui-t'ung ch'in-ch'ai ni-t'ing yen-wu chang-ch'eng che-tzu" (A Joint Memorial Submitting a Draft of Regulations of Salt Administration), TWIKCC, Vol. 2, pp. 1049-1077; reference on p. 1077.

the Ch'ing dynasty, the bureau was again reorganized as the Bureau of Salt Administration (Yen-cheng yüan).²²

On the regional level, the Lianghuai region may be taken as an example to illustrate the structure and function of the salt administration. The Salt Commissioner was stationed at Chiangning. In the producing area, under the Salt Commissioner, there was then a Salt Controller stationed at Yangchou, plus three deputy salt controllers (yün-p'an) stationed at Shihkang, Tungt'ai and Panp'u. In addition, there was a district treasury keeper (k'u ta-shih) who collected salt taxes, two salt examiners (p'i-yen-so ta-shih), one at Icheng and the other at Huaian, to examine salt certificates and to release salt to salt merchants, and twenty-three salt-works superintendents (yen-k'o ta-shih) whose duty was to supervise the production activities of all salt-producing households in order to prevent salt smuggling. Finally, there were seventeen salt inspectors (hsün-chien) stationed at strategic points to check salt passing through and to prevent salt smuggling.²³

²²YFTC, chüan 14, pp. 5-20; Chang Ch'i-yün et al., eds., Ch'ing-shih (History of the Ch'ing Dynasty) (Taipei, 1961), chüan 117, Vol. 2, pp. 1391-1392; and Tseng Yang-feng, Chung-kuo yen-cheng shih (History of Chinese Salt Administration) (Shanghai, 1937), pp. 113-125.

²³Hsieh K'ai-ch'ung et al., Liang-huai yen-fa chih (Compendium on Salt Administration of Lianghuai Region) (Reproduction of 1693 edition; Taipei (1966), pp. 434-435.

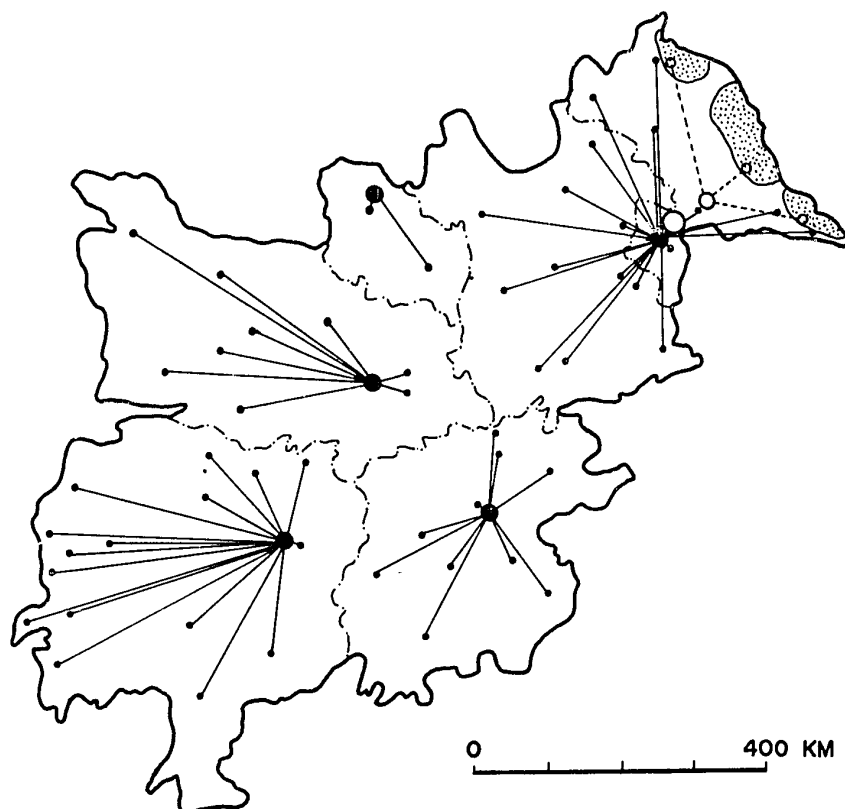
In the marketing area, there were four salt commissioners, one in each province; namely, in Anhwei, Kiangsi, Hupeh, and Hunan. In addition, there were five salt intendants established in four circuits (tao): namely, Chiangning Tao, covering eleven prefectures (fu), six chou and one t'ing in Kiangsu and Anhwei provinces; Yüanlin Tao, covering ten prefectures in Kiangsi Province; Wuch'ang Tao, covering nine prefectures and one chou in Hupeh Province; and Ch'angpao Tao, covering nine prefectures, two chou and five t'ing in Hunan Province. Then there was a grain and salt intendant (liang-yen tao) in Honan Province to administer the salt taxation of two prefectures in that province. Their function was to collect salt taxes and to prevent salt smuggling (Figure 3).²⁴ Clearly, this indicates that the two functions of the salt administration were the collection of the salt tax and the prevention of smuggling.



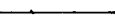
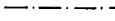
Problems of Salt Revenue Collection

As a major government institution in Ch'ing China, the salt administration's notable pre-modern feature was its lack of systematization. The system of salt taxation was very complicated, and was characterized by a proliferation






²⁴YFTC, chüan 15, pp. 6-9.

THE ADMINISTRATIVE STRUCTURE OF THE LIANGHUAI SALT REGION



-  Salt-producing Area
-  Administrative Relation: Production
-  Administrative Relation: Distribution
-  Provincial Boundary

Seats of Salt Administrators

-  The Salt Commissioner
-  The Salt Controller
-  Deputy Salt Controllers
-  Salt Intendants
-  Prefects or District Magistrates

T.C. CHIANG

Figure 3

of anomalies.²⁵ In a pre-modern context, this complication might be an inevitable element in the process whereby the bureaucracy adjusted itself to local conditions beyond its control. In order to understand how the system operated, a number of problems related to salt taxation must be isolated and clarified.

As mentioned in Chapter II, the annual amount of tax derived from salt was reported to be from less than one-fifth to more than one-half of the total revenue that the imperial government collected during the Ch'ing period. And each year, the salt revenue received by the imperial government was only a part of what was actually collected.²⁶ The absolute amount of salt tax collected annually by the government increased from two million taels in the middle-seventeenth century to more than forty million taels at the end of the Ch'ing dynasty. During the early Ch'ing period, in order to win the good will of the Chinese people, the Manchus abolished all surtaxes of the late Ming and remitted a number of regular taxes. Consequently, the Ch'ing

²⁵ A prominent Chinese salt reformer once stated that with twenty years' working experience with the salt administration, he was still not able to find out all its problems. See Chien Chang, A Plan for the Reform of the National Salt Administration (Shanghai, 1913), p. 7.

²⁶ This is true not only of the salt tax, but also of all other taxes. See E. T. Williams, "Taxation in China," Quarterly Journal of Economics, Vol. 26 (1912), pp. 482-510.

government collected a salt tax of only two million taels. Later, Emperor Ch'ien-lung's extravagance, his campaigns on China's peripheries, and the prolonged military action between 1796 and 1802 against the rebellion of the White Lotus Sect rapidly drained the imperial treasury. More revenue was needed. For one century, from the middle-eighteenth century, the annual revenue derived from salt was about seven million taels, more than triple that in the seventeenth century. The outbreak of the T'ai-p'ing Rebellion in 1851 forced the government to raise funds by various means, the most important being a form of revenue in the likin, which was also levied on salt. From that time, a total of seven to nine million taels of salt likin was collected each year, and after the early nineteenth century, surtaxes were added for various purposes. In the late nineteenth century, the amount of surtax from salt was nearly twice that of the salt likin. In 1910, one year before the Ch'ing dynasty ended, a total of more than forty-seven million taels was collected from the salt tax.

Before the middle-nineteenth century, there were only two kinds of salt taxes: one on saltworks, and the other on salt. The former included taxes on salt flats, salt ovens, salt pans and brine wells; and the latter, included the regular salt tax, the contract salt tax and a long list of miscellaneous exactions (Figure 4). The original tax levied on salt was termed the "regular salt tax," which was of

THE CLASSIFICATION OF SALT TAXES IN CH'ING CHINA

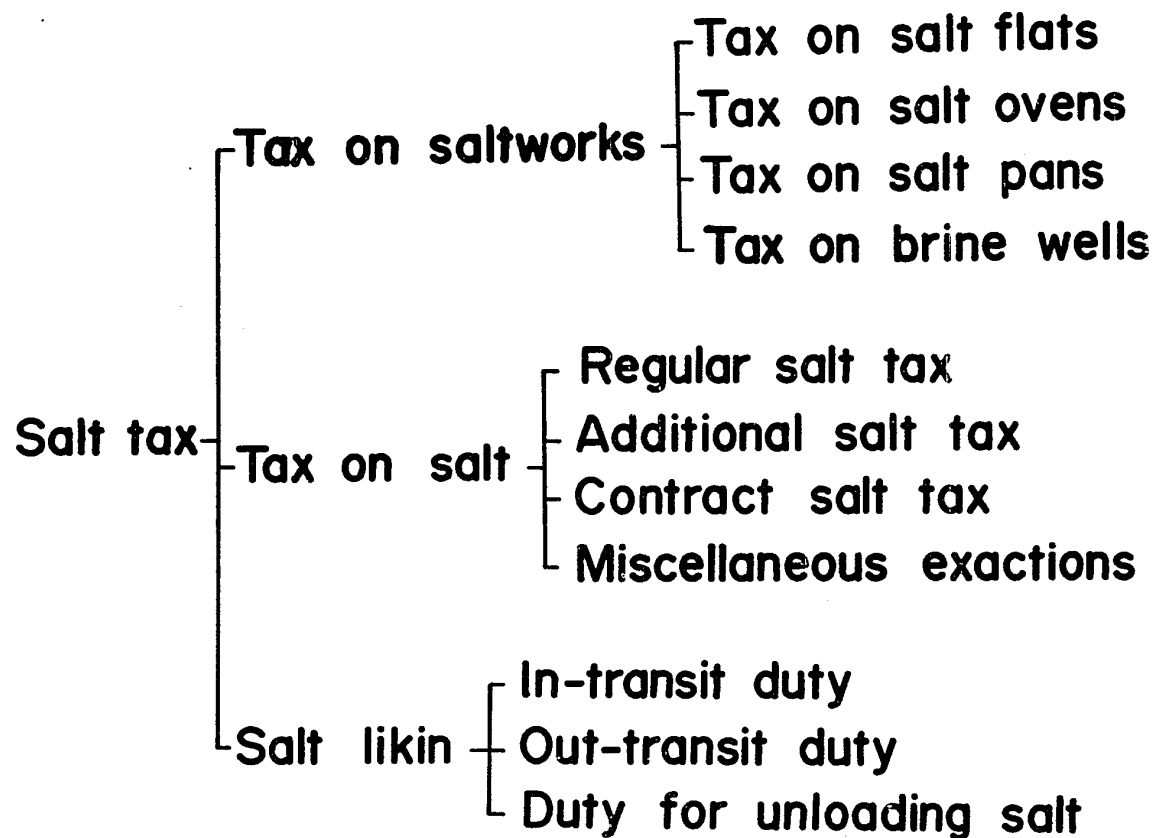


Figure 4

primary importance. Each year this accounted for more than half the total salt tax (Table 3).

Table 3.
Salt Tax, 1841

Items	Revenue in Taels	Percent
Regular Salt Tax	4,061,545	54.3
Tax on Saltworks	642,703	8.6
Contract Salt Tax	56,398	0.8
Miscellaneous Exactions	2,715,233	36.3
Total	7,475,879	100.0

Source: Liu Chin-tsao, comp., Ch'ing-ch'ao hsiu-wen-hsien t'ung-k'ao (Encyclopedia of Historical Records of the Ch'ing Dynasty, Continued) (Reprinted edition; Taipei, 1959), chüan 35, Vol. 2, p. 7891.

Later, particularly in the late nineteenth century, more taxes were added (Figure 4).²⁷ These were designed to raise funds for various purposes, including the subsidizing of the Yellow River works, the paying of foreign indemnities, the financing of railroad construction, the raising of military funds and the remitting of foreign loans. For example, during the reigns of Ch'ien-lung and Chia-ch'ing, salt merchants of Lianghuai, Liangche, Ch'anglu and Shantung contributed a total of some thirty million taels for military

²⁷ CYFC, chüan 3, p. 3.

campaigns.²⁸ In the eighteenth century, salt merchants had already made contributions for various purposes. Gradually, contributions became an important item of salt revenue. The salt likin was first levied in the lower Yangtze area, and then adopted throughout the country. However, due to the proliferation of new taxes on salt, the relative importance of the traditional, regular salt tax in the total salt revenue, gradually decreased. In the closing year of the Ch'ing dynasty, these additional salt taxes accounted for more than one-third of the total salt revenue. Nearly one-fifth was the salt likin.²⁹ Various contributions, profits gained from transport and miscellaneous exactions, together accounted for one-fifth, while the share of the regular salt tax accounted for less than one-sixth of the total (Table 4).

Among the salt administrative regions, Lianghuai accounted for nearly half of all the salt revenue in the seventeenth century; Liangche, for one-seventh; Ch'anglu, for one-tenth; and Hotung for less than one-tenth. At that time,

²⁸See Chao Erh-sun et al., Ch'ing-shih kao (Draft History of the Ch'ing Dynasty) (Mukden, 1937), chüan 129, p. 6.

²⁹One source even shows that the salt likin accounted for more than half of all salt revenue in the late nineteenth century. See K'un-kang et al., Ta-Ch'ing hui-tien (Institutes of the Ch'ing Dynasty) (Reproduction of 1899 edition; Shanghai, 1936), chüan 20, Vol. 3, pp. 218-220.

Table 4.
Salt Revenue, 1910

Items	Taels	Percent
Additional salt tax	18,610,403	39.2
Salt likin	8,376,333	17.7
Regular salt tax	7,681,474	16.2
Public salt transport	5,152,509	10.9
Contract salt tax	2,637,388	5.6
Extra income	2,477,843	5.2
Tax on saltworks	245,617	0.5
Miscellaneous exactions	2,271,802	4.8
Total	47,453,369	100.0

Source: Chien Chang, A Plan for the Reform of the National Salt Administration (Shanghai, 1913), p. 39.

Szechwan, as a salt region, was of little importance and accounted for less than four percent of the total salt revenue. This remained the main spatial arrangement of the salt revenues for some two hundred years, with no significant change until the mid-nineteenth century. Because of the blockage of salt trade routes in the middle Yangtze Valley during the T'ai-p'ing Rebellion, Hupeh and Hunan provinces could not, as previously, obtain salt from the Lianghuai region, and turned instead to the Szechwan and Liangkwan regions for their salt supply. Consequently, both Szechwan

and Liangkwan became principal regions of salt revenue, and the relative importance of the Lianghuai region decreased. A second significant change was the rise of Manchuria as an important source area of salt revenue. Manchuria (Fengt'ien, Kirin and Heilungkiang) accounted for almost one-tenth of the total salt revenue by the end of the Ch'ing period. This was closely related to Chinese colonization and economic development in that area (Table 5 and Table 6).³⁰

As salt was heavily taxed, the largest single retail price determinant was neither production costs nor transport costs, but government taxes. In Chekiang, for example, taxes accounted for about forty percent of the final retail price of salt (Table 7). Thus, salt taxation constituted a very important factor affecting the salt industry. Areas near a producing center paid less tax than distant markets, notwithstanding the lower cost of transport. This was due to the threat of smuggling from the saltworks, which heretofore had not been well-controlled. People in Szechwan paid a low rate of duty, but increased costs of production and transportation made consumer costs as high as those paid in the middle and lower Yangtze Valley, which consumed low-cost

³⁰Robert H. G. Lee, The Manchuria Frontier in Ch'ing History (Cambridge, Mass., 1970).

Table 5.
Annual Salt Revenue for Selected Periods

Region	Early-18th Century ^a		Mid-19th Century ^d		Late-19th Century	
	Taels	Percent	Taels	Percent	Taels	Percent
Lianghuai	3,451,207	44.4	2,128,301	42.3	5,299,902	42.3
Szechwan	302,247	3.9	151,699	3.0	2,031,848	16.2
Liangche	1,021,281	13.1	423,839	8.4	1,593,880	12.7
Ch'anglu	660,373	8.5	502,553	10.0	945,647	7.5
Liangkwang	712,034	9.1	603,851 ^e	12.0	910,459	7.3
Hotung	541,147 ^b	7.0	539,836 ^f	10.7	582,243	4.6
Yünnan	373,771	4.8	347,350	6.9	456,330	3.3
Fukien	347,010	4.5	147,386	2.9	381,216	3.0
Shantung	325,067	4.2	153,429	3.1	282,997	2.3
Shenkan	38,295	0.5	27,927	0.6	47,822	0.4
Total	7,772,432 ^c	100.0	5,026,171	100.0	12,532,344 ^g	100.0

Table 5.
(Continued)

^aFor the period of K'ang-hsi Reign that ended in 1722.

^bIncluding 17,800 taels of salt tax on earth salt collected in Chinpei.

^cIncluding 279,880 taels of tax on saltworks.

^dAverage of salt revenue actually collected in 1841-1842, 1845 and 1849.

^eIncluding 548,301 taels for Kwangtung, 47,617 for Kwangsi, and 7,933 for Kweichow.

^fIncluding 17,800 taels of tax allocated by quota for earth salt in Chinpei.

^gExcluding 211,362 taels for Fengt'ien.

Sources: Wang Ch'ing-yün, "Chih-sheng yen-k'o-piao" (Table for the Salt Revenue during the Ch'ing Dynasty) in Hsi-ch'ao chi-cheng (Collected Works on Government Affairs of Our Glorious Dynasty) (1898; reprinted edition; Taipei, 1966), chüan 5, pp. 28b-33a; Liu Chin-tsao, comp., Ch'ing-ch'ao hsiu-wen-hsien t'ung-k'ao (Encyclopedia of the Historical Records of the Ch'ing Dynasty, Continued) (Reprinted edition; Taipei, 1959), chüan 35, Vol. 2, p. 7891; and K'un-Kang et al., Ta-Ch'ing hui-tien (Institutes of the Ch'ing Dynasty) (Reproduction of 1899 edition; Shanghai, 1936), chüan 20, Vol. 3, pp. 218-220.

Table 6.
Annual Salt Revenue for Late Ch'ing Dynasty

Province	ca.	1	9	0	1	1	9	1	0	1912 (budgeted)	
	Taels				Percent	Taels			Percent	Taels	Percent
Hupei	3,777,430				16.0	1,760,177			3.7	1,768,584	3.7
Szechwan	3,500,000				14.8	6,261,269			13.2	6,721,993	14.1
Kiangsu	2,600,000				11.0	13,860,474			29.3	14,014,690	29.5
Anhui	2,306,173				9.8						
Kwangtung	1,357,700				5.7	4,900,346			10.3	5,486,962	11.5
Hunan	1,607,767				6.8	1,549,669			3.3	251,925	0.5
Chihli	1,332,000				5.6	5,170,030			10.9	5,236,818	11.0
Kiangsi	1,320,054				5.6	72,120			0.2	72,120	0.2
Yunnan	1,185,300				5.0	1,164,595			2.4	1,343,501	2.8
Chekiang	900,000				3.8	2,384,329			5.0	2,406,329	5.1
Fukien	750,000				3.2	1,084,372			2.3	1,088,213	2.3
Shansi	684,452				2.9	1,346,162			2.8	1,346,162	2.8
Shantung	600,000				2.5	1,421,838			3.0	1,725,662	3.6
Kwangsi	490,000				2.1	567,528			1.2	489,979	1.0
Fengt'ien	480,000				2.1	1,655,694			3.5	1,655,694	3.5
Honan	400,000				1.7	296,322			0.6	296,322	0.6
Kweichow	200,000				0.8	434,128			0.9	13,640	0.03
Kansu	70,000				0.3	167,518			0.4	167,518	0.4
Shensi	60,000				0.3	441,322			0.9	441,322	0.9
Hsinchiang	10,500				0.04					19,618	0.04

Table 6.
Annual Salt Revenue for Late Ch'ing Dynasty
(Continued)

Province	ca.	1	9	0	1	1	9	1	0	1912 (budgeted)	
		Tael		Percent		Tael		Percent		Tael	
Chahar						8,050		0.02		85,599	0.2
Kirin						5,170,030		10.9		1,865,765	3.9
Heilungkiang						1,013,735		2.1		1,013,735	2.1
Jehol						55,381		0.1		63,335	0.1
Total		23,613,375		100.0		47,453,369		100.0		47,575,486	100.0

Sources: Alexander Hosie, "The Salt Production and Salt Revenue of China," Nineteenth Century, Vol. 75 (1914), p. 1143; Chien Chang, A Plan for the Reform of the National Salt Administration (Shanghai, 1913), p. 39; and YFTC, chüan 69, pp. 29-32.

Table 7.
Distribution of Retail Price of a Picul of
Salt in Chekiang, ca. 1912

Item	R a n g e	M e d i a n	
		\$*	%
Tax	1.157 - 2.438	1.7975	40.9
Production cost	0.680 - 1.900	1.2900	29.3
Transport cost and profit		1.3125	29.8
Retail price	2.400 - 6.400	4.4000	100.0

*In silver dollars.

Source: "Liang-che ko yin-ti yen-pen yen-shui shou-chia i-lan-piao" (A Table of the Production Cost, Tax Rate and Retail Price of Salt in the Liangche Region), YCTC, Vol. 1, No. 1 (Dec. 1912), Tiao-ch'a, pp. 1-4; No. 2 (Jan. 1913), Tiao-ch'a, pp. 5-7.

highly-taxed salt. Therefore, the marketing areas of low-cost salt from the coastal producing centers were unfairly limited due to the high tax.

An inadequacy of the salt administration in Ch'ing China was the failure to tax all salt on an equal basis. First, a large part of the salt trade went unrecognized officially by the authorities, and hence was untaxed.³¹

³¹One source estimated that the amount of the consumption of untaxed salt was about equal to that of taxed salt around 1912. See Chien Chang, op. cit., footnote 25, p. 3.

This will be elaborated on in detail under the heading of "salt smuggling" in Chapter V. Second, in order to maximize its revenue, the Ch'ing government levied different salt tax rates in different areas. At the end of the Ch'ing period, there was a total of more than seven hundred different kinds of taxes levied on salt.³² The inequality of salt taxation constituted a major blemish on the salt administration of Ch'ing China.

This inequality appeared in various ways, but what interests the geographer is the spatial character of this inequality. In traditional China, salt taxes had always been levied irregularly--geographically and on many separate bases. In coastal areas close to sources of supply and in four inland areas (i.e., inland Chihli Province, northern Honan Province, southern Shansi Province, and eastern Szechwan Province), salt taxes were light. On the other hand, in two areas (i.e., the entire Yunnan salt administrative region and the whole Huainan subdivision of the Liang-huai salt administrative region west of Nanking), salt taxes

³²Hu Siang-yün, "Chung-kuo yen-wu tsui-chin chuank'uang" (Recent Status of the Chinese Salt Administration), YCTC, No. 31 (July 1921), Chuan-chien p. 7.

were extremely heavy,³³ while tax rates in most parts of the Szechwan salt administrative region and a large part of North China were relatively moderate (Figure 5).³⁴ Furthermore, in coastal areas, salt tax rates also varied geographically. For example, different tax rates were levied on salt released by the Shaohsing salt depot in Chekiang Province, according to the distance of one destination from the depot. For salt sold in Shaohsing, the tax was one-third of the retail price; while for that sold in Chiangshan, as the latter was 325 kilometers away, it was about forty-seven percent (Table 8).

Why was this so? As in most traditional societies, the Ch'ing government found it necessary to exact taxes on people's inability to avoid payment rather than on their ability to pay. In areas where salt was moved by navigable

³³Salt taxes in this area had been extremely heavy for centuries. It was so even during the Republican period in the early twentieth century. See Tso Shu-chen, "Ching-kao Ngo-Hsiang-Kan-Wan ssu-sheng fu-lao shu" (An Open Letter to the People of Hupeh, Hunan, Kiangsi and Anhwei Provinces), in Lin Chen-han, Huai-yen chi-yao (Essentials of the Salt Industry in Lianghuai Region) (Shanghai, 1928), Chuan-chien pp. 28-30. Also see Joseph E. Spencer, "Salt in China," Geographical Review, Vol. 25 (1935), p. 356 and Figure 2.

³⁴Hu Kuang-chih, comp., "Ch'uan-kuo ko yen-ch'ü shui-lü teng-ch'a piao" (A Table of Salt-Tax Rates in China), YCTC, Vol. 1, No. 1 (Dec. 1912), Tiao-ch'a pp. 1-8; No. 2 (Jan. 1913), Tiao-ch'a pp. 9-20; and No. 3 (March 1913), Tiao-ch'a pp. 21-27.

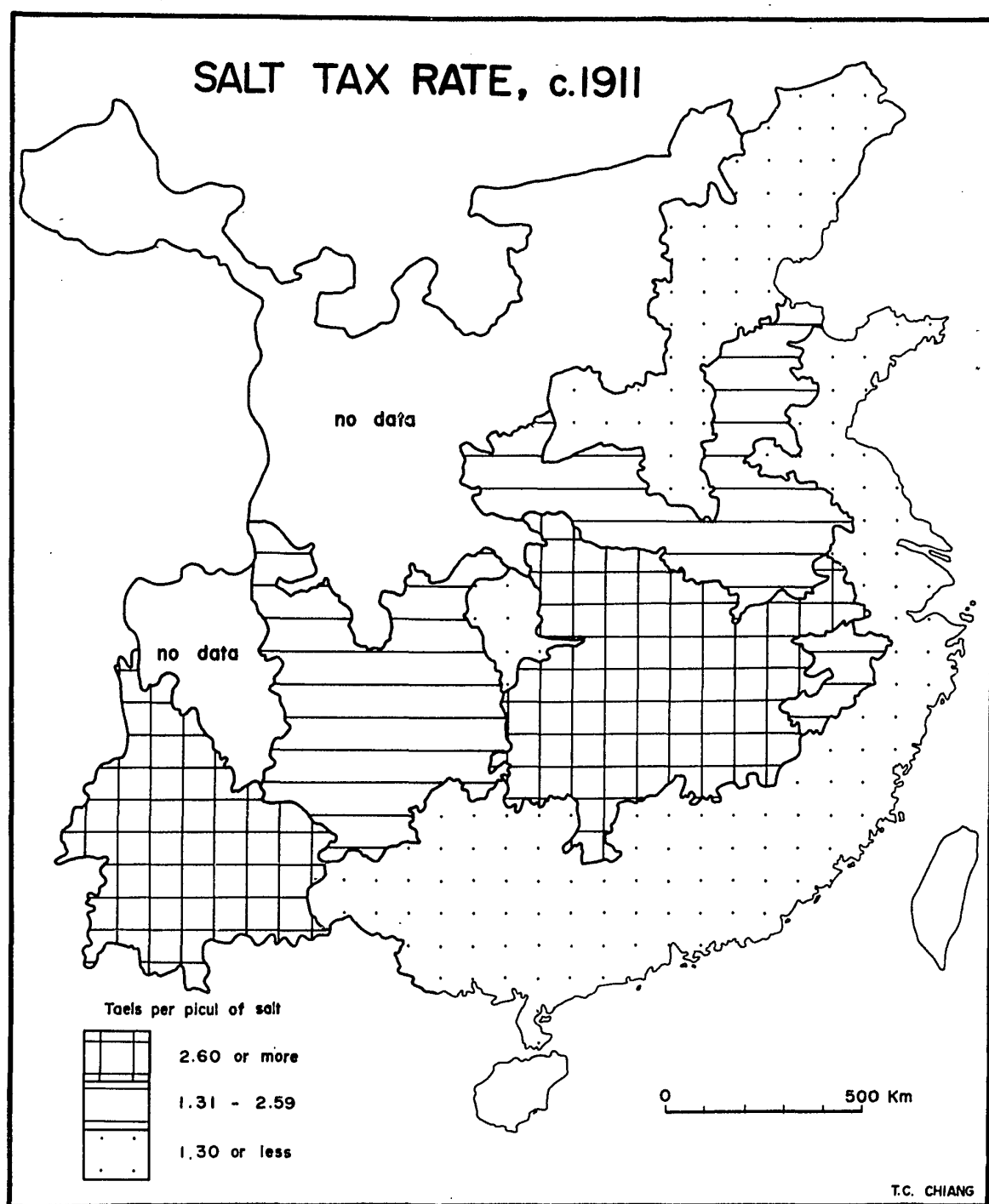


Figure 5

Table 8.
Tax Rate and Distance from Salt Depot

District	Route Distance (in km)	Percentage of Tax in Retail Price
Shaohsing	0	33.3
Chuchi	80	38.6
Lanchi	195	43.5
Lungyu	225	44.9
Chiangshan	325	46.9

Sources: For the route distance, see Feng P'ei et al., Ch'in-ting ch'ung-hsiu Liang-che yen-fa chih (Compendium on Salt Administration of Liangche Region) (1802 edition), chüan 1, pp. 38b-29. For the percentage of tax in retail price, see "Liang-che ko yin-ti yen-pen yen-shui shou-chia i-lan-piao," op. cit., source of Table 7.

waterway because the cost of overland transportation was absolutely prohibitive, the salt administration was so organized that the natural trade routes were well-controlled; and hence, the taxes were very high, varying with the distance to market areas from the salt sources. The further the salt was transported, the higher were the taxes. The Lianghuai region salt administration, which controlled the production and distribution of salt for a vast area that covered the provinces of Kiangsu, Anhwei, Hupeh, and Hunan, and part of Honan, and which was in many respects the best-

organized salt administration in Ch'ing China, provides probably the best illustration of this inequality. In Kiangsu, taxes were in most places light and in some places non-existent; while in the Upper Yangtze provinces, taxes were very heavy. Those in coastal areas who might be well-to-do, paid only a light tax or even escaped entirely because salt was cheaply available, while those in inland provinces who might be too poor to pay a salt tax, were made to pay the most because they lived far from the source of supply. Considering that the lightly-taxed areas included some of the richest in China, the system of salt taxation was indeed unfair and inefficient.³⁵

The Role of the Licensed Salt Merchants

Licensed salt merchants (yin-shang) owed their wealth and power to the monopoly granted to them by the imperial government. This monopoly enabled them to carry on the salt trade. In turn, the government could realize easy, quick collection of a large amount of revenue. Under the system of government partial monopoly of the salt industry in Ch'ing China, licensed salt merchants were partners of the imperial government and monopolists of the salt trade.

³⁵Adshead, op. cit., footnote 7, pp. 21-24; and Richard Dane, Report on the Reorganisation of the Salt Revenue Administration in China, 1913-1917 (Peking, 1918), pp. 17-18.

The merchants' position in the salt administration was of prime importance. Hence, a brief discussion of their role is relevant.

Broadly speaking, there were three groups of salt merchants; ch'ang-shang (yard merchants),³⁶ yün-shang (transport merchants), and hsiao-shang (local distributors and retailers). Yard merchants brought salt from salt-producing households (yen-hu) for storage in their own warehouses and for sale to transport merchants.³⁷ In turn, transport merchants transported and sold salt to local distributors and retailers in designated marketing areas, while salt retailers sold the product directly to consumers.³⁸ A hsiao-shang was self-sufficient, but both the profit derived and his

³⁶There are two different kinds of interpretation of ch'ang-shang. Some writers consider that ch'ang-shang and yüan-shang are two kinds of salt merchants. The former collect salt, and the latter maintain storage for the salt collected by the former. Others think that both are identical. The present writer leans to the second interpretation. See Ping-ti Ho, "The Salt Merchants of Yang-chou: A Study of Commercial Capitalism in Eighteenth-Century China," Harvard Journal of Asiatic Studies, Vol. 17 (1954), pp. 132-134; and Hsü Hung, op. cit., footnote 15, pp. 16-18.

³⁷In the case of Lianghuai region, upon a call from the authorities of the salt administration at Yangchou, a yard merchant shipped the salt from his storages to the salt depot at Shiherhwei.

³⁸Li Chien-ch'ang, Kuan-liao tzu-pen yü yen-yeh (Bureaucratic Capitalism and the Salt Industry in China) (Peking, 1963), p. 25.

influence over the trade were insignificant compared to those of a ch'ang-shang or of a yün-shang. Geographically, the sphere of a hsiao-shang's influence covered, at most, an entire hsien.

In the early Ch'ing dynasty, yard merchants did not engage in the production of salt. Later, resourceful yard merchants bought from time to time the properties of bankrupt salt-producing households or erected their own saltworks. For example, in late Ch'ing, more than half of the saltworks in the Lianghuai region were owned by yard merchants, while in the mid-nineteenth century, only about one-third were so owned.³⁹ Obviously, yard merchants also came to produce salt.

A yard merchant who did not own a saltworks was also called a yüan-shang in Huainan and Szechwan, a t'o-shang in Ch'anglu, an ao-shang in Liangche, and a tso-shang in Hotung. All these refer to salt-storage merchants.⁴⁰ In the early nineteenth century, there were 249 yard merchants alone in the Lianghuai region.⁴¹ The salt produced or collected by a yard merchant usually remained in his storage

³⁹YFTC chüan 30, p. 41; and CYFC, chüan 107.

⁴⁰Lin Chen-han, ed., Yen-cheng tz'u-tien (Dictionary of Salt Administration in China) (Shanghai, 1928), Wu p. 7.

⁴¹CYFC, chüan 150, p. 6.

for a year or longer before it could be sold to a transport merchant. In view of the perishable nature of salt, a yard merchant ran a considerable amount of risk until the salt was eventually sold. Yet, yard merchants still shared much more of the total profit of the salt production than did salt-producing households. In fact, the merchant's profit was tremendous. According to Wei Yüan, yard merchants made a profit of two to three taels for each yin of salt handled.⁴² The annual aggregate profit of these yard merchants was about three million taels. In theory, anyone could engage in the business, and a yard merchant was not an exclusive agent. Yet, most were also yin-shang. In a sense, to be a yard merchant could be considered a sideline of a licensed merchant. In the early Republican period, no new yard merchants were allowed to join the trade and existing yard merchants even became tantamount to exclusive agents. Their right to carry on the trade was inheritable and inalienable, as was that of the yin-shang.⁴³

⁴²Wei Yüan, "Ch'ou-ts'o p'ien" (An Essay on the Salt Administration), in Wei Yüan, Ku-wei-t'ang wai-chi (Collected Works of Wei Yüan) (1878; Reprinted edition; Taipei, ca. 1958), chüan 3, pp. 711-728; reference on p. 717.

⁴³Miao Chiu-chieh and Tseng Shih-tun, T'iao-ch'a Huai-pei yin-ch'üan pao-kao-shu (Report on the Yin-right in Huaipei), cited in Li Chien-ch'ang, op. cit., footnote 38, p. 28.

The most important individuals in the salt trade were the yin-shang, and the Lianghuai region may again be taken as an example to illustrate their role in the trade. Since a yin-shang was the owner of wo-pen, he was the salt merchant who had the right to sell salt in its designated marketing area. The right was inalienable and inheritable. Therefore, a transport merchant had to be a yin-shang. However, in the course of time, there arose a group of yin-shang who did not assume the business by themselves, but who leased their right to sell salt.⁴⁴

For securing an easy, steady collection of salt revenue, the Ch'ing government appointed four ta-tsung-shang (principal head merchants) and thirty tsung-shang (head merchants) to lead san-shang (scattered small merchants).⁴⁵ These head merchants, who had large shares in the salt

⁴⁴The practice of renting yin-p'iao continued to exist in the Republican period. One writer states that, in 1913, the annual rates for leasing a yin-p'iao good for the sale of one yin of salt were one to three taels in the Shantung region. See Ling Wen-yüan, Chung-kuo yen-yeh tsai-chin chuang-k'uang (Present Conditions of the Salt Industry in China) (Peking, 1913), Vol. 1, p. 94. Another shows that, in 1928, the annual rate for leasing a yin-p'iao good for the sale of 4,000 piculs of salt was 600 taels in Anhwei; 2,000 in Kiangsi and in Hupeh, and 3,000 in Hunan. See Lin Chen-han, op. cit., footnote 33, p. 158.

⁴⁵K'un-kang, op. cit., footnote 29, chüan 20, Vol. 3, pp. 216-220.

business, were financially able to be held responsible by the group as a whole for arrears in salt tax payments. They were also responsible for collecting and appropriating the hsia-fei (public relations fund)⁴⁶ and other expenses, and for handling other matters concerning the transport merchants.⁴⁷ The scattered small merchants were then required to trade under these head merchants. It has been estimated that there were as many as 230 transport merchants in the Lianghuai region.⁴⁸ The organization of the transport merchants, however, was not a commercial guild organized by the merchants themselves. The principal head and head merchants were not chosen by the transport merchant body, but rather they were handpicked by the government. For this reason,

⁴⁶Hsia-fei were expenses incurred in entertaining officials and various contributions to the local salt administration which was paid out of the common treasury of the entire transport merchant body. See Ping-ti Ho, loc. cit., footnote 36, pp. 142-143. See also Yao Ying, "P'ien-yen-fa i" (On the Reform of Salt Administration), in HCCSWHP, Vol. 1, pp. 831-833; reference on p. 832.

⁴⁷T'ao Chu, "Ch'ing shan-chien yen-wu fou-fei chi t'ang-p'ai teng k'uan fu-p'ien" (A Memorial Suggesting the Cut of Excessive Fees and Contributions Collected by Head Merchants), in TIKCC, Vol. 2, pp. 1033-1038. See also Shan-ch'ü et al., Chung-hsiu Liang-huai yen-fa chih (Compendium on Salt Administration of Lianghuai Region, Revised) (1806), chüan 38, pp. 16-17; and Ch'eng Meng-hsing et al., Liang-huai yen-fa chih (Compendium on Salt Administration of Lianghuai Region) (1728), chüan 1, pp. 25 and 27.

⁴⁸Ping-ti Ho, loc. cit., footnote 36, pp. 138-141.

the transport merchant body might be considered a semi-governmental organization or a government tool for salt taxation.⁴⁹

The function of a Huainan transport merchant was to transport salt from Shihherhwei, the largest salt-collecting center in China, to its designated marketing area. His salt certificate might be good for one district or more. The regional distributors or local retailers in the consumption area had to buy salt exclusively from him. He was thus the sole seller of salt for the area and hence held a monopoly. Obviously, he was also a profiteer. It has been estimated that during the eighteenth century, the average annual aggregate profit of the transport merchants of the Lianghuai region was about five million taels. In the course of a half century, the sum of their profits should have amounted to 250,000,000 taels.⁵⁰

Such profit was, however, not evenly shared by the transport merchants, among whom the principal head and head merchants formed a powerful ruling clique.⁵¹ In addition

⁴⁹For this reason, some modern salt reformers even did not consider yin-shang as merchants in the regular sense. See Ching Hsueh-ch'ien, "Yin-shang fei shang i" (Licensed Salt Merchants are not Merchants), YCTC, No. 31 (July 1921), She-lun II, pp. 1-7.

⁵⁰Ping-ti Ho, loc. cit., footnote 36, p. 149.

⁵¹Saeki Tomi, op. cit., footnote 14, pp. 241-247.

to their larger share of the business, they were able to charge high rates of interest on the capital which they loaned to scattered small merchants. Moreover, thanks to their intimate relationship with salt officials,⁵² they could appropriate, among other things, a large share of the hsia-fei. The hsia-fei, handled exclusively by a few merchant treasurers in Hankow, Nanking and Yangchou, who were either head merchants or their trusted agents, was never strictly audited, and its burden was invariably shifted to the entire group of transport merchants. From the early eighteenth century, there had been an annual total of more than two million taels of hsia-fei paid by the transport merchants in Hupeh, Hunan, Kiangsi and Anhwei provinces.⁵³ In this way, these principal head and head merchants became very rich--a rich individual merchant having perhaps wealth

⁵²One way to make friends with salt officials was of course by bribing them. Salt merchants also made special contributions on various occasions publicly to governments on all levels, including the emperor. According to official records, the licensed salt merchants of the Lianghuai region made a total contribution of twenty-six million taels between 1733 and 1804. See Ching Hsüeh-ch'ien, "P'iao-pen wen-t'i" (The Problem of the Capital of P'iao), in Ching Hsüeh-ch'ien, ed., Yen-shui wen-t'i (The Problem of Salt Taxation in China) (n.p., 1930), pp. 215-217.

⁵³Tso Shu-chen, loc. cit., footnote 33, p. 28.

of five to ten million taels; and a moderately rich merchant, two or three hundred thousand taels.⁵⁴

Saltworks as an Administration Unit

In the production of salt, saltworks (yen-ch'ang) were not factories in the common sense. They were rather the lowest salt administrative units.⁵⁵ Throughout the Ch'ing period, the number of saltworks noticeably decreased. During Ming times, there were 189, and although new works were added through consolidation and abandonment, only 162 were left by the end of the Ch'ing period (Table 9).⁵⁶ Because of their wide geographical distribution, saltworks varied considerably from one area to another in physical characteristics, in land area, and in salt output (Table 10).

⁵⁴Hsieh Chao-che, Wu-tsa-tsu (Cyclopedia), chüan 4, pp. 25-26. Also see Li Tou, Yang-chou hua-fang lu (Records of the Painted Boats of Yangchou) (1795; Reprinted edition; Peking, 1960), chüan 15, p. 350.

⁵⁵The situation remained the same even during the Republican period. See "The Salt Administration of Che-kiang," Chinese Economic Journal, Vol. 4, No. 1 (1929), p. 45.

⁵⁶This trend continued to be present after 1911, and by 1934 only 102 saltworks existed officially in the whole country. See Ching Hsüeh-ch'ien, "Min-kuo yen-cheng" (Salt Administration of the Republic of China), in Ching Hsüeh-ch'ien, ed., Yen-shui wen-t'i, loc. cit., footnote 52, pp. 5-16.

Table 9.
Number of Saltworks in China during
the Ming and Ch'ing Times

Region	Ming Dynasty ^{1,2}	CH'ING DYNASTY	
		At times when most numerous	Late Ch'ing ³
Ch'anglu	24	20 ⁴	8
Fengt'ien	8	20 ⁴	8
Fukien	7	18 ^{a,6}	13 ^a
Hotung	3	3 ⁴	3
Liangche	38	33 ⁷	25
Lianghuai	31	30 ⁴	23
Liangkwang	29	27 ⁴	23
Shantung	19	19 ⁵	8
Shenkan	3	3	3
Szechwan	17	40 ^b	23
Yünnan	10	26 ⁴	25
Total	189		162

^aExcluding five saltworks in Taiwan.

^bReferring to administrative districts that produced salt. Including one ting, seven chou and thirty-two hsien.

Sources:

1. Ho Wei-ning, Chung-kuo yen-cheng shih (History of the Chinese Salt Administration) (Taipei, 1955), pp. 344-358.
2. Fujii Hiroshi, "Min-dai enjō no kenkyū" (A Study of the Saltworks of the Ming Dynasty), Hokkaidō Daigaku bungakubu kiyō (Bulletin of the Faculty of Arts of the University of Hokkaido), No. 1 (1952), pp. 67-69.

3. "Ch'üan-kuo ch'an-yen ch'ü-yü so-tsai-ti i-lan-piao" (A Table of Saltworks in China), YCTC, I, No. 4 (April 1913), Tiao-ch'a pp. 1-8 and No. 5 (May 1913), Tiao-ch'a pp. 9-17.
4. Chang Ch'i-yün et al., eds., Ch'ing-shih (History of the Ch'ing Dynasty) (Taipei, 1961), chüan 124, Vol. 2, p. 1496.
5. Ling Wen-yüan, Chung-kuo yen-yeh tsai-chin chuang-k'uang (Present Conditions of the Salt Industry in China) (Peking, 1913), Vol. 1, p. 1.
6. Tso Shu-chen, comp., Chung-kuo yen-cheng yen-ko shih: Fu-chien (History of the Chinese Salt Administration: Fukien) (Peking, 1915), p. 41.
7. Fu Wang-lu et al., Liang-che yen-fa chih (Compendium on Salt Administration of Liangche Region) (ca. 1728; reproduction of 1792 edition; Taipei, 1966), chüan 14, Vol. 3, p. 1533.

Table 10.
Average Size of Saltworks by Output*

Region	Year	Number of Saltworks	Annual Output of Salt (in piculs)
Ch'anglu	1911	8	404,155
Fukien	1886	13	207,692
Hotung	1841	3	567,041
Liangche	1915	30	153,113
Lianghuai	ca. 1892	23	243,005
Huaipei		3	441,433
Huainan		20	213,241
Liangkwang	ca. 1817	22	111,062
Shantung	1911	7	95,360
Szechwan	ca. 1913	20	350,381
Yunnan	ca. 1850	24	19,146
Average			187,505

*Based on best data available.

Sources: YFTC, chüan 37, p. 1 (for Ch'anglu); pp. 22-23 (Fukien); and p. 3 (Shantung); Wang Ch'ing-yün, Hsi-ch'ao chi-cheng (Collected Works on Government Affairs of Our Glorious Dynasty) (1898; reprinted edition; Taipei, 1966), chüan 5, p. 34 (Hotung); Fan Yün-shu, "Che-chiang ch'ang-ch'an chi-hua-shu" (A Plan for the Production of Salt in Chekiang), YCTC, Vol. 2, No. 7 (August 1915), Chuan-chien pp. 4-7 (Liangche); Ch'en Ch'ing-nien, Liang-huai yen-fa chuan-yao (Account on Salt Administration of Liang-huai Region) (Yangchou, 1904), chüan 1, pp. 1-2 (Lianghuai); CYFC, chüan 215, pp. 14-16 (Liangkwang) and chüan 275, pp. 3-4 (Yunnan); and Mo T'ang, "Ssu-ch'uan yen-yeh tiao-ch'a pao-kao" (A Survey of the Salt Industry in Szechwan), YCTC, Vol. 1, No. 6 (June 1913), Tiao-ch'a pp. 8-11 (Szechwan).

The organization and composition of a saltworks varied by locality and with production methods. A saltworks might consist of several salt-producing households, as in the case of Tengkuang Ch'ang in Szechwan, or tens of thousands, as of Wuyu Ch'ang in Huainan (Table 11). Because of

Table 11.
Average Size of Saltworks by
Number of Salt-producing Households*

Region	Year	Number of Saltworks	Average Number of Salt-producing Households
Ch'anglu	ca. 1724	14	132
Fukien	1776	13	425
Liangche	1776	11	666
Lianghuai	1776	23	9,387
Liangkwang	1921	17	166
Szechwan	1776	25	365
Average			2,355

*Based on best data available.

Sources: Lu Chih-yü et al., Ch'ang-lu yen-fa chih (Compendium on Salt Administration of Ch'anglu Region) (Reproduction of 1726 edition; Taipei, 1966), chüan 6, Vol. 1, pp. 340-347 (for Ch'anglu); CYFC, chüan 190, pp. 5-6 (Fukien); YFTC, chüan 35, p. 13 (Liangche) and chüan 42, pp. 16-20 (Lianghuai); Tsou Lin, Yüeh-ts'o chi-shih (Records of the Salt Industry in Kwangtung) (Shanghai, 1922; Revised edition; Shanghai, 1927), pp. 6-7 (Liangkwang); and Lin Chen-han, Ch'uan-yen chi-yao (Essentials of the Salt Industry in Szechwan) (Shanghai, 1916; Revised edition; Shanghai, 1919), pp. 214-220 (Szechwan).

different methods of production, salt-producing households were called t'ing-hu (salt-shed households) and tsao-hu (salt-pan households) in the coastal salt-producing areas, hsi-hu (salt-field households) in the Hotung region, ching-hu (brine-well households) in Szechwan Province, tsao-hu in Yünnan Province, and t'ang-hu (salt-pan households) in the earth-salt-producing area of northern Shansi Province.⁵⁷

A salt-producing household, as the name suggests, was a family engaged in the production of salt. In most cases, salt-producing households were semi-independent, small producers, and in seaboard areas, salt-producing was a sideline for many such households.⁵⁸ For example, in the Lüssu salt-works, many salt-producing households also engaged in fishing. In 1905, 356 salt-producing households had about 135 fishing boats. Well-to-do household heads were owners of the boats, while others served as crews employed by the

⁵⁷Ho Wei-ning, op. cit., footnote 8, pp. 256-259.

⁵⁸Salt households were considered to be semi-independent because most of them were so poor that they had to receive advance payment from yard merchants and sell salt to them later. See Pao Shih-ch'en, "Huai-yen san-t'se" (Three Plans for the Salt Administration of the Lianghuai Region), in HCCSWP, chüan 49, Vol. 2, pp. 1237-1238; Chu Shih, "Ch'ing ting yen-fa shu" (A Memorial of a Plan for the Salt Administration), in HCCSWP, chüan 50, Vol. 2, pp. 1277-1280; and YU Teh-yüan, "Yen kuei ch'ang-tsao i" (On the Collection of Salt), in Sheng K'ang, comp., Huang-ch'ao ching-shih-wen hsu-pien (Collected Works on Government Affairs of the Imperial Dynasty, Continued) (1897), chüan 51.

owners.⁵⁹ Some salt-producing households produced salt by themselves; others manufactured salt cooperatively by sharing certain implements, such as salt-boiling pans provided by the government. There were saltfields, as in the sea-salt and lake-salt areas, or brine wells, as in the well-salt areas. In some cases, a saltworks was also provided by the government with production implements, storage facilities and means of transportation. There was also a saltworks superintendent (yen-k'o ta-shih) whose duties included supervising the production of salt, and under whom there were clerks, runners and personal servants. There was, as well, a saltworks police force to protect the saltworks and to prevent smuggling, and when a saltworks consisted of a large number of salt-producing households, it would cover a very large territory. For the convenience of administration, each saltworks was then geographically divided into a number of subdivisions (Table 12), called t'uan in Fukien, Liangche and Lianghuai. T'uan, the rural districts first created during the Northern Chou period (551-581), consisted actually of only 100 rural households.⁶⁰

⁵⁹See Chang Chi-chih, "Yen-yeh cheng-tun kai-liang pei-ngo chi" (On Difficulties in the Development of Salt Production in Lianghuai Region), in Chang Chi-tzu chiu-lu (Collected Works of Chang Chi-chih) (Shanghai, 1933), II chüan 3, p. 6b.

⁶⁰See Wen Chün-t'ien, Chung-kuo pao-chia chih-tu (The Chinese Pao-chia System) (Shanghai, 1935; Reprinted edition; Ch'angsha, 1939), pp. 106-107.

Table 12.
Subdivisions of Saltworks in
Liangche Region, ca. 1800

Saltworks	Number of T'uan	Number of Salt-Boiling Pans
Ch'anglin	5	39
Ch'angt'ing	5	20
Chiench'ing	10	76
Ch'ingch'üan	15	160
Ch'ingts'un	5	268
Chinshan	4	31
Ch'uanshan	10	57
Hsisha	23	141
Hengp'u	5	49
Hsisha	20	107
Hsilu	18	198
Hsüts'un	21	195
Huangwan	16	138
Huangyen	13	50
Jenho	4	83
Luli	13	105
Lungt'ou	13	65
Mingho	4	24
Paolang	20	161
P'utung	2	15
Sanchiang	4	153
Shihyen	7	30
Shuangtui	5	39
Tasung	4	29
Ts'aongo	2	16
Tungchiang	4	96
Tutu	5	121
Yüanp'u	18	124
Yüch'üan	3	16
Yungchia	26	110
Total	304	2,716

Source: CYFC, chüan 163, pp. 4-7.

Under the pao-chia system of imperial control over the rural areas in the Ch'ing dynasty, the t'uan was a division which contained in special cases, about 1,000 households.⁶¹ In the early eighteenth century, there were 290 t'uan in twenty-eight saltworks in the Liangche region. On the average, a saltworks had about ten t'uan,⁶² for each of which there was one (or more) tsung-ts'ui (or t'uan-chang), depending on size. The tsung-ts'ui being the headman of a number of salt-producing households, was a runner, responsible to the saltworks superintendent. On the average, for every eleven salt-producing households, there was one tsung-ts'ui in the Lianghuai region during the sixteenth century.⁶³

In summary, Ch'ing China had a complicated system of salt administration which was a historical inheritance. Because of its inability to engage directly in the production and distribution of salt, the Ch'ing administration controlled the industry by assigning the production of salt to salt-producing households and by subcontracting the

⁶²Fu Wang-lu et al., Liang-che yen-fa chih (Compendium on Salt Administration of Liangche Region) (ca. 1728; reproduction of 1792 edition; Taipei, 1966), chüan 6, Vol. 2, pp. 763-890.

⁶³Fujii Hiroshi, "Min-dai enjō no kenkyū" (A Study of the Saltworks of the Ming Dynasty), Hokkaidō Daigaku bungkubu kiyō (Bulletin of the Faculty of Arts of the University of Hokkaido), No. 1 (1952), pp. 65-100 and No. 3 (1954), pp. 89-132; reference on pp. 74-76.

distribution of salt to licensed salt merchants. For administrative purposes, China Proper was divided into ten salt administrative regions, each combining a salt-producing center and a marketing area. As the functions of salt administration were the collection of the salt tax and the prevention of smuggling, no effort whatsoever was made on the part of the salt administration to improve the techniques of salt production. Ch'ing China's salt taxation system also had many gross inequalities which were a major scar on the administration, in that the poor might pay more tax than the rich because the former were unable to avoid payment. Among the licensed salt merchants, yin-shang were the key profiteers, and hence made handsome fortunes. The organization of yen-ch'ang varied by place, as well as by salt-producing methods. Locally, groups of yen-hu formed the basic administrative units of the industry.

Chapter IV

THE PRODUCTION OF SALT

Salt extraction is a resource-oriented industry, the commodity being generally produced where raw materials were found. The nature of brine and salt deposits and the physical characteristics of source areas greatly dictated the methods by which salt was processed. In this chapter, the geographical distribution of the salt supply, the nature of brine and salt deposits, the natural base for salt production, the sources of raw materials and production methods are discussed. To be analyzed also are the geographical changes of salt production over time.

Widespread Sources of Salt Supply

Ch'ing China's salt supply was widely dispersed. Of the eighteen provinces of China Proper,¹ only Kwangsi did not produce salt.² A total of 351 districts were recorded

¹The content of the study is limited to China Proper. It occasionally touches upon other areas, whenever necessary.

²One source indicates that 25,000 catties of salt were produced annually in Popai Hsien, Kwangsi Province in 1930's. See China, Chiao-t'ung-pu yu-cheng tsung-chü, Chung-kuo t'ung-yu ti-fang wu-ch'an chih (Native Products in China Reported by Local Post Offices) (Shanghai, 1937), "Kwangsi," p. 12. No reference, however, shows that salt was also produced in Kwangsi Province in Ch'ing times.

as production areas (Table 13). One hundred eleven of these districts contained 253 yen-k'o-ssu (salt bureaus),³ the lowest salt administrative unit. Physically, the salt-producing area under the jurisdiction of a salt bureau was called a yen-ch'ang (saltworks), each with a ta-shih (saltworks superintendent). In districts which had no salt-bureau offices, the production of salt was administered by a district magistrate.⁴

More than four fifths of Ch'ing China's salt was extracted from the sea, as saltworks were scattered along the entire length of China's seacoast (Figures 6 and 7 and Table 14). Saltworks were also found on the islands of Hainan and Taiwan. There were two large concentrations of saltworks, one with thirty-five saltworks on the seacoast between Lot'ing and Ihsien in North China and another with fifty-two on the seacoast between the Huai River in Kiangsu Province and the Bay of Hsiangshankang in Chekiang. Inland

³The number of salt bureaus here is the maximum number throughout the Ch'ing dynasty. In fact, it varied over time. Chihli, for example, had twenty in the middle-seventeenth century. These were gradually reduced through amalgamation until there were only eight in the nineteenth century. See Ling Wen-yüan, Chung-kuo yen-yeh tsui-chin chuang-k'uang (Present Conditions of the Salt Industry in China), Vol. 2, Chihli (Peking, 1913), pp. 1-3.

⁴T'ung-tsu Ch'u, Local Government in China under the Ch'ing (Paperback edition; Stanford, California, 1961), pp. 145-147.

Table 13.
Number of Recorded Salt-producing Districts
and Salt Bureaus in Ch'ing China

Province	Number of Districts	Number of Salt Bureaus	Number of Districts without Salt Bureau
Maritime			
Chekiang	23	29	1
Chihli	55	20	46
Fukien	13	27	-
Kiangsu	14	38	1
Kwangtung	23	41	-
Shantung	36	20	26
Subtotal	164	175	74
Interior			
Anhwei	3	-	3
Honan	35	-	35
Hunan	9	-	9
Hupei	4	1	3
Kansu	22	10	12
Kiangsi	2	-	2
Kwangsi	-	-	-
Kweichow	10	-	10
Shansi	44	3	42
Shensi	12	-	12
Szechwan	32	30	2
Yunnan	14	34	-
Subtotal	187	78	130
Total	351	253	204

Sources: See Appendix B.

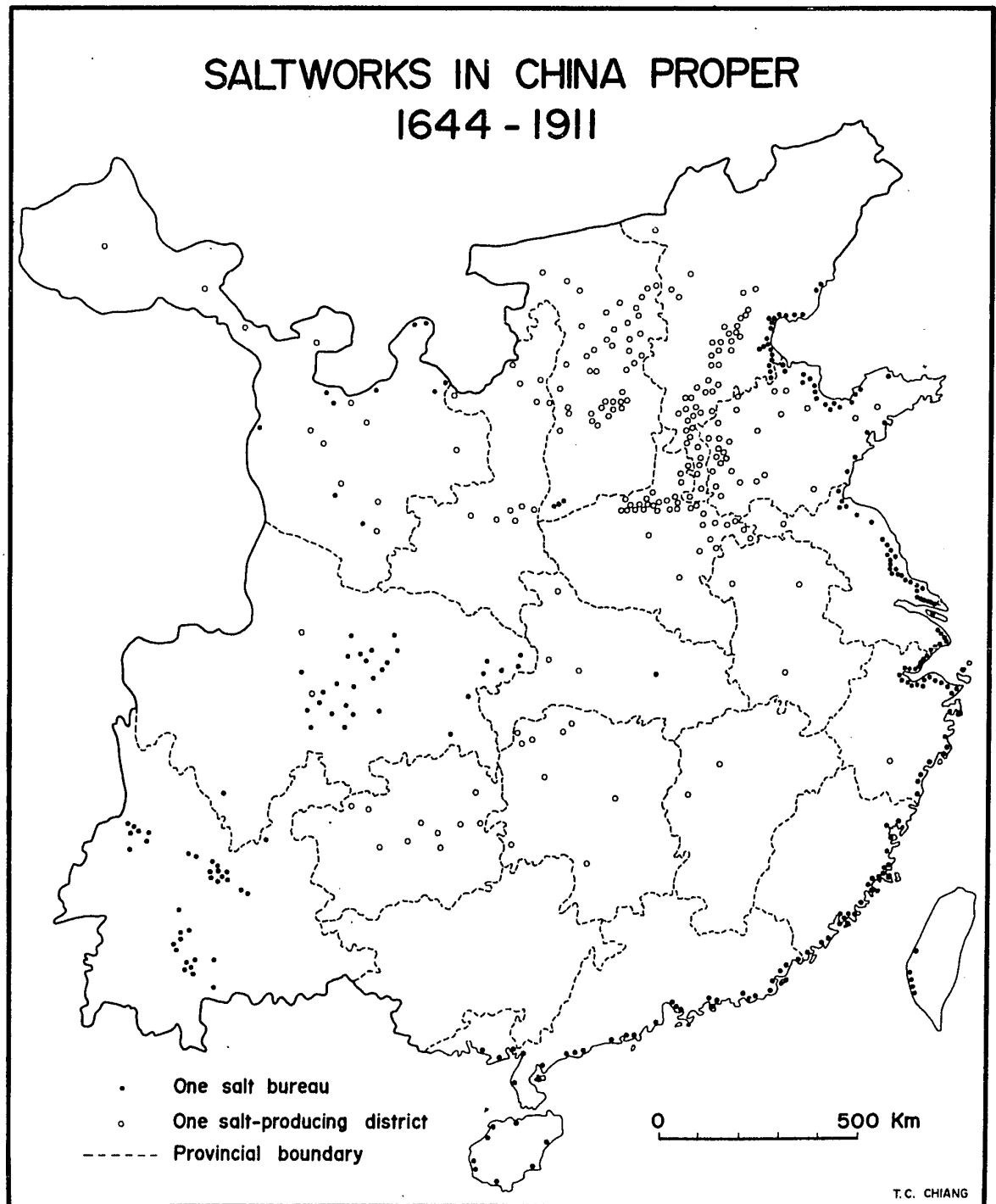


Figure 6

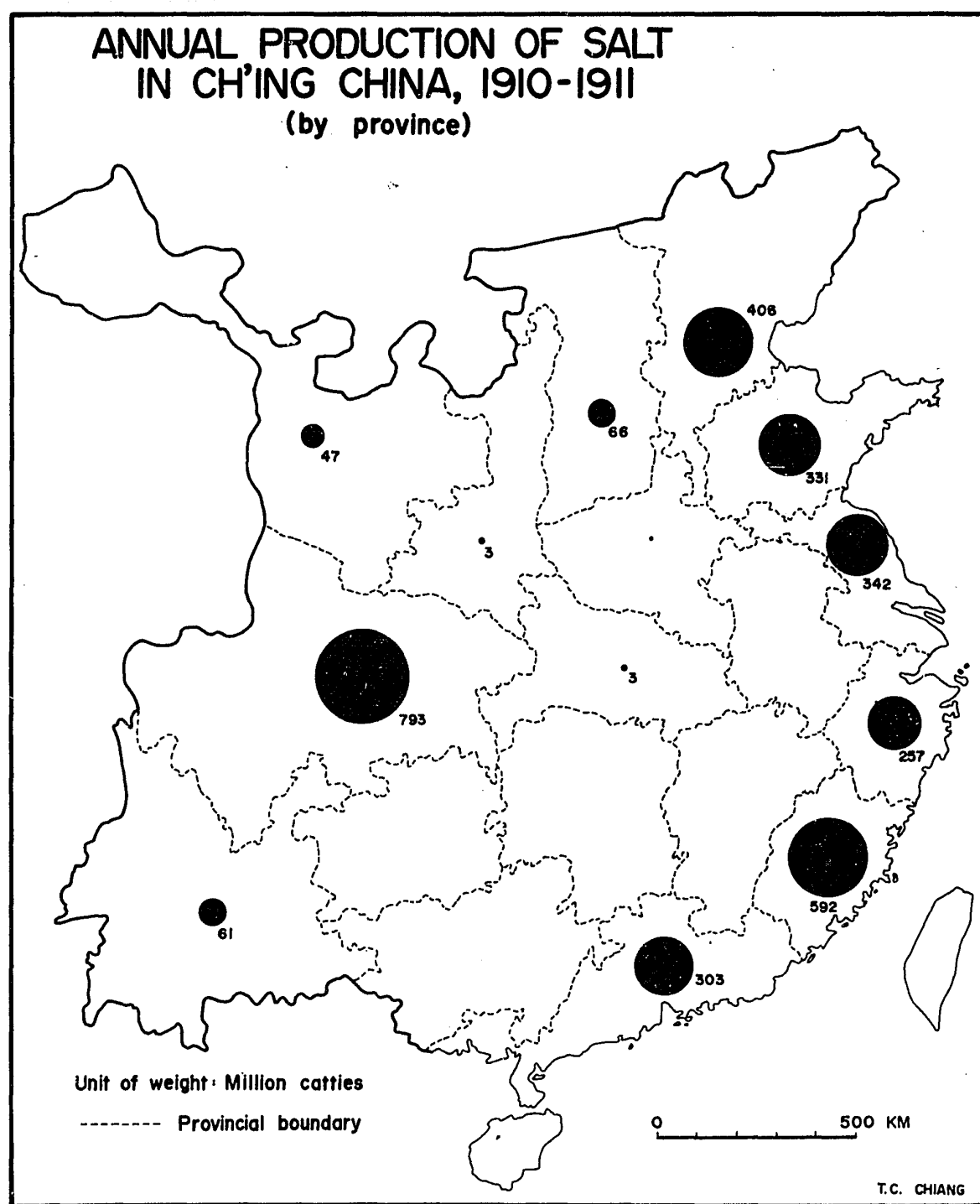


Figure 7

Table 14.
Annual Production of Salt, 1840-1890

Salt-producing Region	In Catties	Percent
Seacoast		
Lianghuai	616,066,360	21.6
Liangche	488,207,356 ^a	17.1
Liaotung	360,000,000	12.6
Ch'anglu	304,813,800 ^b	10.7
Fukien	257,274,325	9.0
Liangkwang	195,205,214 ^c	6.8
Shantung	181,248,750	6.4
Subtotal	2,402,815,815	84.2
Inland		
Szechwan	216,231,200 ^d	7.6
Hotung	180,228,720 ^e	6.3
Yunnan	39,068,100	1.4
Shenkan	14,021,515	0.5
Subtotal	449,549,535	15.8
Grand Total	2,852,365,340	100.0

^aThe production of salt 955,396 yin times 511 catties

^bSum of 263,871 yin times 675 catties plus 791,641 yin times 100 catties.

^cSum of 716,768 yin times 235 catties plus 81,451 yin times 264 catties plus 16,290 yin times 323 catties.

^dSum of 29,516 yin times 5,000 catties plus 137,878 yin times 400 catties plus 5,000 yin times 2,700 catties.

^eIncluding 10,116,240 catties of earth salt produced in central and northern Shansi.

Sources: Wang Hsi-hsün, "Hu-pu Shan-tung-ssu chi-shih" (A Record of the Bureau of Shantung), in Ts'ung-cheng lu (Personal Records of Public Affairs), chüan 3, in Chiang-tu Wang-shih ts'ung-shu (Collected Works of Wang Hsi-hsün) (ca. 1841; Reprinted edition; Shanghai, 1931); and Wang Ch'ing-yün, "Chih-sheng yen-k'o piao" (A Table of Salt Revenue), in Hsi-ch'ao chi-cheng (Collected Works on Government Affairs of Our Glorious Dynasty) (Reprinted edition; 1898), chüan 5, pp. 33-36b. The figure for Liaotung is estimated by the author.

saltworks were scattered over fifteen provinces. Two major inland producers were Szechwan and Shansi provinces. During the middle and late nineteenth century, the former had thirty saltworks, accounting for eight percent of the national output of salt, while the latter had nearly six percent. Secondary concentrations of saltworks producing salt for local consumption include central, southern and western Yunnan, inland Chihli, central and northern Shensi, northeastern Honan, western Shantung, and the Kansu Corridor west of Lanchou (Figures 8 - 14).

Salt was an important source of income to a salt-producing region. The production of salt in Szechwan and Yunnan actually meant less revenue to the imperial government, but more income for local authorities. No stoppage of salt production in these regions was possible because regionalism prevailed. Earth-salt saltworks in northern and central Shansi Province and in parts of Chihli, existed for the same reason.

The diffusion and spread of the production of salt in China reached its maximum areal extent in the Ming period.⁵ The principal southward diffusion of its development reflects China's territorial expansion and population movement

⁵Tao-chang Chiang, "The Salt Industry of Ming China," Geographical Review, Vol. 65 (1975), pp. 93-106.

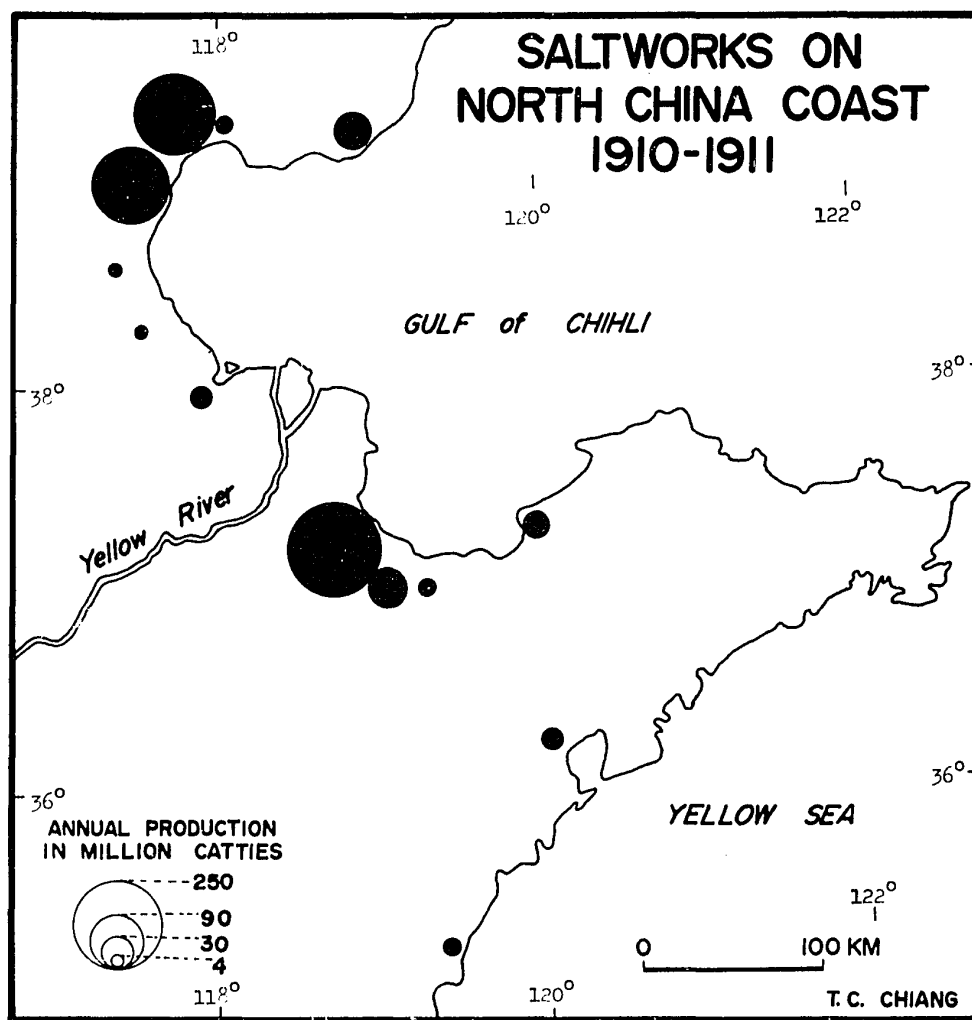


Figure 8

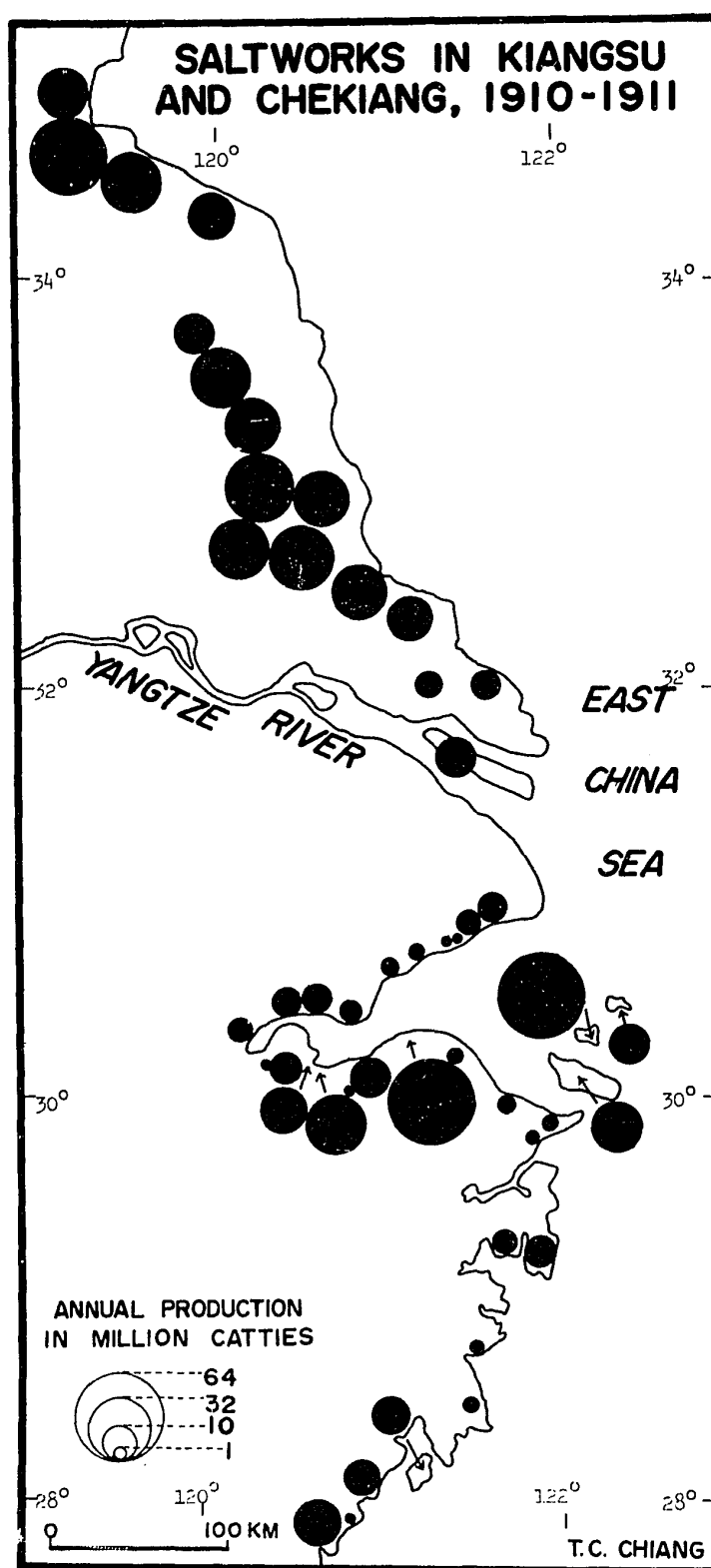


Figure 9

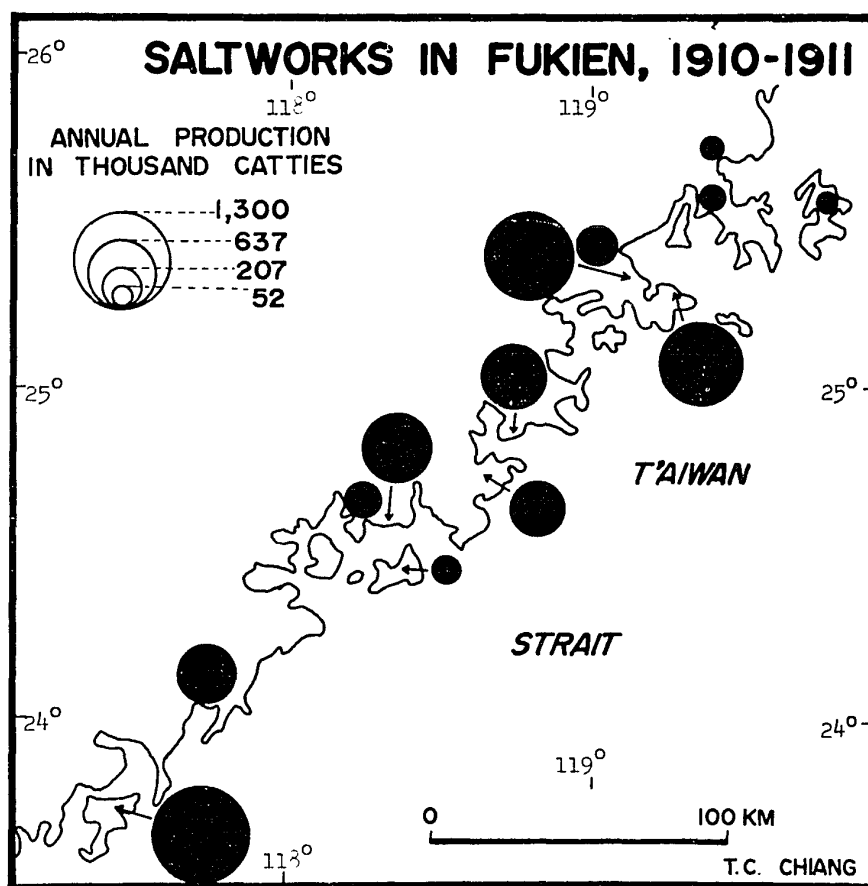
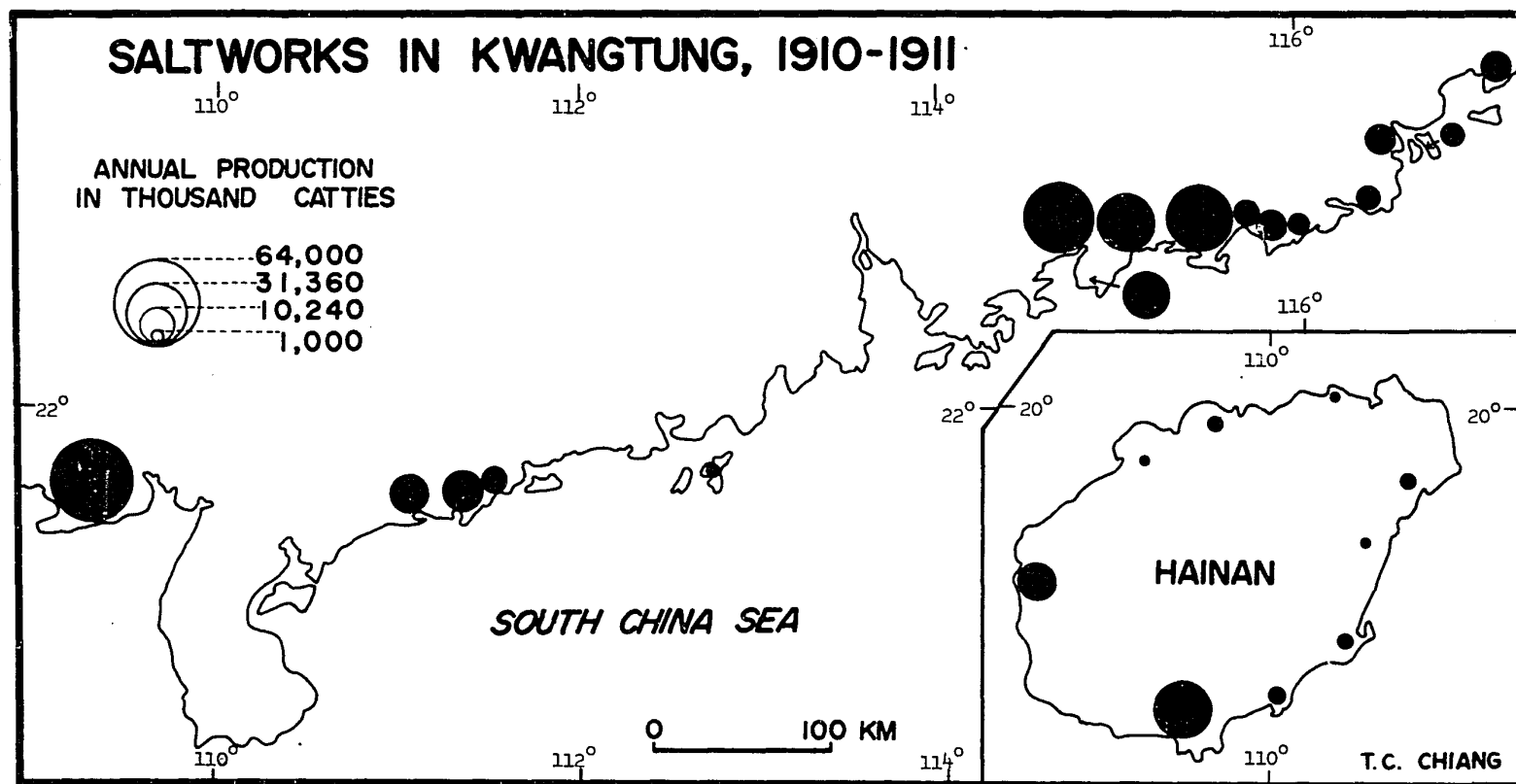


Figure 10

Figure 11



SALTWORKS IN SZECHWAN, 1910-1911

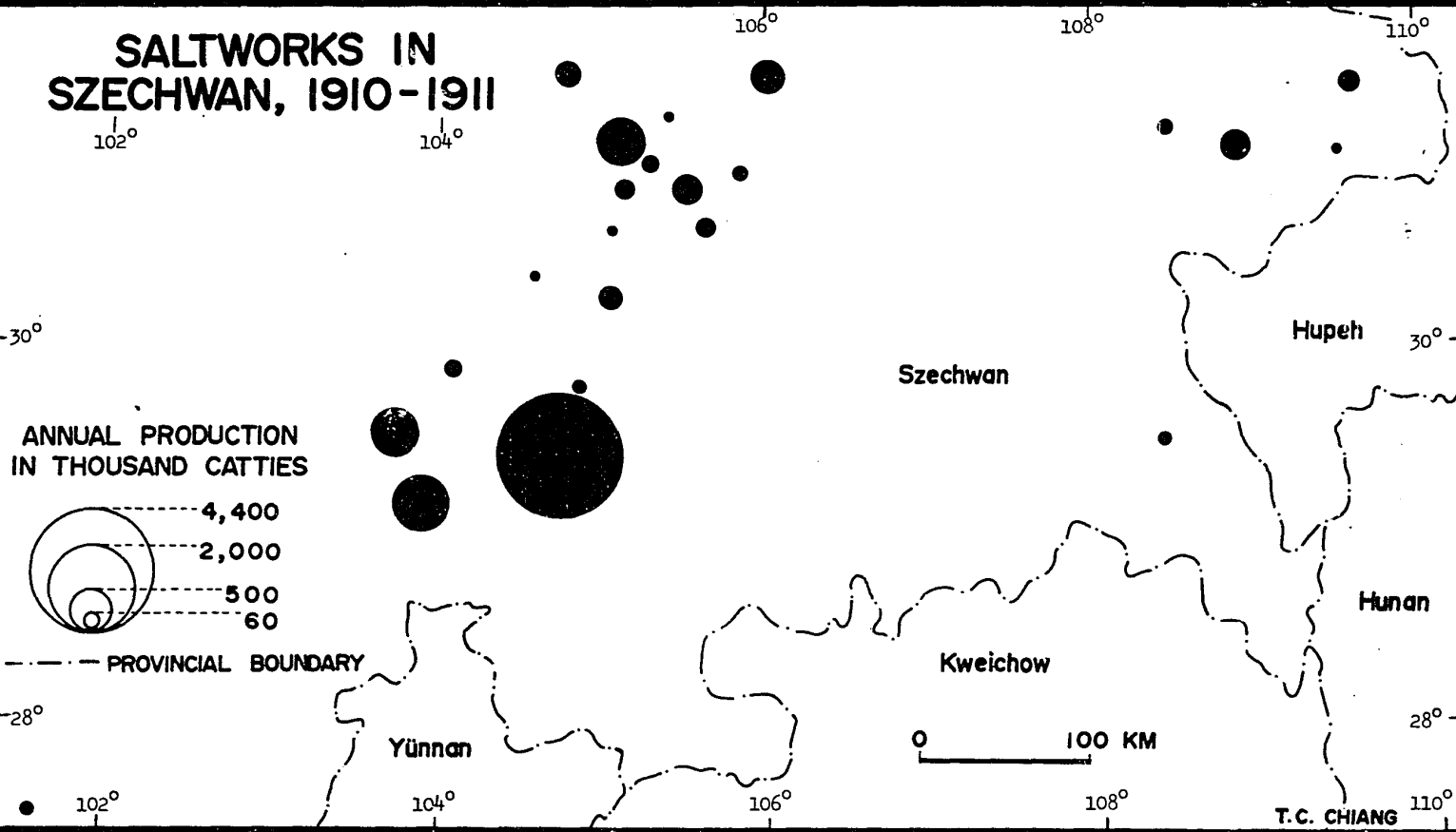


Figure 13

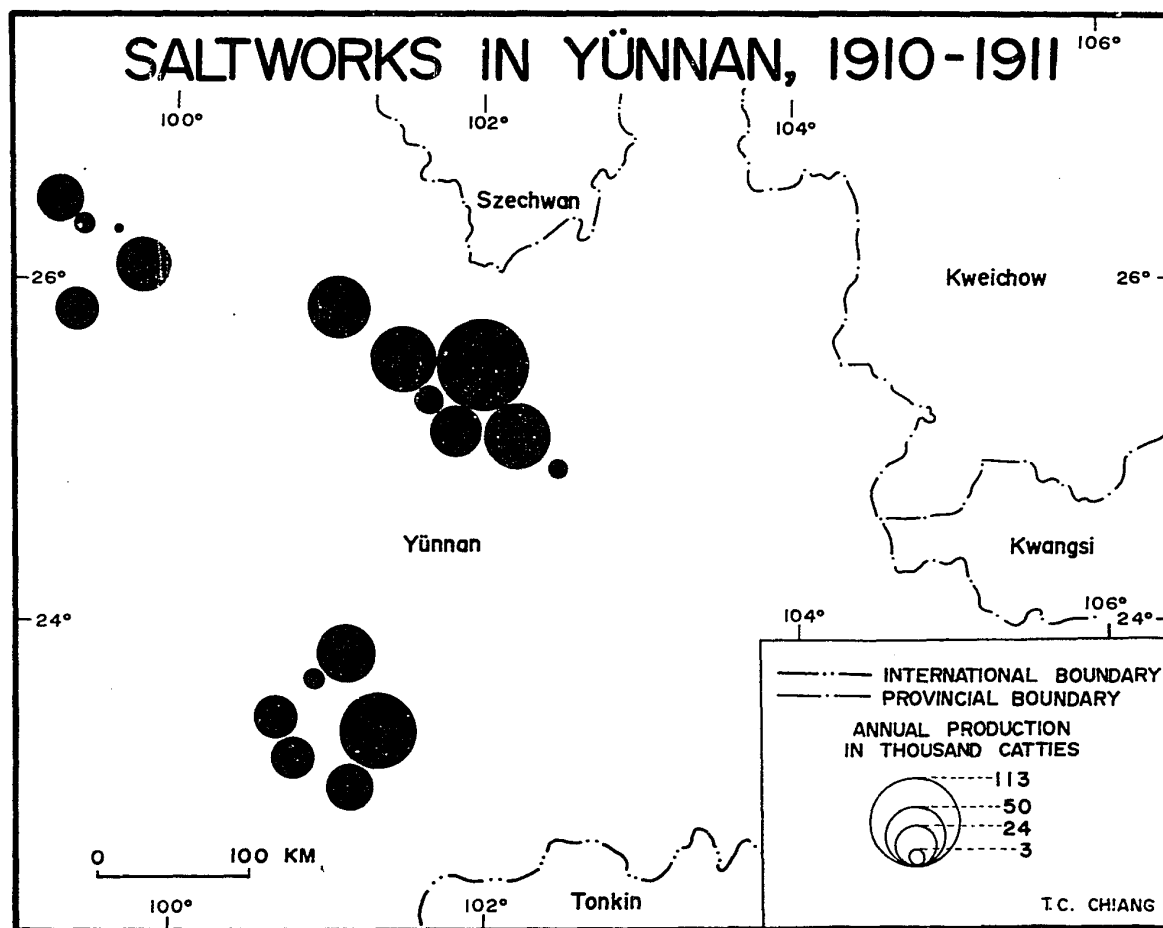
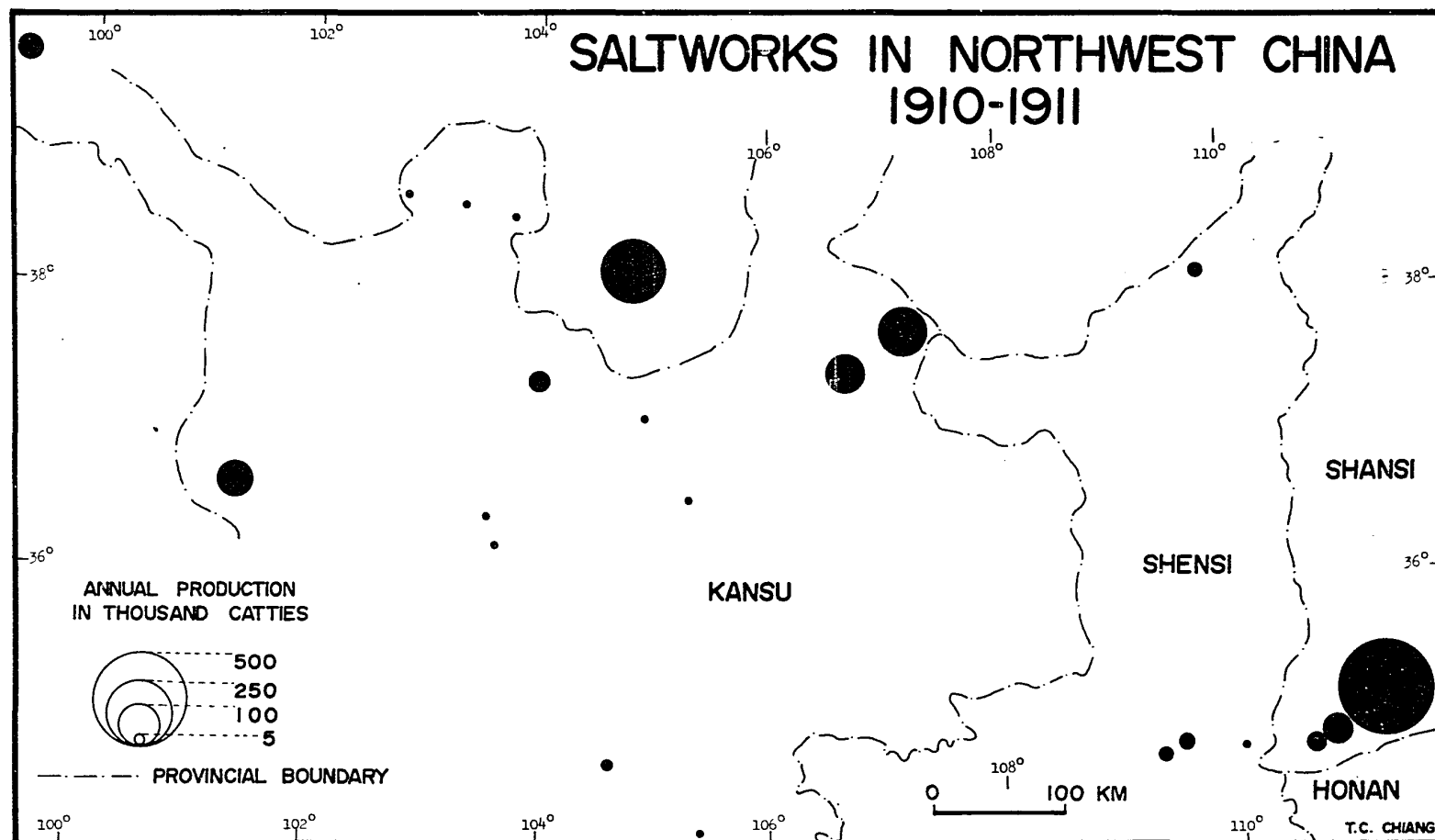


Figure 14



prior to the Ming.⁶ Since Ming, the development of Chinese salt production has taken a somewhat reverse direction because of differing regional-population growth-rates, and to some extent because of the improvement of transportation facilities and production technology.⁷ A better natural resource base has particularly stimulated the rapid and intensive growth of the industry along the North China sea-coast.⁸

The Nature of Brine and Salt Deposits

Sources of salt supply in Ch'ing China were widespread, but not ubiquitous.⁹ Several different types of raw materials were utilized, but there was no known occurrence

⁶For the areal extent of the salt-producing regions of the T'ang and Sung, see Denis C. Twitchett, Financial Administration under the T'ang Dynasty (Second edition; Cambridge, England, 1970), pp. 173-179 and Tai I'hsüan, Sung-tai ch'ao-yen chih-tu yen-chiu (A Study of the Salt Note System of the Sung Dynasty) (Shanghai, 1957), pp. 1-48.

⁷Saeki Tomi, Shindai ensei no kenkyū (The Salt Administration under the Ch'ing Dynasty) (Kyoto, 1956); Ho Weining, Chung-kuo yen-cheng shih (History of the Chinese Salt Administration) (Taipei, 1955); China, Ts'ai-cheng-pu, Yen-wu tsung-chū, Chung-kuo yen-cheng shih-lu (Records of the Chinese Salt Administration), Vol. 5 (Taipei, 1954).

⁸Ch'en Cheng-siang, "Chung-kuo yen-yeh ti-li" (A Geographical Study of the Salt Industry in China), Ti-li yü ch'an-yeh (Geography and Industries), Vol. 2, No. 1 (1957), pp. 11-15.

⁹The term ubiquity refers to raw materials that are available everywhere at the same price. See Alfred Weber, Theory of the Location of Industries, translated with an Introduction and Notes by Carl J. Friedrich (Chicago, 1929), pp. 50-51.

of pure rock salt in China Proper during the Ch'ing dynasty.¹⁰ Only at some lakes in Kansu was there salt, crystallized under very dry climatic conditions.¹¹ For the production of crude salt, brine, saline rock and salty earth, the principal raw materials were, however, gross materials rather than pure ones.¹² Weight lost through salt-making processes varied from one kind of material to another and differed from place to place. Samples of seawater gathered at different saltworks on China's seacoast have a salt content of one to five percent by weight (Table 15). On the average, the salinity of seawater off the China seacoast is about three percent. Thus, from every 100 pounds of seawater, only three pounds of salt can be extracted.

¹⁰Outside China Proper, pure, natural crystallized salt deposits were found in Hsinchiang and the Tsaidam Basin. See Yüan Chien-ch'i, Hsi-pei yen-ch'an tiao-ch'a shih-lu (A Survey of Salt Resources in Northwest China) (Nanking, 1947), pp. 37-78. Salt deposits were discovered recently in Hunan Province. See Chu Mo-lin, Fei-ch'u yen-wu kai-k'uang (Account on Salt Administration on Mainland China) (Taipei, 1962), p. 56.

¹¹Sung Yin-hsing, translated by E-tu Zen Sun and Shiou-chuan Sun, T'ien-kung k'ai-wu: Chinese Technology in the Seventeenth Century (University Park, Penn., 1966), p. 122. The production of this type of salt was very small in quantity. It accounted for less than a half of one percent of the national total production.

¹²There are two kinds of localized materials: pure materials and gross materials. Pure materials are those which enter to the extent of their full weight into the finished product, while gross materials are those which impart only a portion or none of their weight to the finished product. See Weber, op. cit., footnote 9, pp. 52-53.

Table 15.
Salinity of Brine

Province*	Type of Brine	Salt Content in Percentage by Weight
Chihli	Seawater	0.93 - 4.68
Shantung	Seawater	1.25 - 3.75
Kiangsu	Seawater	2.50 - 4.94
Chekiang	Seawater	2.02
Kwangtung	Seawater	1.44 - 2.43
Taiwan	Seawater	2.50 - 3.00
Kansu	Well brine	2.00
	Lake water	25.50 - 30.00
Szechwan	Well brine	1.04 - 27.69
Yunnan	Well brine	1.56 - 56.25
Hupei	Gypsum mine brine	1.00 - 13.00

*No data are available for Fukien and other provinces

Sources: See Appendix C.

The salinity of seawater varies with place as well as with time. In general, it is higher off the North than the South China coast.¹³

¹³Three sources show however that the salinity of seawater is higher off the South China coast than off the North China coast. Reasons for this are twofold. First, the difference in salinity between both is very small. Second, it could be due to the bias of samples. In considering the drier climate in North China than in South China,

The salt content of brine raised from wells in the interior, ranges from one to fifty-six percent by weight. In late Ch'ing, half the salt produced in Szechwan Province was extracted from brine having a salinity of less than ten percent of salt substance. The salinity of brine correlates with the depth of the producing well. The deeper the well, the greater the salinity of the brine. In general, brine pumped from wells of a depth of six to seven hundred meters has a salt content of thirteen percent by weight. Wells having a depth of nine hundred meters yield brine with a salt content of eighteen percent by weight. However, as the depth of a well reaches beyond nine hundred meters, saline rock with a salt content of twenty-five percent by weight can be found.¹⁴ The brine produced in Yünnan Province had an even higher salt content, ranging from two percent up to fifty-six percent, with about half the salt produced in that province in late Ch'ing times being extracted from brine with a salt substance of twenty-five percent. Water in some

the higher salinity of seawater in the North seems to be logical. See Chu Tsu-yu, Chung-kuo hai-yang (China's Seas) (Taipei, 1956), pp. 49-50; Shinkichi Yoshimura, "Higashi shinakai kaiyoshi" (An Oceanographical Study of the East China Seas), in Watanabe Akira, ed., Shin chiri taikei: shizen kankyo (A Geography of China: Physical Environments) (Tokyo, 1926), pp. 464-465; and Richard A. Barkley, Oceanographic Atlas of the Pacific Ocean (Honolulu, 1968).

¹⁴Wang Yung-che, Ssu-ch'uan sheng (Szechwan Province) (Shanghai, 1956), pp. 37-38.

salt lakes in Kansu Province had very high salt content; i.e., twenty-five percent or higher, whereas the brine obtained from gypsum mines in Hupeh Province had a salt content of only one to thirteen percent.¹⁵ As a whole, about four-fifths of the total production of salt in Ch'ing China was extracted from raw materials that had a salt content of roughly three percent by weight. These raw materials, however, were made to lose a great part of their weight in the salt-making process, as salt was processed at the point of its source in order to save transport costs. Therefore, the chemical nature of brine and salt deposits determined the geographical distribution of salt production in Ch'ing China.

The Natural Base for Salt Production

In Ch'ing China, a major factor responsible for geographical variation in production methods and production costs of salt was the physical environment for salt production. Not only did this differ in the interior from that on the seacoast, but the physical environment also varied among places in the interior or on the seacoast. The following discussion will emphasize the difference in physical environment among coastal salt-producing areas.

¹⁵ See Wu Ch'eng-lo, Chin-shih Chung-kuo shih-yeh t'ung-chih (A Survey of Industries in Modern China), Vol. 1 (Shanghai, 1929), p. 221; and Lin Chen-han, Huai-yen chi-yao (Essentials of the Salt Industry in Lianghuai Region) (Shanghai, 1928), p. 42.

The straight, flat and low-lying seacoast north of Hangchou Bay favored the construction of salt fields and the operation of saltworks. Hence, there were numerous salt fields in Chihli, Shantung, and Kiangsu Provinces. On the other hand, south of the Bay, the seacoast was mostly rocky, indented and occasionally included small patches of lowland. It was relatively unfavorable for solar evaporation. A lack of extensive, flat, coastal plains does not favor the construction of large saltfields. In addition, owing to the rugged terrain, fast-flowing rivers in Chekiang, Fukien and eastern Kwantung are of little use for transportation, except for small native boats, which have to be hauled upstream. Except for the Si Kiang Valley, the limited hinterlands of these rivers also restricted salt production.¹⁶ Therefore, the most important area of salt production was the Lianghuai salt-producing region, which benefited from a flat coastal plain and a vast marketing area penetrated by the Yangtze, the Huai and their tributaries.

At saltworks along the seacoast, in the inland areas of North China, and in Northwest China, salt was produced either wholly or partially by solar evaporation. Climatic conditions therefore played a crucial role. Evaporation

¹⁶Chiao-min Hsieh, Atlas of China (New York, 1973), pp. 19-20 and maps I-1 and I-16. See also Ch'en Cheng-siang, loc. cit., footnote 8, p. 11.

rate is a function of atmospheric temperature. The higher the evaporation rate, the more favorable is the condition for salt production. Along China's seacoast, the summer months constitute the best period in the year for brine-gathering, and on the average, the annual period for salt production in North China is shorter than that in the South. The former averages three to four months, while the latter, only four to five months. The best period for brine-gathering in the Wenchou area of Chekiang Province is, for example from June to September, when the average monthly temperature is above 22°C.¹⁷ In the coastal areas of Chekiang Province, the average monthly temperature is above 4°C throughout the year. In Fukien and Kwantung Provinces, it is much higher. Thus, salt can be produced all year long in these provinces. However, in North and Northwest China, average monthly temperatures are below the freezing point for a period of one to three months, during which the saltworks stand idle.¹⁸

Salt production is also affected by precipitation. When the precipitation of a place increases, the salinity of

¹⁷See Chang Liu and Hu Chün-t'ai, Che-chiang yen-cheng-chü tiao-ch'a yen-yeh pao-kao (A Field Survey of the Salt Industry in Chekiang) (n.p., 1912), "When-chou chih-pu," pp. 7-8.

¹⁸Yuan Chien-ch'i, "Yen-ch'ü ch'i-hsiang chih ch'u-pu yen-chiu" (A Preliminary Study of the Weather and Climate of China's Salt Regions), Yen-wu yüeh-pao (Salt Administration Monthly), Vol. 6, No. 12 (1947), pp. 4-28; reference on pp. 5 and 8.

its seawater decreases. The drier the climate of a place, the higher the evaporation rate, and the easier will be the production of salt at that place. As atmospheric moisture in China comes mostly from the Pacific, the precipitation decreases from southeast to northwest. The isohyet of average annual precipitation of 750 mm runs along the Tsinling and the Huai. The annual precipitation in areas north of this line is less than 750 mm, while the average annual precipitation in coastal areas of Chekiang, Fukien and Kwantung provinces ranges from 1,000 mm to more than 2,000 mm.¹⁹

Therefore, North and Northwest China have a more favorable climate for salt production than South, Southwest and Southeast China.²⁰ More critical is the duration of the rainy season. On the average, there are more than 100 rainy days²¹ in coastal areas south of the Yangtze, while north of the river, there are less than 100. The area with the shortest rainy period on China's seacoast is found in the section west of Yent'ai and south of Shanhaikuan, which has less than seventy-five rainy days annually.²² Another

¹⁹Chia-min Hsieh, op. cit., footnote 16, pp. 30-31.

²⁰Yuan Chien-ch'i, loc. cit., footnote 18, pp. 5-6 and 8.

²¹Any day with a minimum daily precipitation of more than one tenth of a millimeter is defined as a rainy day.

²²Yuan Chien-ch'i, loc. cit., footnote 18, pp. 8-10. Also see Chia-min Hsien, op. cit., footnote 16, p. 32.

factor affecting salt production is the frequency of typhoons. South China's seacoast is frequently visited by destructive typhoons, while North China's seacoast is normally free of this hazard.

Owing to the differing amounts of precipitation, the differing numbers of rainy days, and the differing typhoon frequencies, production methods in one coastal salt-producing area differ markedly from those in another. The solar evaporation method on large saltfields was very popular in Chihli, Shantung and northern Kiangsu, while the solar evaporation method, with portable wooden pans, was used in the Hangchow Bay area. These pans could be piled up and covered to keep off the rain on rainy days. In southern Chekiang, Fukien and Kwangtung, brine was evaporated in small paved salt pans.²³ These portable wooden pans and small paved salt pans were designed to allow the strong brine to complete the final process of crystallization within several hours under fine weather, a process to be discussed in detail in the following section.

Sources of Raw Materials and Production Methods

The raw materials for producing salt came from six sources: seawater, salt lakes, brine wells, saline rock,

²³Yuan Chien-ch'i, loc. cit., footnote 18, p. 11.

gypsum mines and salty earth (Table 16).²⁴ For centuries, the only method of extraction practiced at coastal saltworks was to boil seawater, and this technique was employed in

²⁴Two other types of salt, mu-yen or "wood salt" and p'eng-yen or "grass salt," were presumably formed by evaporating ground brine on tree branches, pieces of wood, twigs and grass. See Li Shih-chen, Pen-ts'ao kang-mu (The Great Pharmacopoeia) (1596; Reprinted edition; Shanghai, 1930), Vol. 10, p. 38; and Sung Yin-hsing, op. cit., footnote 11, pp. 109 and 122-123. See also Fujii Hiroshi, "Mindai enjō no kenkyū" (A Study of the Saltworks of the Ming Dynasty), Hokkaido Daigaku bungkubu kiyō (Bulletin of the Faculty of Arts of the University of Hokkaido), No. 1 (March 1952), pp. 76-85. In Wenchou, Chekiang Province, tree branches, pieces of wood, twigs and grass gathered from the seashore were collectively termed as t'ien-hui (natural ashes) from which brine was obtained by the leaching method. The salt obtained by boiling the brine was thus a kind of wood salt or grass salt. See Chang Liu and Hu Chün-t'ai, op. cit., footnote 17, pp. 3-4.

Table 16.
Types of Salt and Methods of Production
in Ch'ing China, by Province

Type of Salt	Method of Production	Province
Sea salt	Boiling Leaching ashes Iron pans	Chihli, Shantung, Kiangsu, Chekiang
	Leaching peat* Iron pans	Chekiang, Fukien, Kwangtung
	Bamboo pans	Chekiang, Fukien, Kwangtung
	Solar Evaporation Seawater	Chihli, Shantung, Kiangsu, Fukien, Kwangtung
	Brine Leaching ashes Salt fields Wooden pans	Chekiang Chekiang, Kiangsu
	Leaching peat Salt fields Wooden pans	Shantung, Chekiang, Fukien, Kwangtung Chekiang, Kiangsu
Lake salt	Playa salt dredging	Shensi
	Solar evaporation	Shansi, Shensi, Kansu
	Boiling	Shensi, Kansu
Well salt	Boiling Brine raised from wells	Kansu, Szechwan, Hupeh, Yünnan
	Leaching peat	Kansu, Szechwan
Saline rock	Boiling	Szechwan, Yünnan

Table 16.
Types of Salt and Methods of Production
in Ch'ing China, by Province
(Continued)

Type of Salt	Method of Production	Province
Gypsum salt	Boiling	Chekiang, Hunan, Hupeh
Earth salt	Boiling	Chihli, Shantung, Kiangsu, Chekiang, Shansi, Shensi, Kansu, Honan, Anhwei, Hupeh

*Materials leached including peat scraped from ground, mud of newly-emerged coastal land and sandy soil processed in fields.

every maritime province of China as late as 1830.²⁵

²⁵At least as early as in 1746, the boiling method was employed only on the Changway saltworks in the Ningteh district of Fukien Province. See Min-sheng yen-ch'ang ch'üan-t'u, 1746 (A Pictorial Map of Saltworks in Fukien, dated in 1746) (A manuscript of an original Chinese landscape painting on silk in color collected by the Library of Congress, Geography and Map Division. I am indebted to Dr. Sen-dou Chang for reminding me of the existence of this painting.) As late as 1830, the boiling method was still used in Fukien Province. See Fu-chien yen-fa chih (Compendium on Salt Administration of Fukien Region) (1830), preceding chüan 1, p. 1b and chüan 9, pp. 19b-20a. At least as early as 1886, the boiling method was then no longer found in Fukien Province. See YFTC, chüan 32, pp. 8-12. At the beginning of the sixteenth century, the solar evaporation method was first employed, at least in P'ut'ien Hsien of Fukien Province. See Hsing-hua fu-chih (Gazetteer of Hsinghua Prefecture) (1503; Reprinted edition; 1871), chüan 12, cited in Han Ta-ch'eng, "Ming-tai shang-p'in ching-chi ti fa-chan yü tzu-pen chu-i meng-ya" (The Development of a Commodity Economy and the Growth of Capitalism in the Ming Dynasty), in Han Ta-ch'eng et al., Ming-Ch'ing she-hui ching-chi hsing-t'ai ti yen-chiu (Studies on the Social and Economic History of the Ming-Ch'ing Periods) (Shanghai, 1957), pp. 5-6. See also P'u-t'ien hsien-chih (Gazetteer of P'ut'ien Hsien) (1758; reproduction of 1926 edition; Taipei, 1963), chüan 2, pp. 83b-84a. Fukien was the first of the salt-producing provinces in humid South China to switch completely from the boiling method to full solar evaporation. Reasons for the change were the lack of fuel and the improvement of brine-gathering techniques. The salinity of brine was high enough to complete salt crystallization in a very short time under solar evaporation. See also YFTC, chüan 2, p. 4.

Apparently, this was the simplest method then known.²⁶ In this process, seawater was not boiled directly. Instead, brine of high salinity was first obtained by one of a number of methods. In intertidal areas in Chihli, Shantung, and Kiangsu provinces, for example, ashes of burnt reeds or rice straw from salt stoves were spread on the ground to a depth of about one inch in order to absorb salt. The ashes were then swept up and filtered with seawater to yield brine,

²⁶For example, in 1914 about forty percent of the total production of salt in Chekiang Province was produced by the boiling method. See Fan Yün-shu, "Che-chiang ch'ang-ch'an chi-hua-shu" (A Plan for the Production of Salt in Chekiang), YCTC, Vol. 2, No. 7 (August 1915), chuan-chien III pp. 1-17; reference on pp. 4-7. Conditions remained the same as late as the twentieth century. See Joseph E. Spencer, "Salt in China," Geographical Review, Vol. 25 (1935), pp. 353-366; reference on p. 358. A recent report indicates that even late in 1958 there were still 801 salt-boiling stoves in use in the Huainan region. See Chu Feng, "T'an Huai-yen" (Account of the Production of Salt in Liang-huai Region), Ti-li chih-shih (Geographical Knowledge), Vol. 9, No. 8 (1958), pp. 345-348; reference on p. 348.

which was boiled down in a shallow iron pan.²⁷ On the flat coastlands, extensive growths of wild reeds and heavy marsh grass provided cheap fuel. Each salt household had a certain area of land for growing reeds on which no encroachment was allowed. Another practice was adapted to coastal lowlands that were submerged by high tides. A pit was covered with reed mats, over which salty earth was spread.²⁸ At high tide, brine seeped through the earth and the mat into the pit, dissolving some of the salt contained in the earth. After the tide receded, the brine was removed from the pit

²⁷There were two kinds of pans. Iron pans had been used for centuries in China. In addition, pans made of woven bamboo were also used in eastern Chekiang, Fukien and Kwangtung. The outside of the pans, which were approximately ten feet in diameter and one foot deep, was plastered with clamshell lime. An advantage to using these bamboo pans is that they were much cheaper than iron pans and could be made locally right at the saltworks. In addition, the longer the clamshell lime was burnt, the harder it would become. Generally, these bamboo pans lasted about a year. Iron pans were big. It was not economic for a salt-producing household to have a single pan. Besides, iron pans easily rusted and wore out much more quickly in humid South China than in semi-humid North China. See Ho Wei-ning, op. cit., footnote 7, p. 308 and Sung Ying-hsing, op. cit., footnote 11, p. 115. See also YFTC, chüan 35, pp. 2-3.

²⁸The earth's quality depends on the quantity of sand that it contains. The sandier the earth is, the less brine it produces. However, the leaching time for sandy earth is only three-fifths that for loamy earth. See Chang Liu and Hu Chün-t'ai, op. cit., footnote 17, p. 7.

and boiled, yielding salt.²⁹ In Shantung, Kiangsu, Chekiang, Fukien and Kwangtung provinces, the pit was dug in somewhat higher ground, which was not washed by tidal waters. Seawater was then poured over the cover of the pit and filtered through to produce a stronger brine.³⁰ On newly-emerged coastal plains, a similar method was used, salty mud was scraped from the ground and then filtered with seawater to obtain brine. Therefore, saltworks kept moving toward the sea as the new shoreline continuously emerged. In the nineteenth century, all saltworks in the Huainan region were, for example, located outside the Fan-kung-ti (dike), but formerly they were all inside (Figures 15 - 17).³¹

Solar evaporation was used in three ways, mainly on the coasts of Chihli, Shantung and Kiangsu provinces where the climate was dry and the low-lying coastal plains were

²⁹ As refined salt was for the first time produced in 1914, crude salt was produced at saltworks throughout Ch'ing China. See Matsui Gentarō and Kosiji Shuichirō, eds., Tsui-hsin hua-hsueh kung-yeh ta-ch'uan (Encyclopedia of Chemical Industries), Chinese translation by Li T'un-hua and Lo Hsiung-ts'ai, Vol. II (Shanghai, 1936), p. 255.

³⁰ Sung Ying-hsing, op. cit., footnote 11, pp. 110 and 115.

³¹ See "Fu-tsou Fan-ti cha-pa li-chin ch'i-pi fu-p'ien" (A Memorial on the Opening and Closing of the Gates of Fan-kung-ti), in TIKCC, Vol. 3, pp. 1643-1647; reference on p. 1644. See also Chang Liu and Hu Chün-t'ai, op. cit., footnote 17, p. 3.

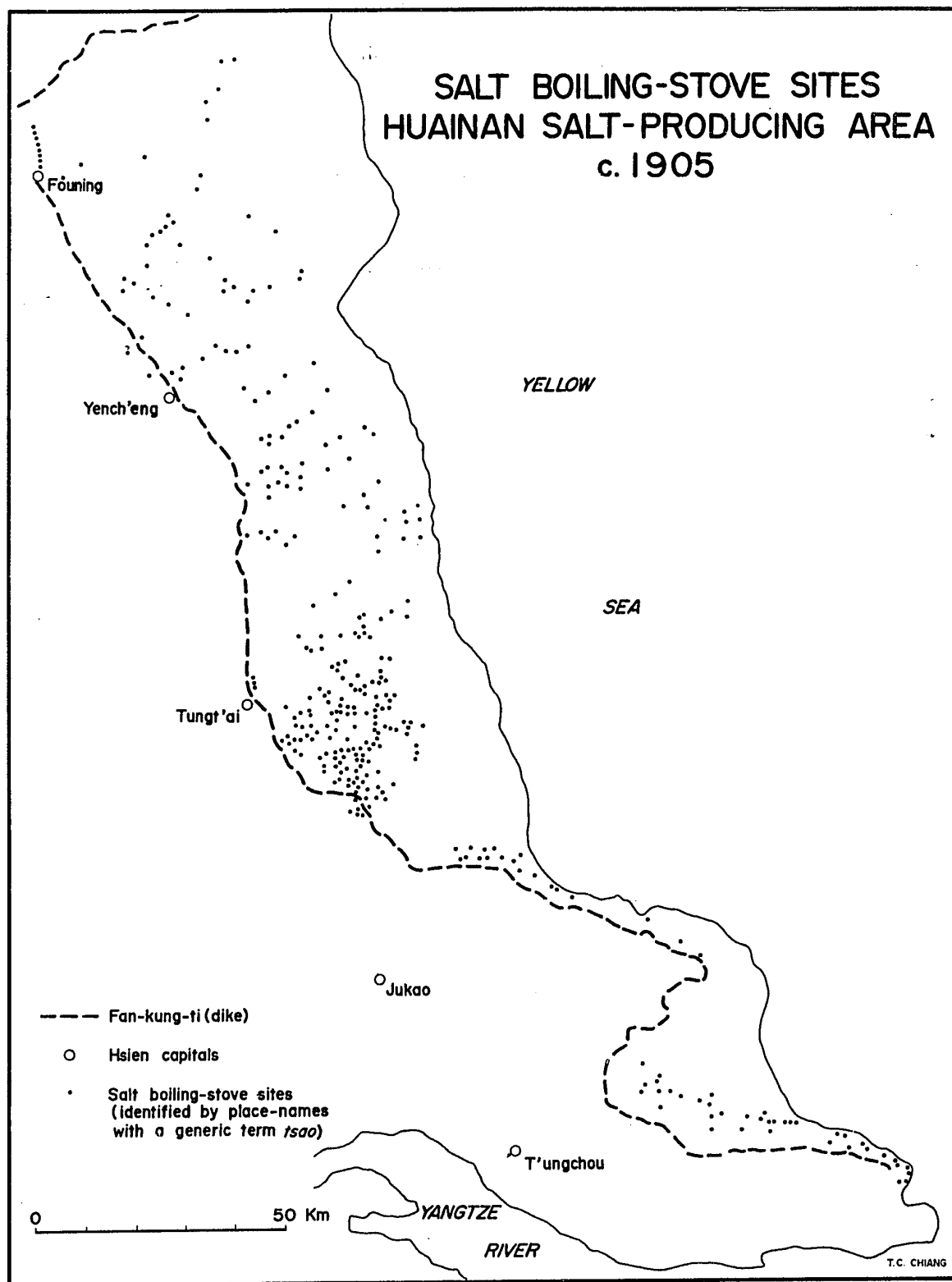


Figure 15

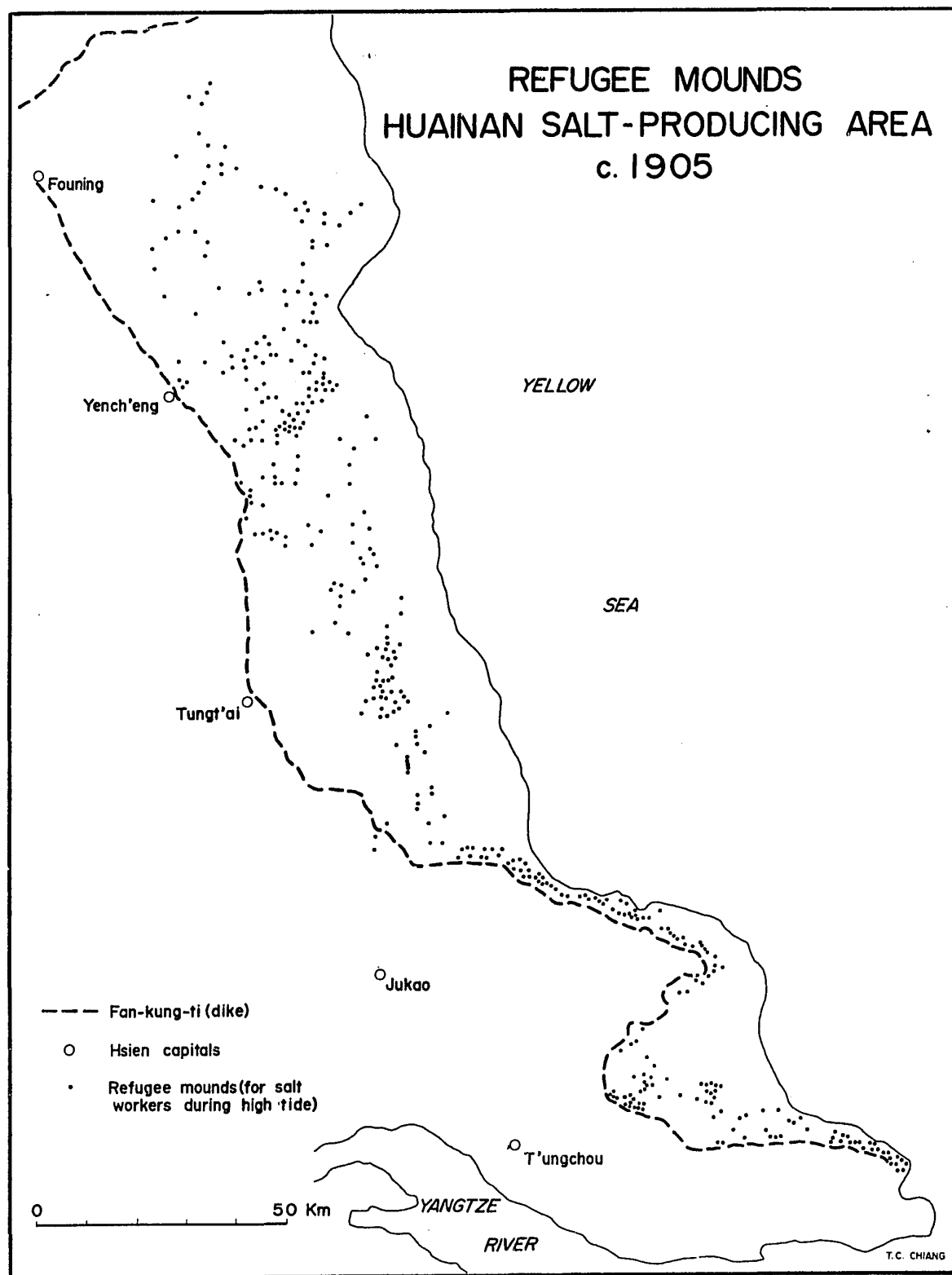


Figure 16

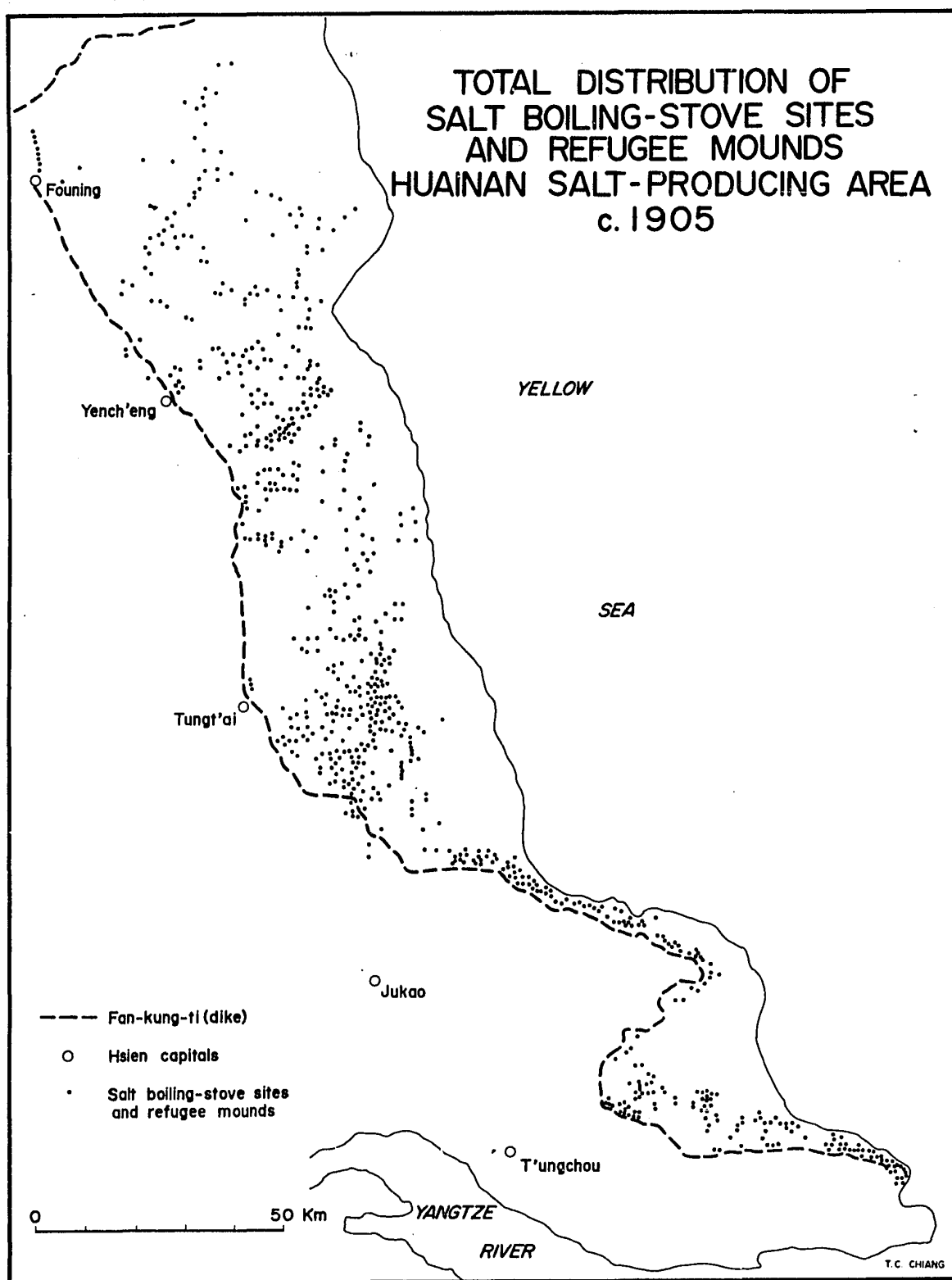


Figure 17

flat. Here, seawater was evaporated directly by solar heat. For example, in 1891, there were 4,965 brick-paved salt fields at the Panp'u saltworks, 2,489 at the Chungcheng salt works, and 1,999 at the Lin-hsing saltworks in northern Kiangsu Province.³² On a much smaller scale, this method was also practiced in Fukien and Kwang-tung provinces. Shallow saltfields were filled with seawater, which was shifted from field to field until salt crystallization began --a process that took several days to complete in favorable weather. In Chihli, for example, this process took two to three days in May and June, while six to seven days were needed in March and April owing to differences in temperature and the intensity of evaporation.³³

The designs and structures of these fields or pans varied with each province. Thus, there were different names. These were called yen-ch'ih in Chihli, Shantung and Kiangsu, yen-t'an in Chekiang, and yen-ch'eng in Fukien and Kwangtung. In Fukien, seawater was directly evaporated by solar heat in saltfields of about 1,800 square meters, each of which was divided into three parts. The first fifth was known as the yen-lu, the middle three-fifths, the yen-ch'eng,

³²See YFTC, chüan 30, p. 25.

³³See Ling Wen-yüan, op. cit., footnote 3, p. 25. See also Sung Ying-hsing, op. cit., footnote 11, pp. 110 and 116 and Chu Feng, loc. cit., footnote 26, pp. 345-348.

and the remaining part, the yen-k'an. The yen-lu was for the storage of fresh seawater, the yen-ch'eng were for evaporation, and the yen-k'an was for salt crystallization. Of the three, only the yen-k'an was paved with pebbles.³⁴

There were two types of saltfields. In low areas adjacent to the sea, fields were connected by canals that led to the sea. In areas either far from the sea or on higher ground, it was un-economic to have a canal. Instead, wells were dug and seawater or underground saltwater were lifted into the fields by windmill or by two men using a wooden bucket.³⁵

In Shantung, Chekiang, Fukien and Kwangtung provinces, seawater was indirectly evaporated by solar heat. Strong brine obtained through either method of filtration was poured into large pans paved with bricks and stone slabs. This final process of crystallization was completed within several hours. Some of these pans also had a collecting vat to store the brine on rainy days.³⁶

In the Hangchou Bay area, brine was evaporated in portable wooden pans by solar heat (Figures 18 and 19).

³⁴See Ching-chi hsüeh-hui, Fu-chien ts'ai-cheng shuo-ming-shu (A Report on the Provincial Finance of Fukien), cited in YFTC, chüan 32, p. 8.

³⁵YFTC, chüan 29, pp. 4b-7a.

³⁶See Chang Liu and Hu Chün-t'ai, op. cit., footnote 17, pp. 18-19.

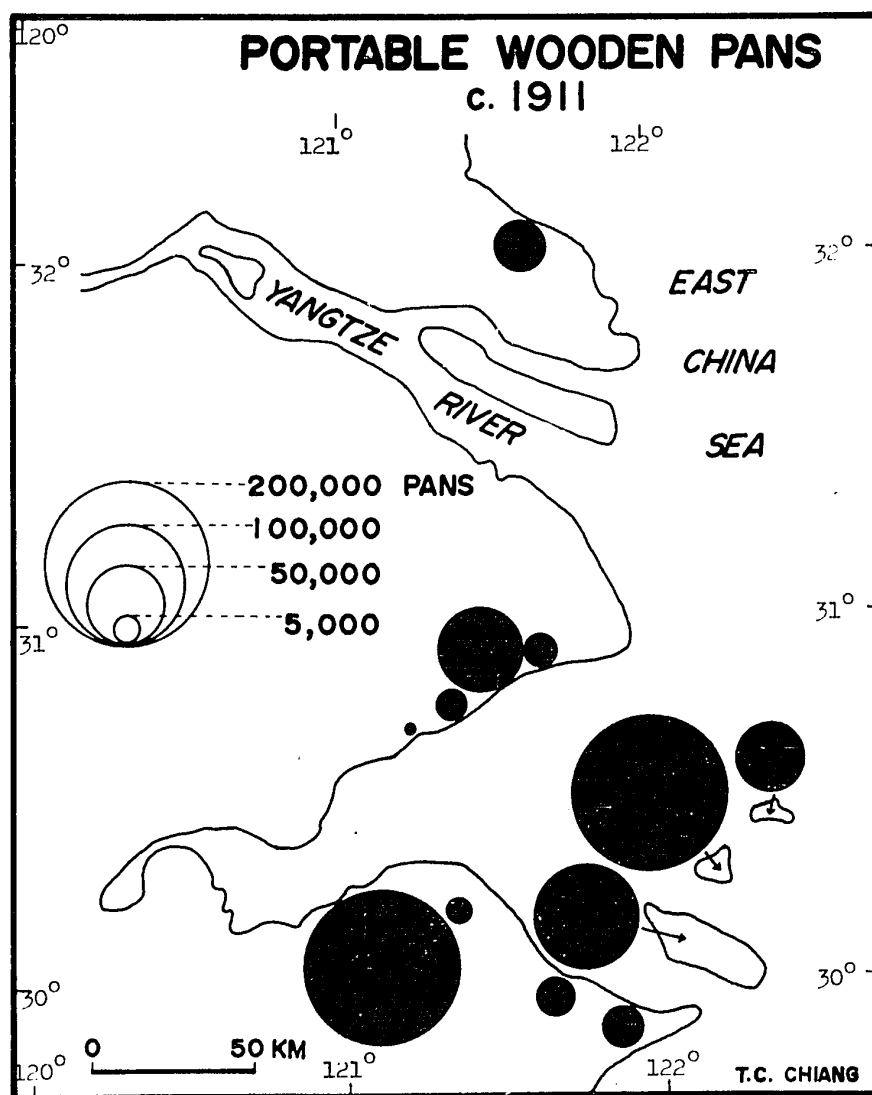


Figure 18

SALT PRODUCTION IN LIANGCHE, c.1911

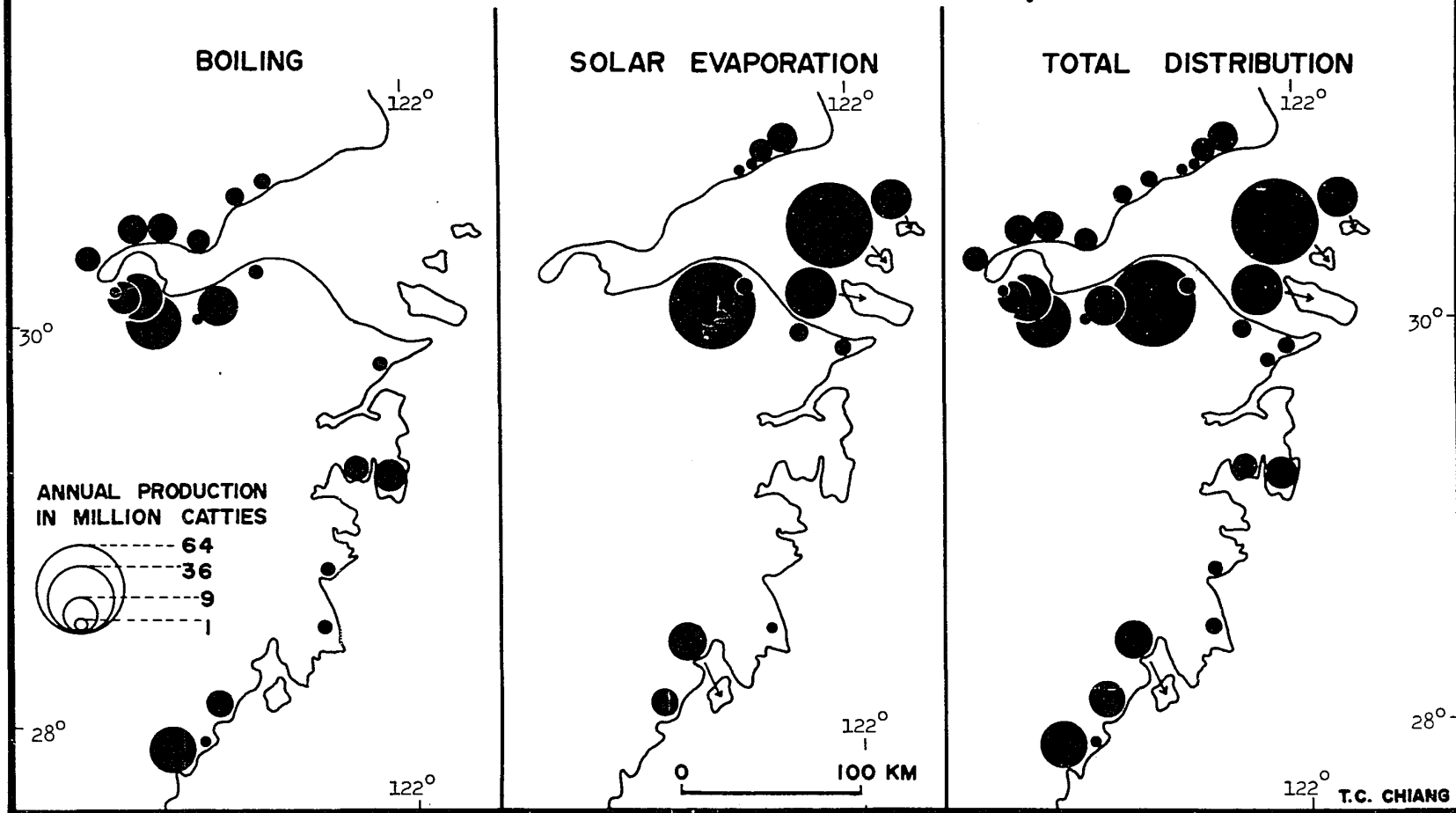


Figure 19

approved and stamped with the government seal. Pans that were not so stamped could not be used. Such wooden pans were about eight feet long, three feet wide and one to two inches deep. However, the sizes were by no means uniform.³⁷ Some were so small and light that they could be carried and piled up by women and children, which provided an outlet for surplus labor in rural areas. At the Yüyao saltworks in Chekiang Province, the final process of crystallization in these portable pans took only one day in fine weather in summer.³⁸ Strong brine was obtained from either method of filtration. Portable wooden pans were innovated at the Taishan saltworks in the eighteenth century, and later their use spread to other saltworks in the Liangche region. By the end of the Ch'ing period, there were 571,913 wooden pans in Chekiang Province.³⁹ In 1908, these were finally adopted

³⁷Ibid., "Wen-chou chih-pu," p. 19 and "Shao-hsing chih-pu," pp. 9-10.

³⁸Ibid., "Shao-hsing chih-pu," p. 11.

³⁹See YFTC, chüan 35, pp. 12-13.

at the Lüssu saltworks in the Huainan region.⁴⁰ In general, the leaching of earth was more often associated with solar evaporation than with the boiling method, owing to the unavailability of ashes.⁴¹ In addition, in Kwangtung, there was a fourth brine-gathering method employed which was locally termed "shai-sha" meaning "to sun-dry sand." Under this system, a field of sandy soil was first flooded with seawater at high tide. After being sun-dried, the field was then harrowed, a process which was repeated several times, until the soil became very salty. Finally the soil was collected and filtered to obtain brine.⁴²

In Shansi, Shensi and Kansu provinces, salt was produced at salt lakes. In Shansi, clear water was shifted

⁴⁰It was reported that in 1922 there were more than 18,000 portable wooden pans owned by the T'ung-jen-t'ai Salt Company in Lüssu. See Chang Chi-chih, "Ti-i Huai-nan ko-ch'ang t'ui-hsing pan-shai wei-ch'ih yen-ch'üan chien-ku tsao-min sheng-chi an" (A Proposal for the Adoption of Portable Wooden Pans and the Consideration of the Livelihood of Salt-producing Households in Huainan), in Chang Chi-tzu chiu-lu (Collected Works of Chang Chi-chih) (Shanghai, 1933), chüan 19, p. 16a. In 1958, there were still 8,198 portable wooden pans in use in the Huainan region (possibly all at the Lüssu saltworks). See Chu Feng, loc. cit., footnote 26, p. 345.

⁴¹YFTC, chüan 33, p. 9a.

⁴²For a description in detail, see Shu-yen Lin, "Salt Manufacture in Hong Kong," Journal of the Hong Kong Branch of the Royal Asiatic Society, Vol. 7 (1967), pp. 138-153; reference on pp. 139-143. See also CYFC, chüan 215, pp. 7-11a.

from Chiehch'ih, a salt lake, into salt fields in the spring under a process called "chung-yen" or "salt-planting."⁴³

Salt crystals produced by solar evaporation were collected in late summer.⁴⁴ At the east side of the lake, wells were dug to obtain brine, which was then evaporated in salt fields by solar heat.⁴⁵ In 1727, more than seven million catties of natural salt crystals were collected. Similar production occurred in the eighth and eleventh centuries.⁴⁶ A logical explanation is that it was so dry in these years that salt crystals could form. Moreover, the lake, fifteen miles long and two miles wide, was encircled by a wall, for protection against stealing and smuggling. Similar methods

⁴³The method was innovated in the T'ang. Before the T'ang, natural salt crystals were dredged. See YFTC, chüan 33, p. 11a. The method existed at least as early as in ca. 808 A.D. as a famous Chinese scholar who was a native of Hotung mentioned the salt field in an essay that he wrote in 808 A.D. See Liu Tsung-yüan, "Chin-wen" (Accounts on Shan-si) in Liu Ho-tung ch'üan-chi (Complete Works of Liu Tsung-yüan) (ca. A.D. 820; Reprinted edition; Shanghai, 1935), p. 188. For the year in which the essay was written, see Shih Tzu-yü, Liu Tsung-yüan nien-p'u (A Chronological Biography of Liu Tsung-yüan) (Wuhan, 1958), p. 52. The term chung-yen was also used in the Huaipai area. See Chu Mo-lin, op. cit., note h of Appendix B.

⁴⁴Sung Ying-hsing, op. cit., footnote 11, p. 115.

⁴⁵The wells were dug for the first time in 1777, when a canal overflowed. See YFTC, chüan 2, p. 28.

⁴⁶Wang Ch'ing-yün, Hsi-ch'ao chi-cheng (Collected Works on Government Affairs of Our Glorious Dynasty) (1898; reprinted edition; T'aipei, 1966), chüan 5, p. 35a.

were also practiced in Shensi and Kansu. Many salt lakes in Shensi and Kansu had natural salt crystals, which were then simply gathered by a colander with a long handle and were ready for distribution.⁴⁷ Lake water was also boiled to obtain salt in Kansu and Shensi provinces.⁴⁸

Production methods in Szechwan and Yunnan provinces were markedly different. There, salt was obtained by boiling brine pumped from deep wells. Brine was obtained in three ways. If the salinity of natural brine from a well were high, the brine was simply brought up in long bamboo tubes raised by a windlass turned by a big wheel rotated by buffaloes. Should a well contain salt rock, it would be filled with fresh water from the surface in order to dissolve the salt. The resulting brine was then lifted to the surface in the same way. In a third method, brine of low salinity raised from a well was sprinkled over dry earth or on ashes of burnt straw spread on the ground. As the sprinkled earth or ashes became dry by solar evaporation, sprinkling was repeated and after a number of these, salt was accumulated in the earth. The earth was finally filtered with the same salt water pumped from the well so as to obtain strong

⁴⁷Sung Ying-hsing, op. cit., footnote 11, p. 122.

⁴⁸Shen Ching-ming et al., Kan-su yen-fa chih-lüeh (Account on the Salt Administration in Kansu Province) (n.p., 1930), chüan 2, p. 6a.

brine.⁴⁹ In at least six districts in Szechwan Province,⁵⁰ natural gas was used as fuel in contrast to the use of coal.⁵¹ Elsewhere, firewood and straw were used.⁵² Brine

⁴⁹The third way was practiced in Taning, K'ai Hsien, Sant'ai and Lochih districts of Szechwan Province, and Hsiho district of Kansu Province. See Miao Ch'iu-chieh, Yen-cheng kai-yao (Salt Administration in China) (Nanking, 1946), p. 10.

⁵⁰These are Ilung, Chungchiang and P'engchi in northern Szechwan; Chiunglai in western Szechwan; and Fushun and Yunghsien in southern Szechwan. See YFTC, chüan 3, pp. 21-22.

⁵¹Coal had never been a major fuel for boiling salt in Ch'ing China, as it had been in England before 1800. See C. T. Smith, An Historical Geography of Western Europe before 1800 (New York, 1967), pp. 426-566.

⁵²See Sung Ying-hsing, op. cit., footnote 11, pp. 116 and 122. The use of natural gas for evaporating brine goes back certainly to the Han, and knowledge of it is probably even older. During the Ch'ing dynasty, however, only weak natural gas was known in the early-nineteenth century. At that time, gas was used, but firewood and coal were more important fuels. In the 1850's, the use of natural gas became more popular, and since then, its use has increased tremendously. See Richard C. Rudolph, "A Second-Century Chinese Illustration of Salt Mining," ISIS, Vol. 43, No. 131 (1952), pp. 39-41. For an interesting account of the salt industry at Tzuliuching during the late nineteenth century, see Jung Li, translated with an introduction and notes by Lien-che Tu Fang, "An Account of the Salt Industry at Tzuliuching," ISIS, Vol. 39, No. 118 (1948), pp. 228-234. One source indicates that cattle dung was also used. See Lin Chen-han, Ch'uan-yen chi-yao (Essentials of the Salt Industry in Szechwan) (Shanghai, 1916; Revised edition; 1919), p. 591.

wells were also found in Changhsien and Hsiho of Kansu Province, Hsianghsiang of Hunan Province and Kueichou of Hupeh Province.⁵³

Rock salt was produced in Yunnan Province. Saline rock was mined and soaked in either brine or fresh water. The flow of natural salt springs was also gathered. In both cases, the resulting brine was boiled to obtain salt. Principally in Yunnan Province, and to a lesser extent in Szechwan and Kansu provinces, wet salt was often removed from boiling pans and molded into specific shapes that hardened as they dried, to facilitate land transportation. These were marketed in three shapes, kuo-yen or pan salt in cake form, t'ung-yen or tube salt in tube form, and chuan-yen or brick salt in brick form.⁵⁴

At the gypsum mines of the Yinch'eng district in central Hupeh Province, after the gypsum had been mined, the lower portion of the mine was filled with water from the surface. It was then left for a period of six to eight

⁵³See Chang T'ing-yü et al., Ming-shih (History of the Ming Dynasty) (1739; Reprinted edition; T'aipei, n.d.), p. 457; Ku Tsu-yü, Tu-shih fang-yü chi-yao (Essentials of Historical Geography of China) (1667; Reprinted edition; Shanghai, 1937), p. 3506; and Ming-shih-lu (Veritable Records of the Ming Dynasty) (Nanking, Taiwan, 1964), "Ming T'ai-tsu shih-lu" (Veritable Records for the Period of the Reign of Emperor T'ai-tsu), p. 3527.

⁵⁴Liu Chün, "Ch'ing-tai Yunnan ti yen-wu" (Development of the Salt Administration in Yunnan Province during the Ch'ing Dynasty), CCCYC, Vol. 2, No. 1 (1933), pp. 27-141.

months,⁵⁵ but after such time the mine had become a brine well, the water having dissolved salt from the walls of the tunnel and shaft. The brine was then lifted to the surface by a large wooden bucket. When a mine became dry after its brine was extracted, it was again operated for gypsum, the resulting brine finally being boiled to yield more salt. Coal was used as fuel.⁵⁶ Salt was also produced as a by-product in gypsum mines in Ch'uchou and Hangchou, Chekiang Province and in Hsiangtan, Hunan Province.

The production of earth salt has been recorded in many districts in Chihli, Shantung, Honan, Shansi, Shensi, Kansu, Kiangsu, Anhwei and Hupeh provinces.⁵⁷ Surface layers of saline earth that had accumulated through centuries of seepage and the overflow of the middle and lower Yellow River, were scraped from the ground, soaked in water,

⁵⁵Another source says that the period lasts from ten to fifteen months. See Joseph E. Spencer, "Gypsum and Salt Mining in Central Hopeh, China," Economic Geography, Vol. 14 (1938), pp. 282-286; reference on p. 283.

⁵⁶Lin Chen-han, Huai-yen chi-yao (Essentials of the Salt Industry in Lianghuai Region) (Shanghai, 1928), "Ch'ang-ch'an," p. 41. See also Spencer, loc. cit., footnote 55, pp. 282-286.

⁵⁷Ho Wei-ning, op. cit., footnote 7, p. 234.

and then filtered, evaporated, and boiled in small pans, but the salt thus obtained was dark in color and of inferior taste.⁵⁸

Modern refined salt was unknown in Ch'ing China. Salt sold in Kan Hsien, Kiangsi was imported from Kwangtung, where it had been evaporated by solar heat. But after being imported to Kiangsi, it was first dissolved in water and then boiled to yield a product similar to that made in Huainan by the boiling method. However, in the final analysis, it was still crude salt.⁵⁹

The simplicity of the boiling method favored its wide use, but salt-producing households in Ch'ing China, as had those in Ming, had very low productivity. Annual production by a typical salt-producing household for example, varied

⁵⁸Sung Ying-hsing, *op. cit.*, footnote 11, p. 122; Shinoda Osumu, "Shih-yen" (Salt), in Yabuuchi Kiyoshi et al., translated by Chang Hsiung and Wu Chieh, *T'ien-kung k'ai-wu yen-chiu lun-wen-chi* (Collected Studies on T'ien-kung k'ai-wu) (Peking, 1959), pp. 92-94; Li Shih-chen, *op. cit.*, footnote 24, Vol. 10, p. 54. Saltpeter with earth salt as a by-product was obtained frequently in many parts of China. Thus, the earth salt was certainly produced in many other areas.

⁵⁹Reasons for this peculiar process are unknown so far. One source indicates, however, that salt merchants in Kan Hsien intended to smuggle the reboiled salt across the border into the market area of Huainan salt. See T'ao Chu, "Fu-ch'en Huai-Yüeh yin-chiai shih-i che-tzu" (A Memorial in the Border Area in Kiangsi and Adjacent to Huainan and Kwangtung Regions), in *TWIKCC*, Vol. 3, pp. 1563-1572.

from 1,000 to 4,000 catties.⁶⁰ And in terms of technology, most production methods were inherited from Ming. Innovations were few. As the Ch'ing government looked upon the salt industry as a revenue source, the salt administration machinery was occupied with problems involving revenue collection; yet it failed to improve production techniques. Salt officials were not interested in trying new approaches, as they were afraid these might fail. Furthermore, salt-producing households produced salt for the government, from which wages were too low to ameliorate general poverty among the workers. The real profiteers were the merchants engaged in distribution. Thus, salt-producing households were financially unable to try any new production method which might involve risk, while the merchants, who were financially able, had no incentive to do so. Production methods, basically hampered by the nature of the raw materials and the physical environment of the source areas, therefore remained primitive and inefficient.

⁶⁰Ho Wei-ning, op. cit., footnote 7, p. 278; Chang Chu et al., Liang-huai yen-fa chih (Compendium on Salt Administration of Lianghuai Region)(1551), chüan 5, p. 16; Wang Ch'i, Liang-che ts'o-chih (Account of Salt Administration of Liangche Region)(ca. 1614), chüan 4, p. 16; cited in Ho Wei-ning, op. cit., footnote 7, p. 278; Hsieh Chao-chih et al., Fu-chien yün-ssu chih (Account of Salt Transportation of Fukien Region)(ca. 1613), cited in Ho Wei-ning, op. cit., footnote 7, p. 260.

Production costs also varied with production methods, the solar evaporation method being less costly than the boiling method. In 1910, for example, the production cost of salt through the evaporation of seawater by solar heat directly in salt fields was less than two cash per catty and that by evaporating strong brine in portable wooden pans by solar heat was eight to nine cash. In the same sense, the production cost of boiling brine gathered by leaching peat was eight to nine cash per catty and that by boiling brine obtained by filtering ashes was eleven to twelve cash.⁶¹ According to a table compiled in 1912 for the Liangche region, the median cost of the boiling method was \$1.525 (silver currency) per picul of salt, while that for solar evaporation was \$0.713. In other words, the cost of the boiling method was more than twice that for solar evaporation.⁶² However, another source shows that later (in 1933), the ratio of production cost by solar evaporation and

⁶¹Chang Chi-chih, "YU-pei tzu-cheng-yüan chien-i t'ung-kai ko-sheng yen-fa ts'ao-an" (A Draft of the Salt Reform Submitted to the National Advisory Council), in Chang Chi-tzu chiu-lu (Collected Works of Chang Chi-chih) (Shanghai, 1933), chüan 17, p. 15b.

⁶²"Liang-che ko yin-ti yen-pen yen-shui shou-chia i-lan-piao" (A Table of the Production Cost, Tax Rate and Retail Price of Salt in Liangche Region), YCTC, Vol. 1, No. 1 (Dec. 1912), Tiao-ch'a pp. 1-4; No. 2 (Jan. 1913), Tiao-ch'a pp. 5-7. Due to the unavailability of reliable and comparable statistics on the production of salt for the Ch'ing period, we have to use those of a later date.

Table 17.
Production Cost of Salt in 1933

Region	Cost in Collars Per Picul Range	of Salt Median
Ch'anglu	0.135 - 0.315	0.225
Shantung	0.300	0.300
Fukien	0.300	0.300
Hotung	0.500 - 0.800	0.650
Lianghuai	0.300 - 1.700	1.000
Liangche	0.330 - 1.700	1.015
Liangkwang	0.260 - 3.500	1.880
Yunnan	2.000 - 4.800	3.400
Szechwan	1.700 - 5.350	5.350

Source: Ho Wei-ning, Hsin Chung-kuo yen-yeh cheng-ts'è
(New China's Salt Industry Policy) (Chungking, 1941;
2nd edition; Shanghai, 1947), pp. 3-12.

boiling, remained about the same (Table 17). In Huaipei, where the solar evaporation method was used, the median cost was 1.625 Chinese yuan per catty of salt; while in Huainan, where the boiling method prevailed, it was 3.00 yuan per catty in 1933.⁶³ In contrast to sea and lake salt, which

⁶³See China, Bureau of Foreign Trade, Ministry of Industry, China Industrial Handbooks, Kiangsu (Shanghai, 1933), p. 299.

was relatively cheaply produced, the production cost of brine-well salt, as it involved very costly well-drilling, was much higher.⁶⁴

Geographical Changes of Salt Production

To analyze geographical changes in salt production over time since the fourteenth century in China, the best available statistics of annual salt production for the entire country are those for the period 1368-98 and 1840-90. Annual production figures for other periods are not complete. These data show that annual production for the entire country increased from less than half a billion catties in the late fourteenth century to nearly three billion catties in the second half of the nineteenth, an increase of more than six times in five centuries. The rate is remarkably close to that of the population growth as estimated by Ping-ti Ho, according to whom, the Chinese population increased from sixty-five million in 1400 to 430 million in 1850, an increase of 662 percent.⁶⁵ The region that experienced the greatest increase in salt production

⁶⁴In Szechwan, it cost 5,000 taels of silver to drill a well fifty chang deep, 25,000 taels 150 chang deep and 45,000 taels 250 chang deep. See Lin Chen-han, op. cit., footnote 52, p. 247. A Chinese chang equals 5.581 meters.

⁶⁵Ping-ti Ho, Studies on the Population of China, 1368-1953 (Cambridge, Mass., 1959), pp. 277-278.

was Liaotung, followed by Yünnan and Szechwan, all with rates more than three times the national average. Among salt-producing regions in the North, however, only that of Ch'anglu was higher than the national rate, attributable to the rapid population increase in the imperial capital area. Hotung, Shantung and Shenkan had much lower rates of increase than other regions. There was also no significant change in the overall distribution of salt production between the coastal and interior regions; the ratio between them remaining about the same, four to one. However, relative changes in all regions were quite substantial. Those that became more important were Liaotung, Ch'anglu, Szechwan and Yünnan, while the relative positions of Fukien, Liangkwan and Shenkan remained almost unchanged. The importance of remaining regions in this way declined. A general trend was that the solar evaporation method continued to take the place of the boiling method as fuels became scarcer, year after year. The rapid development of salt production in Szechwan was noteworthy during the mid-nineteenth century, when parts of Hupeh and Hunan, which had formerly bought salt from Huainan, were made to turn to Szechwan for a salt supply because of the blockade of trade routes in the middle and lower Yangtze Valley by the T'ai-p'ing rebels (Table 18). In traditional China, salt was produced for human consumption rather than for industry. Thus, the consumption of salt within a region defined the

Table 18.
Geographical Changes in Salt Production

Region	1 3 6 8 - 9 8		1 8 4 0 - 9 0		C H A N G E	
	Annual Production of Salt (A)*	% (B)	Annual Production of Salt (C)*	% (D)	$\frac{C}{A} \times 100$	D - B
Seacoast						
Lianghuai	141,030	30.2	616,066	21.6	437	8.6
Liangche	88,303	18.9	488,207	17.1	553	-1.8
Liaotung	7,713	1.6	360,000	12.6	4,667	11.0
Ch'anglu	25,262	5.4	304,814	10.7	1,207	5.3
Fukien	41,829	9.0	257,274	9.0	615	0.0
Liangkwang	29,558	6.3	195,205	6.8	660	0.5
Shantung	57,355	12.3	181,249	6.4	316	-6.3
Subtotal	391,050	83.7	2,402,815	84.2	614	0.5
Inland						
Szechwan	10,128	2.2	216,231	7.6	2,135	5.4
Hotung	60,800	13.0	180,229	6.3	296	-6.7
Yunnan	1,828	0.4	39,068	1.4	2,137	1.0
Shenkan	3,514	0.7	14,022	0.5	399	-0.2
Subtotal	76,270	16.3	449,550	15.8	610	-0.5
Grand Total	467,320	100.0	2,852,365	100.0	610	0.0

*In thousand catties

Table 18.
Geographical Changes in Salt Production
(Continued)

Sources: For 1368 - 98 figures, see Shen Shih-hsing et al., Ming hui-tien (Institutes of the Ming Dynasty) (Reprinted 1587 edition; Shanghai, 1936), pp. 903-976. For figures of 1840 - 90, see Table 14 of this dissertation.

amount of production for that region. Huainan, for example, continued to be the leader in salt production throughout the Ch'ing period because of its larger population, but not because of a better natural-resource base for salt production. On the contrary, the Shenkan salt region had been a minor salt-producer, not because of its lack of raw materials for salt production but because of its meager population (Figure 20).

In conclusion, Ch'ing China's salt supply was widely dispersed. The diffusion and spread of the production of salt paralleled territorial expansion and population movement. The industry reached its maximum areal extent in the Ming period. After that time, a better natural-resource base stimulated the development of the industry along the North China seacoast to a greater extent than elsewhere in the nation. Several different production methods were used to accommodate diverse natural environments and varied raw materials, but these were generally primitive and inefficient. The simplicity of the boiling method favored its wide use. During late Ch'ing times, for example, small

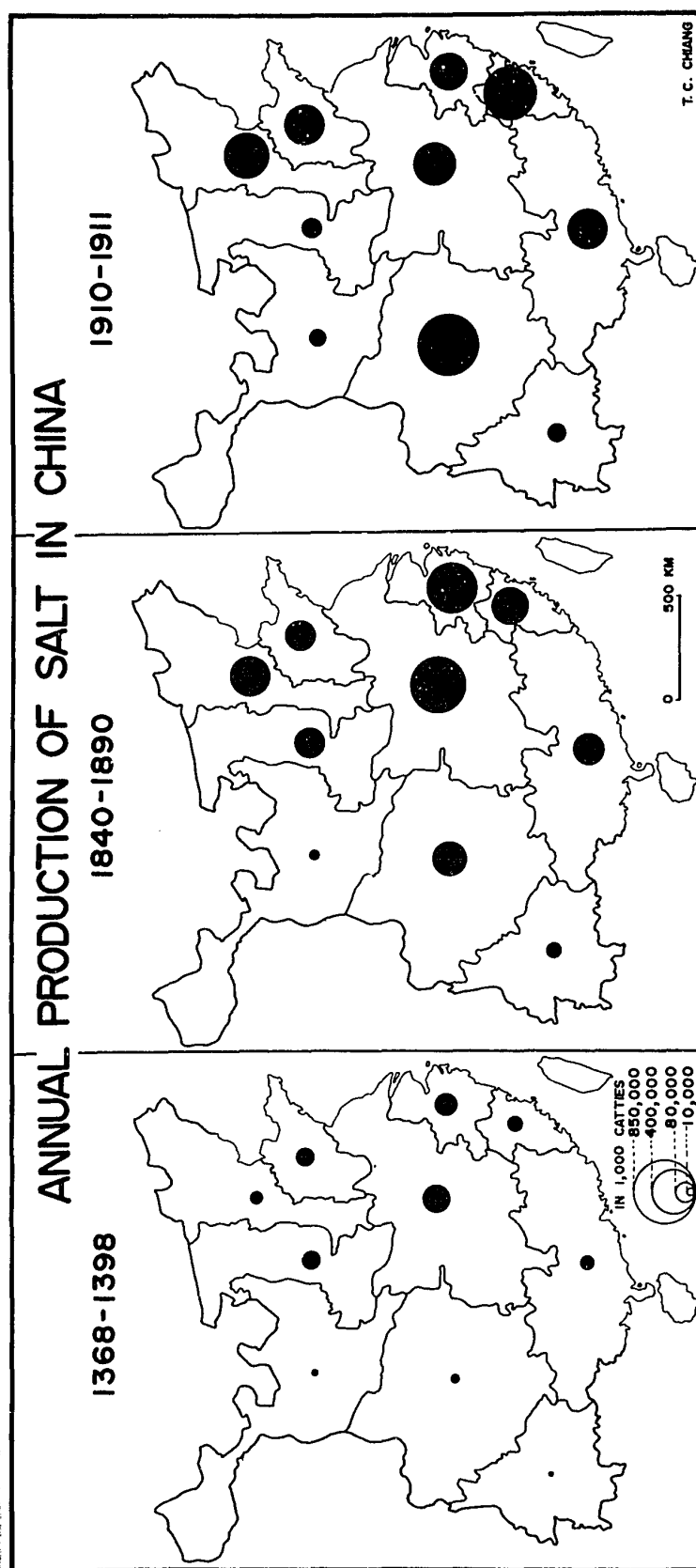


Figure 20

producers in Kiangsu Province, clung to old methods of production rather than to adopting as in modern saltfields such newer techniques as the solar evaporation of seawater. A reason for this is that traditional, small salt-boiling households were widespread, and the flow of salt from salt-works was difficult to control, a situation which encouraged smuggling, and in turn, provided extra income for such households.⁶⁶ Nevertheless, the solar evaporation method continued to take the place of the boiling method, as fuels became scarcer year after year. Geographical changes in salt production also reflected differences in regional population growth.

⁶⁶Chang Chi-chih, "Yen-yeh kai-liang hou-i" (More on Salt Reform), in Chang Chi-tzu chiu-lu, loc. cit., footnote 61, chüan 17, p. 82.

Chapter V

CONSUMPTION OF SALT

In traditional China, as very little salt was used as raw material for the chemical industry, the amount of salt consumed in an area was almost entirely dependent upon the size of the population. In this chapter, various estimates of per-capita salt consumption are reviewed. To be discussed also are the spatial characteristics of salt consumption and the factors affecting these patterns. In addition, salt smuggling is analyzed.

Per Capita Salt Consumption

Under ordinary conditions, to maintain health, a person requires five to fifteen grams of salt daily, or three to nine catties a year.¹ Related to salt consumption in China, however, was the dietary fact that the Chinese lived largely on cereals and, therefore, required even more than if they had been meat-eaters. Much is lost through perspiration. Thus, a southern Chinese, who perspires more,

¹Bernardo A. Houssay et al., translated by Juan T. Lewis and Olive T. Lewis, Human Physiology (New York, 1955), p. 479.

must consume more salt than northern Chinese, as the South has a warmer, more humid climate. The amount of salt intake varies slightly also with a number of other factors. The wealthy, for example, consume more than the poor.

Estimates of per-capita consumption of salt in China vary greatly. A field report of the 1930's, for example, indicates that the average amount was only six catties per person annually in Ting Hsien of Hopeh (Chihli) Province,² while another source shows that more than eighteen catties were consumed per capita in the Yangtze delta.³ These figures represent the two extremes, however. Other estimates are in between. The annual consumption per capita has been estimated at eight catties by Hosie,⁴ nine by Fei and

²Sidney D. Gamble, Ting Hsien, A North China Rural Community (New York, 1954), p. 113. See also Li Chi-nung, "T'ung-ch'ou chiu-sheng yen-fa'i" (On the Reform of the Salt Administration in Nine Provinces), YCTC, Vol. 1, No. 5 (May 1913), Hsüan-lu pp. 1-6; reference on p. 2.

³Chang Chi-chih, Chang Chi-tzu chiu-lu (Collected Works of Chang Chi-chih), edited by Chang Hsiao-jo (Shanghai, 1933), chüan 18, p. 3a.

⁴Alexander Hosie, "The Salt Production and Revenue of China," Nineteenth Century, Vol. 75, No. 5 (May 1914), pp. 1119-1143; reference on p. 1122.

Chang, and Lin,⁵ ten by Ling,⁶ twelve by Ho,⁷ Chang⁸ and Spencer,⁹ thirteen by Pien,¹⁰ fifteen by Miao,¹¹ and sixteen by an unknown foreign writer.¹²

Among all the countries in the world in the early twentieth century, Switzerland, at 10 catties, had the lowest annual per-capita consumption of salt, while the highest was Japan with an annual figure of eighteen. In the Netherlands, the figure was seventeen; in Austria, sixteen;

⁵Hsiao-tung Fei and Chih-i Chang, Earthbound China (London, 1948), p. 163; and Lin Chen-han, Ch'uan-yen chi-yao (Essentials of the Salt Industry in Szechwan) (Shanghai, 1916; revised edition; 1919), p. 494.

⁶Ling Wen-yüan, Chung-kuo yen-yeh tsui-chin chuang-k'uang (Present Conditions of the Salt Industry in China), Vol. I, Shantung (Peking, 1913), p. 109.

⁷Ho Wei-ning, Hsin Chung-kuo yen-yeh cheng-ts'e (New China's Salt Industry Policy) (Chungking, 1941; 2nd edition; Shanghai, 1947), p. 78.

⁸Chang Chi-chih, loc. cit., footnote 3.

⁹Joseph E. Spencer, "Salt in China," Geographical Review, Vol. 25 (1935), pp. 353-366; reference on p. 364.

¹⁰Pien Sung-yüan, "Kai-ke yen-fa ssu-i" (A Personal View on Salt Reform), YCTC, Vol. 1, No. 5 (May 1913), She-lun II, pp. 1-15; reference on p. 3.

¹¹Miao Ch'iu-chieh, Yen-cheng kai-yao (Salt Administration in China) (Nanking, 1946), pp. 3-4.

¹²Shou-ho, tr., "Lun Chung-kuo i-yen-k'o ti-ya chieh-k'uan" (Salt Tax as a Guarantee for Foreign Loans), YCTC, Vol. 1, No. 5 (May 1913), I-lun pp. 1-6; reference on p. 3.

in France and the United Kingdom, fourteen; in Germany¹³ and British India, twelve; and in Italy and Russia, eleven. As far as dietary nature is concerned, the desire capacity of East Asians for salt is certainly greater than is the case for Europeans, and in this regard, China can well be compared with Japan. As consumption of salt in North China is less than in the South, Chang has suggested a minimum of twelve catties for the whole of China,¹⁴ although later, he indicated that this estimate was very conservative.¹⁵

In the early twentieth century, annual per-capita consumption of salt in Taiwan was reported at a little more than thirteen catties¹⁶--a figure which was unchanged in 1957.¹⁷ In the late nineteenth century, 47 districts in southern Shansi Province had a total population of 3,998,730 persons, who consumed 46,549,000 catties of taxed salt

¹³One source indicates that the figure for Germany for 1908 was 15.4. See Matsui Gentarō and Kosiji Shuichirō, eds., Tsui-hsin hua-hsüeh kung-yeh ta-ch'üan (Encyclopedia of Chemical Industries), Chinese translation by Li T'ung-hua and Lo Hsiung-ts'ai, Vol. II (Shanghai, 1936), p. 245.

¹⁴Chang Chi-chih, op. cit., footnote 3, chüan 18, pp. 2b-3a.

¹⁵Chien Chang, A Plan for the Reform of the National Salt Administration (Shanghai, 1913), p. 5.

¹⁶Pien Sung-yüan, loc. cit., footnote 10.

¹⁷Ho Wei-ning, Chung-kuo yen-cheng shih (History of the Chinese Salt Administration) (T'aipei, 1955), p. 682.

annually, which indicates an annual per-capita rate of less than twelve catties.¹⁸ For the period of 1953-57, average annual production of salt in mainland China was 5,841,400 metric tons, of which 934,000 metric tons were for industrial use and 36,400 metric tons for agricultural purposes.¹⁹ Therefore, 4,871,000 metric tons must have been for human consumption. Given a population of 615 million for 1955, the annual per-capita consumption rate would thus be almost sixteen catties.²⁰

In conclusion, it seems reasonable to set the annual per-capita consumption of salt at thirteen catties for the

¹⁸For the figures for population and salt consumption for each district, see Shan-hsi t'ung-chih (Gazetteer of Shansi Province) (1892 edition), chüan 65 and 70. Salt-consumption figures were originally given in yin. A yin equals 250 catties. For the conversion factor, see Shan-hsi t'ung-chih, chüan 70, p. 47b. In a simple correlation analysis, the coefficient of correlation (r) between these two variables, size of population and amount of salt consumption, is 0.86. For this reason, we may consider that the data are of high accuracy.

¹⁹Chu Mo-lin, Fei-ch'ü yen-wu kai-k'uang (Account on the Salt Administration on Mainland China) (T'aipei, 1962), p. 35.

²⁰During the period of 1962-64, each year China exported 100,000 metric tons of salt to Japan. See K. P. Wang, "The Mineral Resource Base of Communist China," in the Joint Economic Committee of the U.S. Congress, An Economic Profile of Mainland China (New York, 1968), pp. 169-195; reference on p. 174. There is no reference about the export of salt for 1953-57. Even if an allowance of 100,000 metric tons is allocated for export, it would not make a significant difference in the final result in calculating the per-capita salt consumption.

whole country; twelve for North and Northwest China; fourteen for Central and South China; and thirteen for Southwest China.

Spatial Characteristics

No reliable national statistics for salt consumption are available for Ch'ing China. To demonstrate consumption for the whole country, therefore, it is necessary to estimate the amount. Statistics of population from 1741 to 1853 particularly from 1776 to 1853, have proved to be among the best population data for China in the past five centuries.²¹ Based on the analysis of per-capita salt consumption in the preceding section, we may reasonably assume that the annual per-capita consumption of salt was thirteen catties for the whole country; twelve for North and Northwest China; fourteen for Central and South China; and thirteen for Southwest China. By using population data as a base, multiplied by these factors, we can then derive estimates of salt consumption in Ch'ing China for the eighteenth and nineteenth centuries (Tables 19 and 20).

²¹Ping-ti Ho, Studies on the Population of China, 1368-1953 (Cambridge, Mass., 1959), p. 97.

Table 19.
Estimated Salt Consumption in Ch'ing
China, 1741-1850

Period	Average Annual Population	Average Annual Salt Consumption	Index
	persons	catties	
1741 - 1750	168,272,062	2,187,536,806	100
1751 - 1760	187,873,076	2,442,349,988	112
1761 - 1770	206,959,013	2,690,467,169	123
1771 - 1780	246,979,440	3,210,732,720	147
1781 - 1790	289,915,611	3,768,902,943	172
1791 - 1800	295,910,447	3,846,835,811	176
1801 - 1810	325,842,555	4,235,953,215	194
1811 - 1820	341,350,660	5,437,558,580	203
1821 - 1830	379,343,734	4,931,468,542	225
1831 - 1840	404,054,628	5,252,710,164	240
1841 - 1850	422,110,655	5,487,438,515	251

Sources: For the population figures, see Ping-ti Ho, Studies on the Population of China, 1368-1953 (Cambridge, Mass., 1959), pp. 281-282. The figures for salt consumption were obtained by multiplying the population figures by thirteen.

Table 20.
Estimated Salt Consumption in Ch'ing China, 1787 and 1850

Province	<u>1 7 8 7</u>			<u>1 8 5 0</u>		
	Population	Salt Consumption		Population	Salt Consumption	
			%			%
Markets for coastal saltworks						
Kiangsu	31,427*	439,978**	11.4	44,155*	618,170**	11.0
Anhwei	28,918	404,852	10.5	37,611	526,554	9.4
Chekiang	21,719	304,066	7.9	30,027	420,378	7.5
Chihli	22,957	275,484	7.1	23,401	280,812	5.0
Shantung	22,565	270,780	7.0	33,127	397,524	7.1
Kiangsi	19,156	268,184	7.0	24,515	343,210	6.1
Hupei	19,019	266,266	6.9	33,738	472,332	8.4
Hunan	16,165	226,310	5.9	20,614	288,596	5.2
Kwangtung	16,014	224,196	5.8	28,182	394,548	7.0
Honan	14,024 ^a	168,288	4.4	15,951 ^a	191,412	3.4
Fukien	12,012	168,168	4.4	15,000 ^b	210,000	3.7
Kwangsi	6,376	89,264	2.3	7,827	109,578	2.1
Subtotal	230,352	3,105,836	80.6	314,148	4,253,114	75.9
Markets for interior saltworks						
Kansu	15,162	181,944	4.7	15,437	185,244	3.3
Shansi	13,232	158,784	4.1	15,131	181,572	3.3
Szechwan	8,567	111,371	2.9	44,164	574,132	10.2
Shensi	8,403	100,836	2.6	12,107	145,284	2.6

Table 20.
Estimated Salt Consumption in Ch'ing China, 1787 and 1850
(Continued)

Province	<u>1 7 8 7</u>			<u>1 8 5 0</u>		
	Population	Salt Consumption		Population	Salt Consumption	
			%			%
Markets for interior saltworks (Continued)						
Honan	7,012 ^c	84,144	2.2	7,976 ^c	95,712	1.7
Kweichow	5,158	67,054	1.7	5,434	70,642	1.3
Yunnan	3,461	44,993	1.2	7,376	95,888	1.7
Subtotal	60,995	749,126	19.4	107,625	1,348,474	24.1
Grand Total	291,347	3,854,962	100.0	421,773	3,601,588	100.0

*Population in thousand persons.

**Salt consumption in thousand catties.

^aTwo-thirds of the total population of Honan.

^bEstimated by the writer.

^cOne-third of the total population of Honan.

Table 20.
Estimated Salt Consumption in Ch'ing
China, 1787 and 1850
(Continued)

Sources: For the population figures, see Ping-ti Ho, op. cit., text footnote 21, p. 283. The figures for salt consumption were obtained by multiplying the population figures by a factor of twelve for Chihli, Honan, Kansu, Shansi, Shantung and Shensi; thirteen for Kweichow, Szechwan and Yunnan; and fourteen for the remaining nine southern provinces.

Total annual consumption of salt in the country as a whole, as seen in Table 19, was thus about 2,200 million catties in the mid-eighteenth century and 5,500 million catties in the mid-nineteenth. Consumption had increased two and one half times within one century (Table 19). The second figure, however, is almost double that of the annual production of salt for 1840-1890, as released by the government.²² Such a large difference may reflect that the population statistics for 1850 were perhaps exaggerated²³ or that the consumption of untaxed salt was equal to that of taxed.²⁴ The writer inclines to the second possibility.

²²See Table 14 in Chapter IV of this dissertation.

²³John D. Durand, "The Population Statistics of China, A.D. 2 - 1953," Population Studies, Vol. 8 (March 1960), pp. 209-249; reference on p. 244.

²⁴See Chien Chang, op. cit., footnote 15, p. 3. Should the population statistics for 1850 have been exaggerated, the amount of untaxed salt would be overestimated. It is highly possible that this was the case.

Estimates for 1787 indicate that four-fifths of the total salt consumption were distributed in coastal and one-fifth in interior markets. These estimates are of high accuracy, as the ratio between the amount of salt production of the coastal and that of the interior salt-producing centers was exactly four to one for China Proper during the eighteenth and nineteenth centuries, according to historical records. In 1787, about one-third of the salt was consumed in North and Northwest China; somewhat less than half in Central China; more than one-eighth in South China; and less than six percent in the Southwest (Table 20). Sixty-three years later, the regional distribution of salt consumption basically remained the same, but with a significant increase in salt consumption in Szechwan Province. Trading areas of coastal saltworks together accounted for three-fourths of the total consumption, while those of interior saltworks absorbed one-fourth of the total. Among the major regions, Central China remained the leader, accounting for almost half the total consumption, followed by North and Northwest China, with a slight drop in percentage compared with that of 1787. As Szechwan became a leading salt consumer among the eighteen provinces, the Southwest now consumed about the same as South China, or one-eighth of the total, respectively (Table 20 and Figure 21).²⁵

ANNUAL CONSUMPTION OF TAXED SALT IN EIGHTEENTH-CENTURY CHINA

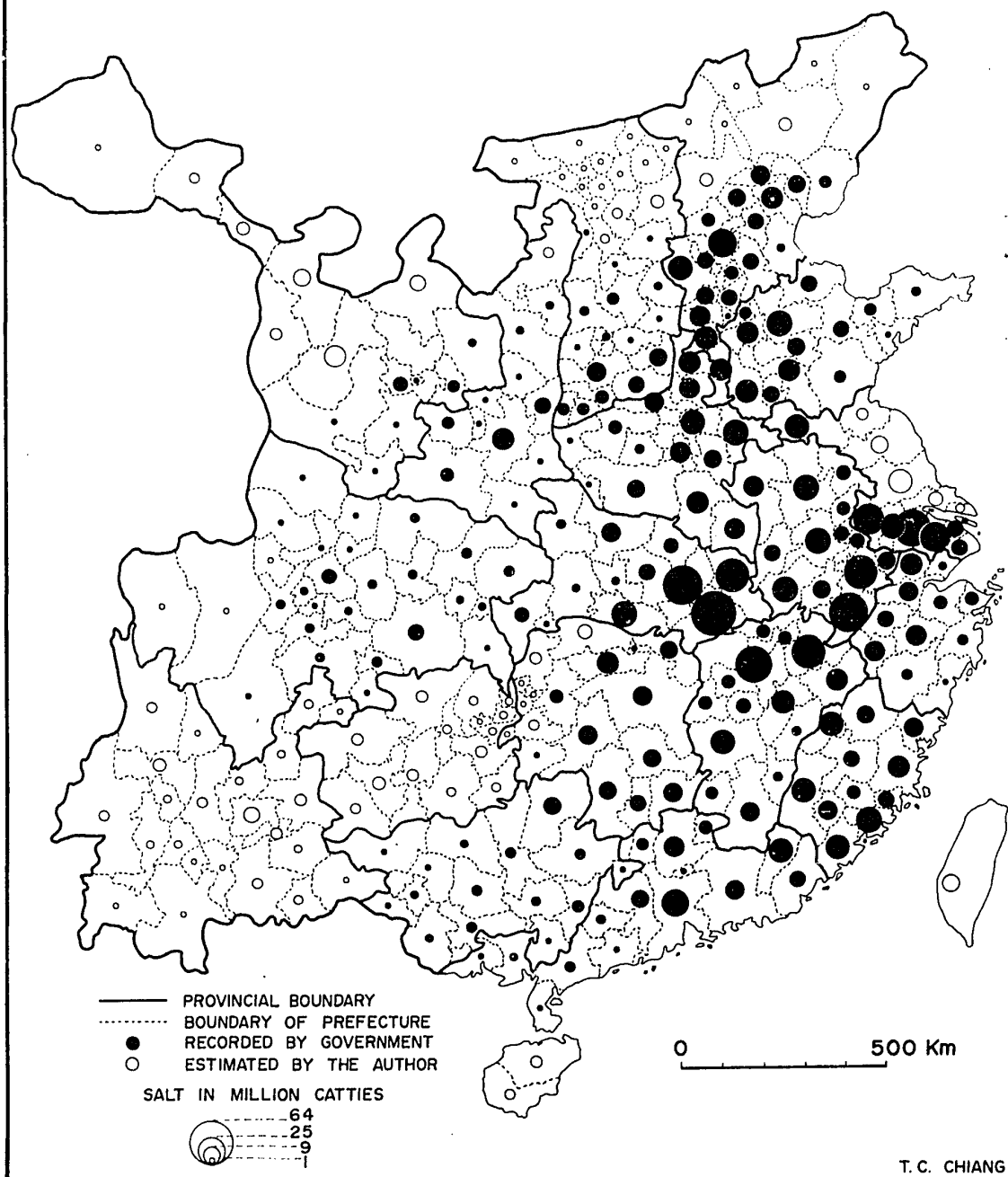


Figure 21

To discuss the geographical variations of the per-capita consumption of taxed salt, a different set of data must be used. The best single source of complete population data on a prefectural level for the whole country in Ch'ing times is probably the Chia-ch'ing Ta-Ch'ing i-t'ung chih (Comprehensive Gazetteer of Ch'ing China during the Chia-ch'ing Reign), completed in 1842. As statistics for salt consumption on the prefectural level are unfortunately not available for all prefectures nor are they given for an identical period, an incomplete set of data for differing years has been used. Certainly, this will increase the variance and lower the validity of the data. Nevertheless, these figures are felt to reveal the general pattern of the per-capita salt consumption in Ch'ing China. By these criteria, then, North, Northwest and West China had smaller per-capita consumption than did Central and South China (Table 21). Local variations indicate that salt-producing areas tend to have smaller per-capita reported salt

²⁵ An analysis of rank correlation between the ranks of provinces in 1787 and those in 1850 yields a coefficient of rank correlation $r = 0.805$. There is a significant relationship at the level of significance $\alpha = 0.01$. The two largest values of the squares of difference between ranks are 36 for Chihli and 144 for Szechwan. Chihli has an absolute increase rate between the two years of only two percent, while Szechwan has one of 416 percent. The average increase rate of the eighteen provinces together is 45 percent.

Table 21.
Salt Consumption in Ch'ing China*

Salt Region	Population (ca. 1820) (persons)	Salt** Consumption (catties)	Per-Capita Salt Consumption (catties)
Ch'anglu	29,168,358	254,949,480	8.74
Fukien	15,264,628	119,377,400	7.82
Hotung	18,369,563	69,739,344	3.80
Liangche	39,609,940	246,183,755	6.22
Lianghuai	91,238,318	602,111,533	6.60
Liangkwang	34,647,926	191,395,195	5.52
Shantung	34,069,010	150,614,505	4.42
Shensi	7,592,290	12,482,191	1.64
Szechwan	27,664,726	44,570,200	1.61
Total	297,624,759	1,691,423,603	5.68

*The coverage of data for Ch'anglu, Hotung, Liangche, Lianghuai, Liangkwang, Shensi and Szechwan is incomplete. Data for Yunnan are unavailable. For the actual areal coverage of the data, see Figure 19.

**The salt consumption data of Ch'anglu are for ca. 1726, Fukien 1801, Hotung and Szechwan 1730, Liangche 1773, Lianghuai 1744, Liangkwang 1762, Shantung 1791, and Shensi pre-1732.

Sources: For the population figures, see Muchanga, ed., Chia-ch'ing Ta-Ch'ing i-t'ung-chih (Comprehensive Gazetteer of Ch'ing China during the Chia-ching Reign) (Reproduction of 1842 edition; Taipei, 1967). For the salt consumption, see Lu Chih-yü et al., Ch'ang-lu yen-fa chih (Compendium on the Salt Administration of Ch'anglu Region) (Facsimile reproduction of 1726 edition; Taipei, 1966), chüan 7, pp. 54b-65 (for Ch'anglu); YFTC, chüan 48, pp. 11b-22a (for Fukien); YFTC, chüan 45, pp. 11b-22a (for Hotung);

Table 21.
Salt Consumption in Ch'ing China
(Continued)

Sources (Continued): YFTC, chüan 47, pp. 19-25a (for Liangche); YFTC, chüan 46, pp. 5-18a (for Lianghuai); YFTC, chüan 49, pp. 1-35a (for Liangkwan); YFTC, chüan 44, pp. 18-25a (for Shantung); CYFC, chüan 96, pp. 4-9a (for Shensi); and YFTC, chüan 50, pp. 7b-24a (for Szechwan).

consumption than those distant from saltworks (Table 24). Chihli Province had a higher than average per capita consumption figure because of its proximity to the imperial capital of Peking. Areas close to the imperial capital also tend to have a higher degree of efficiency in salt administration and to suffer less smuggling. It follows that here the sale of taxed salt would tend to be large. Consequently these conditions resulted in a higher per-capita consumption figure. In the South, as well, prefectures where smuggling was controlled also tended to enjoy greater per-capita consumption.

In order to analyze the pattern of local salt consumption, Shansi may be taken as an example, as it is the only province for which both population and salt consumption data for almost the same period (population for 1884 and salt for 1865) at the hsien level, are available. There were eighty-six hsien, of which forty-seven in southern Shansi bought salt from Chiehch'ih in the southwestern corner of the province, while thirty-nine in central and

northern Shansi consumed earth salt produced locally. In all, Shansi had a total population of nine million, consuming nearly fifty-nine million catties of salt annually, for an average annual per-capita figure of six and a half catties, or very close to the national average for taxed salt. Annual salt consumption per capita among the hsien varied greatly; for southern Shansi, from less than one catty to more than six, and for central and northern Shansi, from less than four catties to more than thirty-three. Such variations, however, could be attributed in part to the accuracy of the data. Some of the extreme values on the upper side of the range, for example, suggest that either the population was under-estimated or the salt consumption was exaggerated. In the table below, average annual per-capita consumption was more than eleven catties for the former, and less than three for the latter (Table 22).

To measure the population against salt consumption by means of a scatter diagram, dots for hsien in southern Shansi tend to be concentrated in the lower and right sides of the diagram and those for hsien in central and northern Shansi in the upper and left sides. In other words, each group has a stronger correlation than that of the pooled total (Figure 23). Southern Shansi was distant from its two neighboring salt-producing areas on the east, Chihli and Shantung. The region was also physically well-protected. Therefore, the high cost of overland transportation

Table 22.
Salt Consumption in Shansi in the
Eighteenth Century

Prefecture	Population (1884)	Annual Salt* Consumption (1865)	Per-Capita Salt Consumption
	persons	catties	catties
Central and Northern			
Ch'in Chou	187,764	605,125	3.22
Fenchou Fu	1,481,214	2,739,250	1.85
Hsin Chou	499,955	1,115,375	2.48
Liao Chou	129,207	392,250	3.04
Ningwu Fu**	145,778	243,750	1.89
Paoteh Chou	158,051	215,625	1.36
P'ingting Chou	606,402	1,298,250	2.14
Tai Chou	418,656	771,875	1.84
T'aiyuan Fu	1,431,419	4,975,000	3.48
Subtotal	5,008,446	12,356,500	2.47
Southern			
Chiang Chou	494,444	5,652,000	11.43
Chieh Chou	292,483	4,080,500	13.95
Ho Chou	176,651	1,652,500	9.35
Hsi Chou	83,513	486,750	5.83
Luan Fu	897,058	9,970,000	11.11
P'ingyang Fu	932,916	11,870,750	12.72
P'uchou Fu	460,130	4,568,250	9.93
Tsechou Fu	661,535	8,268,250	12.50
Subtotal	3,998,730	46,549,000	11.64
Grand Total	9,007,176	58,905,500	6.54

*Salt consumption was originally listed in yin. In this case, one yin equals 250 catties.

**Including Hingwu Hsien and Shenchih Hsien only.

Source: Shan-hsi t'ung-chih (Gazetteer of Shansi Province) (1892 edition), chüan 65 and chüan 70.

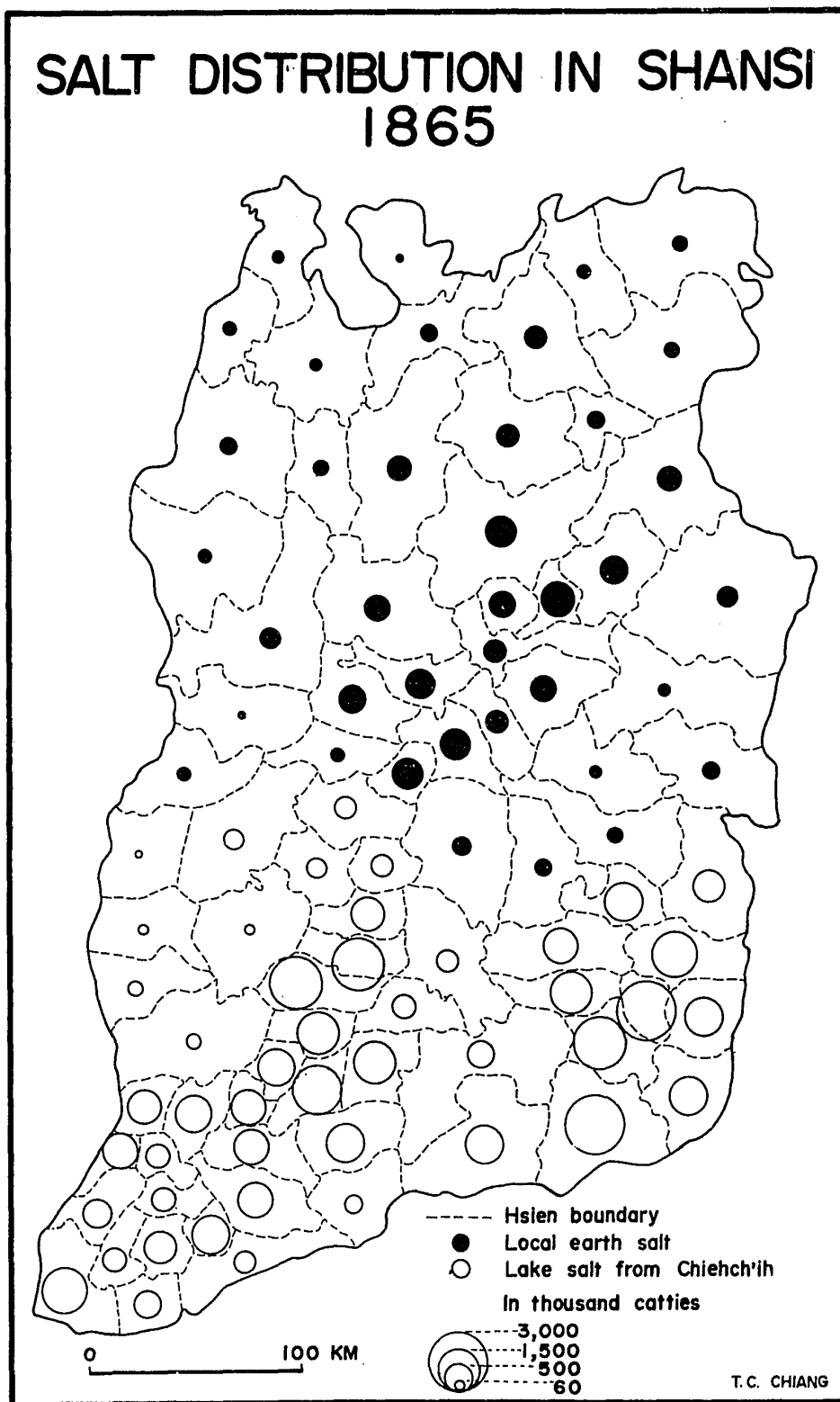


Figure 22

POPULATION AND SALT CONSUMPTION OF SHANSI BY HSIEN

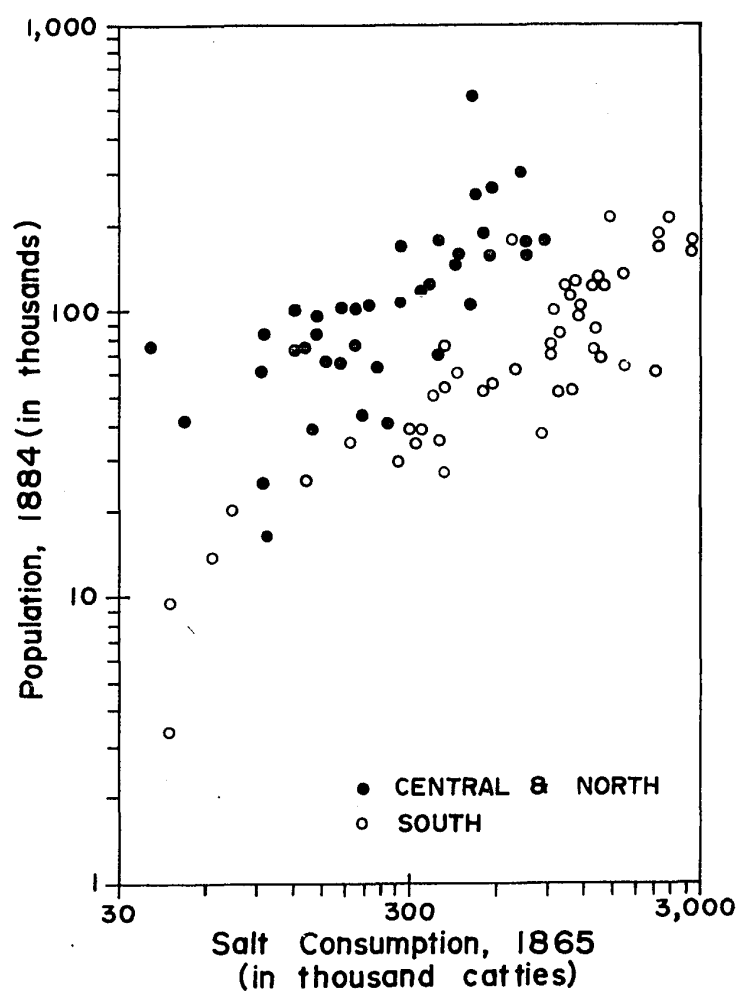


Figure 23

prohibited the importation of illegal salt from that direction. Furthermore, Chiehch'ih, the only source of salt in the region, was among the best-watched salt-producing centers in the entire country, it was extremely difficult to smuggle out any significant amount of salt from there. Therefore, the amount of taxed salt sold in southern Shansi must have been close to the amount actually consumed. In fact, the average annual per-capita consumption of nearly twelve catties for the area was identical to the estimate for North China as a whole. The situation in central and northern Shansi, on the other hand, was different. There, because small saltworks were widespread over more than forty hsien, salt-smuggling was inevitable. In addition, northern Shansi was also subject to the illegal importation of salt from salt lakes in Inner Mongolia. Consequently, the average per-capita consumption of taxed salt in these areas was very low.

The distribution of population was an important factor affecting the geographical character of salt consumption in Ch'ing China. In a simple regression-and-correlation analysis of the sale of salt and the population size of forty-seven districts in southern Shansi Province during the nineteenth century, a correlation coefficient (r) of 0.7741 was obtained. The value of " r " indicates that the size of the population of a district was positively associated with the sale of salt. In testing the null hypothesis $\rho = 0$, the

value of "r" was highly significant.²⁶ The regression equation is specified as follows:

$$\hat{Y} = 488 + 0.0408 X$$

where \hat{Y} is the estimated number of yin of salt distributed in a district, and X is the observed population size of the same district. The coefficient of determination (r^2) is 0.60, indicating that sixty percent of the apparent relationship between the sale of salt and the population size can be explained by the regression. Residuals, ranging from minus 5,022 to plus 5,372, were probably owing to other factors (Table 23).

A similar analysis for 195 prefectures of China Proper yields a correlation coefficient (r) of 0.6159, which indicates that the population size of a prefecture was positively correlated with the amount of taxed salt consumed (Figure 24). A statistical test proves the value of "r" to be highly significant. The regression equation in this case is as follows:

$$\hat{Y} = 755,333 + 5.019 X$$

The map of basic residuals shows that the consumption of taxed salt was also affected by other locational factors (Figure 25).

²⁶George W. Snedecor and William G. Cochran, Statistical Methods (Ames, Iowa, 1967), p. 557.

Table 23.
Sale of Salt, and Population of Southern Shansi
in the Nineteenth Century

No.	District	Observed sale of salt (in yin) (Y)	Population (in persons) (X)	Estimated sale of salt (in yin) (\hat{Y})	Residual (in yin) (Y - \hat{Y})
1	Ani	5,300	71,700	3,413	1,887
2	Ch'angch'ih	11,679	159,897	7,413	4,667
3	Ch'angtzu	5,939	211,264	9,108	-3,169
4	Chao-ch'eng	3,621	71,099	3,389	232
5	Chiang	3,909	52,378	2,625	1,284
6	Chiangchou	5,227	72,093	3,429	1,798
7	Chichou	564	26,325	1,562	-998
8	Chiehchou	3,400	38,515	2,059	1,341
9	Chingshui	2,152	52,635	2,636	-484
10	Chishan	4,459	135,210	6,005	-1,546
11	Ch'uwo	8,405	62,372	3,033	5,372
12	Fenhsi	1,268	35,857	1,951	-683
13	Fengt'ai	11,645	172,162	7,512	4,133
14	Foushan	1,798	32,119	1,798	0
15	Hochin	3,735	78,166	3,677	58
16	Hsia	3,937	86,651	4,023	-86
17	Hsiangling	5,484	118,239	5,312	172
18	Hsiangning	721	36,932	1,995	-1,274
19	Hsiangyüan	4,723	103,814	4,724	-1
20	Hsichou	1,230	39,309	2,092	-862

Table 23.
Sale of Salt, and Population of Southern Shansi
in the Nineteenth Century
(Continued)

No.	District	Observed sale of salt (in yin) (Y)	Population (in persons) (X)	Estimated sale of salt (in yin) \hat{Y}	Residual (in yin) (Y - \hat{Y})
21	Hukuan	4,388	124,063	5,062	-674
22	Hungt'ung	9,518	189,700	8,228	290
23	Huochou	1,431	50,648	2,062	-631
24	Ich'eng	5,343	132,067	5,876	-533
25	Ishih	1,785	60,384	2,952	-1,167
26	Juich'eng	2,255	56,338	2,787	-532
27	Kaop'ing	9,334	210,841	9,090	244
28	Lich'eng	2,794	61,727	3,006	-212
29	Linchin	2,710	177,550	7,732	-5,022
30	Linfen	8,541	174,558	7,610	931
31	Lingch'uan	4,777	100,906	4,605	172
32	Lingshih	1,558	54,904	2,728	-1,170
33	Luch'eng	6,482	135,906	6,849	-367
34	P'inglu	1,430	39,279	1,306	124
35	P'u	287	20,059	1,306	-1,019
36	T'aip'ing	5,285	89,274	4,130	1,155
37	Taning	246	14,574	1,083	-837

Table 23.
Sale of Salt, and Population of Southern Shansi
in the Nineteenth Century
(Continued)

No.	District	Observed sale of salt (in yin) (Y)	Population (in persons) (X)	Estimated sale of salt (in yin) (\hat{Y})	Residual (in yin) (Y - \hat{Y})
38	T'unliu	3,875	100,387	4,584	-709
39	Wanch'uan	1,589	77,426	3,647	-2,058
40	Wenhsi	4,202	125,810	5,621	-1,419
41	Yangch'eng	5,165	124,991	5,588	-423
42	Yoyang	1,558	35,473	1,935	-377
43	Yüanch'ü	1,076	30,787	1,744	-668
44	Yuhsiang	1,578	26,832	1,583	-5
45	Yungchi	6,662	65,825	3,174	-3,488
46	Yungho	3,949	52,113	2,614	1,335
47	Yungho	184	9,571	878	-694

Source: Data of the original observed Y and X were obtained from Shan-hsi t'ung-chih, op. cit., source of Table 22, chüan 65 and 70.

POPULATION AND SALT CONSUMPTION IN EIGHTEENTH-CENTURY CHINA

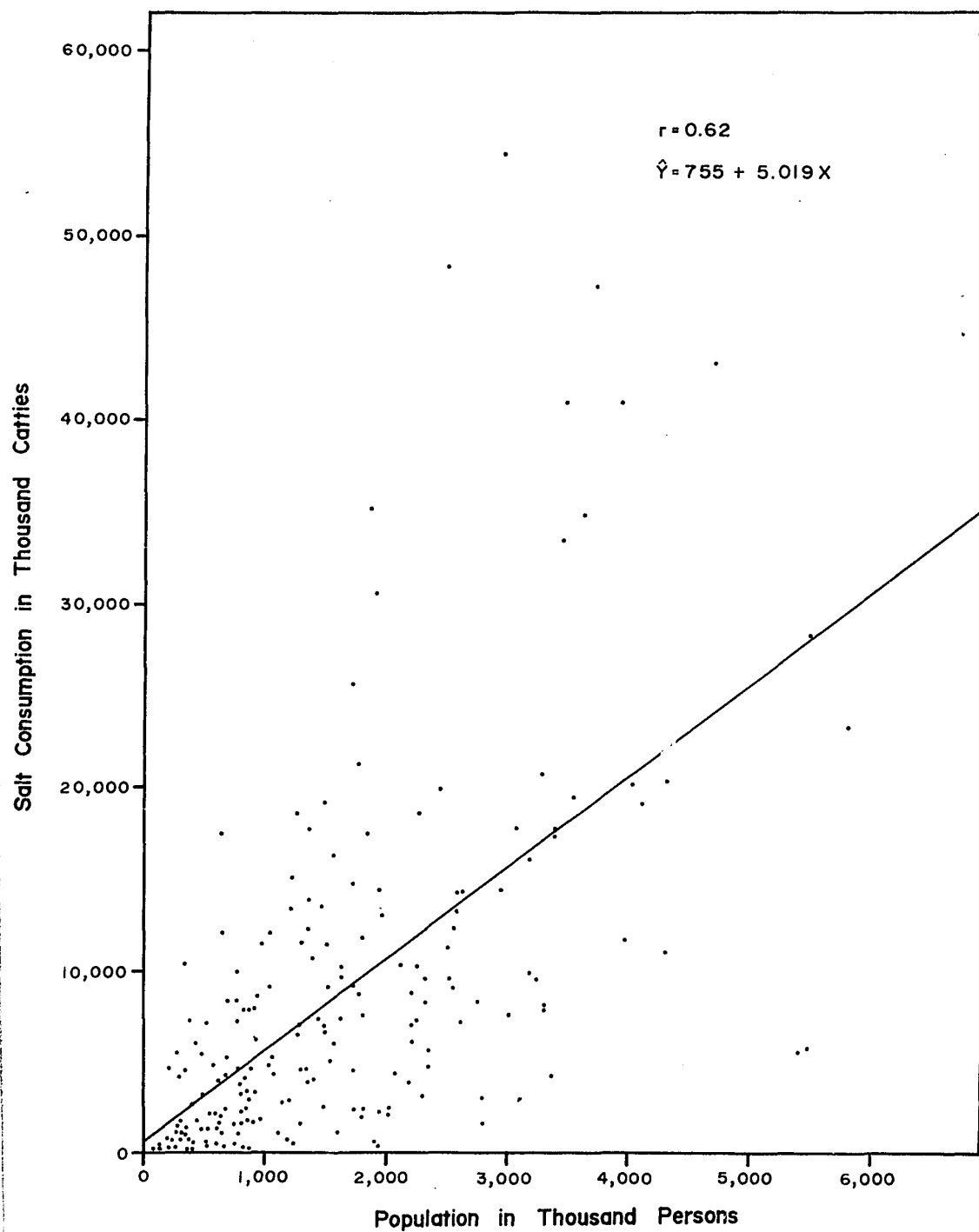
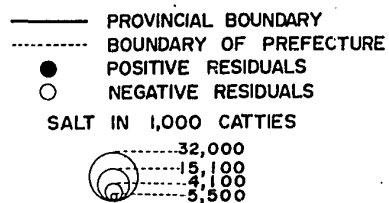


Figure 24

MAP OF RESIDUALS

ANNUAL CONSUMPTION OF TAXED SALT IN EIGHTEENTH-CENTURY CHINA

No data are available
for the entire Yunnan
and Kweichow provinces
and parts of other
provinces.



0 500 Km

T. C. CHIANG

Figure 25

Areas close to coastal saltworks were especially subject to salt smuggling. First, the saltworks were not well controlled. Second, as salt was heavily taxed, the price was unrealistic. Thus, the sale of taxed salt was less than the amount actually consumed. To some extent, there is a positive correlation between the distance of an area from the nearest saltworks and the sales of taxed salt. In other words, the closer an area was to a saltworks, the lesser amount of taxed salt was consumed, and vice versa. To illustrate this, Shantung may be taken as an example. In that province, there were thirteen prefectures (fu and chou), six of which were on the coast and contained saltworks, whereas seven were in inland locations and had no coastal saltworks. For this reason, the former group recorded an annual per-capita consumption of less than two catties, while the latter, more than five (Table 24).

In a rank-correlation analysis, ranks of distances from the nearest coastal saltworks to the geographic center of each prefecture correlate positively with ranks of the per-capita salt consumption of these prefectures. Among twelve cases, the largest value of squares of differences is only 12.25. The coefficient of rank correlation is calculated as:

$$r = 1 - 6(53)/12(143) = 0.81$$

To test the null hypothesis that there is no relationship between distance from the nearest saltworks and the

Table 24.
Salt Consumption in Shantung

Prefecture	Population (ca. 1820)	Salt Consumption (1791)	Per-Capita Consumption	Distance from* Nearest Coast Saltworks
	persons	catties	catties	km
Maritime				
Ch'ingchou Fu	3,318,763	8,060,625	2.43	90
Ichou Fu	2,181,379	3,935,700	1.80	90
Laichou Fu**	3,374,017	4,278,600	1.27	50
Tengchou Fu	1,912,501	2,317,950	1.21	60
Wuting Fu	2,191,389	7,085,250	3.23	50
Subtotal	12,978,049	25,678,125	1.98	
Inland				
Chinan Fu	4,014,819	20,012,625	4.98	170
Chining Chou	889,350	7,933,050	8.92	260
Linch'ing Chou	1,083,743	4,417,425	4.08	260
T'aian Fu	2,473,415	9,560,700	3.87	230
Ts'aochou Fu	3,177,027	16,099,650	5.07	330
Tungch'ang Fu	1,696,656	14,553,225	8.58	280
Yenchou Fu	2,627,871	14,232,150	5.42	230
Subtotal	15,962,881	86,808,825	5.44	
Grand Total	28,940,930	112,486,950	3.89	

Table 24.
Salt Consumption in Shantung
(Continued)

*Roughly from the center of a fu or chou.

**Including Chiao Chou.

Sources: Data of the population of ca. 1820 were obtained from Muchanga, op. cit., sources of Table 21, chüan 162-184. Data of the salt consumption were obtained from YFTC, chüan 44, pp. 18-25.

per-capita salt consumption, the "z" value was calculated as:

$$z = 0.81 \sqrt{12 - 1} = 2.69$$

Since this value exceeds $z_{0.005} = 2.58$, we can say that there is a significant relationship at the 1% level of significance (Table 25).

The level of economic development of an area was also related to the purchasing power of that area. The higher the level of regional economic development, the more salt that area would consume. Statistics of regional income for Ch'ing China are not available but the economy was predominantly agricultural, the total cultivated land of an area would provide a crude index of its level of regional economic development. For example, in a simple correlation analysis of salt consumption and cultivated land for southern Shansi province, a correlation coefficient (r) of 0.88 was obtained (Table 26).

Table 25.
Paired Data of Ranks of Distance from the
Nearest Saltworks and of Per-Capita
Salt Consumption in Shantung

Prefecture	Distance (rank)	Per-Capita Salt Consumption (rank)	d	d ²
Laichou Fu	1.5	2	0.5	0.25
Wuting Fu	1.5	5	3.5	12.25
Tengchou	3	1	-2.0	4.00
Ichou	4.5	3	-1.5	2.25
Ch'ingchou Fu	4.5	4	-0.5	0.25
Chinan Fu	6	8	2.0	4.00
T'aian Fu	7.5	6	-1.5	2.25
Yenchou Fu	7.5	10	2.5	6.25
Linch'ing Chou	9.5	7	-2.5	6.25
Chining Chou	9.5	12	2.5	6.25
Tungch'ang Fu	11	11	0.0	0.00
Ts'aochou Fu	12	9	-3.0	9.00
Total			0.0	53.00

Source: See Table 24.

Table 26.
Paired Data of Salt Consumption and
Cultivated Land of Southern Shansi

Fu and Chou	Y*	Y ²	X*	X ²	XY
P'ingyang Fu	1,067	1,138,489	490	240,100	522,830
Luan Fu	859	737,881	380	144,400	326,420
Chechou Fu	793	628,849	280	78,400	222,040
Chiang Chou	490	240,100	343	117,649	168,070
P'uchou Fu	409	167,281	346	119,716	141,514
Chieh Chou	386	148,996	234	54,756	90,324
Huo Chou	150	22,500	89	7,921	13,350
Hsi Chou	47	2,209	59	3,481	2,773
Total	4,201	3,086,305	2,221	766,423	1,487,321

*Y for 1730 salt consumption in 10,000 catties. X for ca. 1820 cultivated land in 10,000 mow. One mow equals 0.152 acre.

Sources: Data of salt consumption were obtained from Shen Yen-fu, Ho-tung yen-fa t'iao-chi chi (A Record of the Salt Administration of Hotung) (1784), chüan 5, pp. 1b-8a. Data of cultivated land were obtained from Muchanga, op. cit., sources of Table 21.

$$r = \frac{8(1,487,321) - (4,201)(2,221)}{\sqrt{\{8(766,423) - (2,221)^2\} \{8(3,086,305) - (4,201)^2\}}}$$

$$= 0.88$$

To test the null hypothesis $\rho = 0$, the value of "r" was rejected at .1% level of significance. Therefore, we may say that these two variables show high positive correlation.

In addition, analyses of correlations between salt consumption and four other variables for 195 prefectures of China Proper were carried out, and the results are as follows:

Table 27.
Correlation Coefficients of Salt Consumption
and Four Other Variables

Variable	Correlation Coefficient
Area of Cultivated Land	0.457
Amount of Land Tax	0.455
Population Density	0.334
Presence of Saltworks*	-0.186

*Dummy variables were used; i.e., zero for a prefecture in which there was no saltworks and unity for a prefecture in which there were or had been saltworks.

To test the null hypothesis $\rho = 0$, all four values of correlation coefficients were significant at the 1% level of

significance, since the absolute values of all the four coefficients exceed 0.181, the value of the correlation coefficient at the 1% level of significance with 195 degrees of freedom. In other words, salt consumption in a prefecture was positively correlated with the area of cultivated land, the amount of land tax and the population density, and negatively correlated with the presence of saltworks. Both the area of cultivated land and the population density can be considered substitutes for an unavailable index of the level of economic development.

Salt Smuggling

Smuggling posed a serious problem for salt administrators under Ch'ing rule as it was widespread and involved a tremendous amount of salt. The imperial government, of course, was also deprived of large amounts of revenue. On the other hand, salt merchant stood to lose income if he did not smuggle. The control of salt smuggling thus became a major task for the salt administration, especially as it was in the interests of both the imperial government and the salt merchants. As salt was heavily taxed, it was often smuggled. The taxed salt was, of course, much more expensive than the untaxed. One official declared in a memorial "that illicit salt was easy to sell because of its low price. People who bought untaxed salt were numerous. Because of its high price, taxed salt was difficult to sell.

People who bought taxed salt were few."²⁷ In the early eighteenth century, salt officially designated for sale in Juning Fu of Honan Province was smuggled into Hupeh Province because of a higher retail price in the latter than in the former. In turn, illicit salt from Ch'anglu was smuggled into Juning Fu instead.²⁸ In 1833, in Kiangsi, Hupeh, and Hunan provinces, taxed salt was sold at from sixty to over seventy cash per catty while illicit salt was available for less than thirty.²⁹ Salt smuggling was a most profitable business. In 1838, at saltworks on Choushan Islands off the Chekiang coast, untaxed salt could be bought, for example, at a price as low as twelve cash per load of twenty catties.

²⁷Lu Hsün, "Shang-yen chia-yin chien-chia shu" (A Memorial Suggesting an Increase in the Number of Catties per Yin for a Lower Price of Salt), in HCCSWP, Vol. 2, pp. 1245-1246.

²⁸Wang Ch'ing-yün, Hsi-ch'ao chi-cheng (Collected Works on Government Affairs of Our Glorious Dynasty) (n.p., 1898; Reprinted edition; Taipei, 1966), chüan 5, p. 336.

²⁹T'ao Chu, "Ch'a-fu Ch'u-Hsi hsien-mai yen-chia che-tzu" (A Memorial Reporting the Present Salt Price in Kiangsi, Hupeh and Hunan Provinces), in TIKCC, Vol. 3, pp. 1355-1365; reference on p. 1355.

As such salt was shipped to Shanghai, it was then sold at twenty cash per catty, or thirty-three times the price at Choushan.³⁰

As was discussed in Chapter III, there were also geographical differences in salt taxation. Salt distributed in Hupeh, Hunan, Kiangsi and Anhwei sections of the Huainan region, for example, was taxed two to three times more heavily than that sold in neighboring regions,³¹ and the retail price was thus much higher as well. Therefore, there was an illicit movement of salt from neighboring regions into these sections. In other words, salt that was lightly taxed flowed into areas where salt was more heavily taxed. Hence, because of its geographical location, the Huainan salt region suffered the penetration of smuggled salt, taxed and untaxed, from seven other salt-producing regions; Huaipei, Ch'anglu, Hotung, Szechwan, Liangkwan, Fukien and Liangche. Salt was smuggled into the Huainan from all directions. Illicit salt from eastern Szechwan entered

³⁰T'ao Chu, "Cha-heh Shang-hai hui-kuan ping-wu t'un-chu szu-yen chi Chou-shan t'i-fang ch'an-yen ying-kuei che-chiang ching-li che-tzu" (A Memorial Reporting the Non-Existence of Storing Illicit Salt in Guildhalls in Shanghai and Suggesting that Salt Affairs of Choushan Islands be Administered by Chekiang Authorities), in TWIKCC, Vol. 3, pp. 1635-1641; reference on pp. 1635-1638.

³¹Shen Ch'i-yüan, "Shang tu-yüan lun Chiang-hsi yen-wu shu" (A Memorial to the Governor-General on the Salt Affairs in Kiangsi Province), in HCCSWP, chüan 50, p. 1289.

western Hupeh and proceeded to northern, western and central Hupeh and northwestern Hunan. Salt from Liangkwan entered southern Hunan and Kiangsi and moved all the way north to Wuch'ang and Chiuchiang on the Yangtze River. Smuggled salt from both Fukien and Liangche was found in the northeastern part of Kiangsi Province, while Liangche salt was also sneaked into southern Anhwei and as far as Chiangning Fu of Kiangsu. A large amount of illicit salt from Ch'anglu and even Huaipai, carried mainly by returning grain-tribute junks (ts'ao-ch'uan), was likewise sold along the Grand Canal and the Yangtze River up to eastern Hupeh. Illegal shipments of salt from Ch'anglu also penetrated northern and eastern Hupeh Province via Honan. Smugglers carrying salt from the Hotung region also worked in northern and central Hupeh Province, mainly through the upper Han Valley.³²

³²T'ao Chu, "Hui-t'ung Liang-hu tu-fu ch'ou-i ch'u-sheng ts'o-wu che-tzu" (A Joint Memorial on the Salt Affairs of Hupeh Province), in TIWICC, Vol. 3, pp. 1545-1554; "Hui-pao Che-yen yin-t'i ch'i-szu ch'ing-hsing che-tzu" (A Memorial Reporting the Prevention of Salt Smuggling in Chekiang Province), in TIWICC, Vol. 3, pp. 1555-1561; and "Fu-chien Huai-Yueh yin-chiai shih-i che-tzu" (A Memorial Reporting the Prevention of Salt Smuggling in the Border Area between Kwangtung and Kiangsi Provinces), in TIWICC, Vol. 3, pp. 1563-1572; Li Ch'eng, Huai-ts'o pei-yao (Essentials of Lianghuai Salt Affairs) (Yangchow, 1823), ch'uan 5; and Shih-ch'ao sheng-hsun (Sacred Instructions of Ten Reigns, 1616-1874) (ca. 1880; Reprinted edition; T'aipei, 1965), ch'uan 102, Chia-ching Reign, February 1820, Vol. 3, pp. 1846-1847. See also Saeki Tomi, Shindai ensei no kenkyu (The Salt Administration under the Ch'ing Dynasty) (Kyoto, 1956), pp. 108-126.

In conclusion, the annual per-capita consumption of salt was thirteen catties for the whole nation, while rates were higher in the south than in the north. Geographical variations in the consumption of taxed salt reflects the distribution of the population among other factors. The existence of the illicit salt trade tended to counter-balance the heavy tax levied by the government and lessened the burden of profiteering by salt merchants in collaboration with corrupt salt officials. Therefore, illegal trade, paralleling an often corrupt legal trade, was a well-known feature of the salt industry throughout the Ch'ing dynasty.

Chapter VI

THE DISTRIBUTION AND MOVEMENT OF SALT

In Ch'ing times, the state monopolized the salt trade through several different systems, all of which were characterized by the fact that the distribution of salt was in the hands of privileged merchants under strict government control. In this chapter, the mechanism and operation of these systems are discussed. To be dealt with also are the trade network, means of transportation, and the spatial structure of market areas.

Marketing Systems

The means of government control of the salt industry varied by place and according to the period. In the Ch'ing dynasty, six different systems were used; the certificate system (yin-fa), the group system (kang-fa), the ticket system (p'iao-fa), the salt ration-tax system (kuei-ting-fa), the official transport system (kuan-yün) and the system of taxation at saltworks (chiu-ch'ang cheng-shui). However, the certificate system had been the basic structure of the marketing mechanism of the industry in China for the past seven centuries. Both the kang-fa and p'iao-fa were actually its two reformed versions. Under the certificate

system, the salt industry was organized into two divisions, production and distribution. On the production side, each saltworks consisted of a number of salt-producing households, which were collectively responsible for production. On the distribution side, salt merchants (yen-shang) obtained certificates (yin-p'iao) from the government by bidding and took these to a designated salt depot for the acquisition of the product. These merchants, in turn, were responsible for delivering the salt to secondary merchants in the designated market area and so were sometimes referred to as "transport merchants" (yün-shang). The secondary merchants, most of whom were wholesalers (but including some retailers) provided storage facilities at hsien capitals and sold the salt to retailers either in the hsien capital or in other markets of the hsien. This system can be illustrated by the following flow chart (Figure 26).

In order to understand how the system operated, it is necessary to trace briefly the origin of the group system. Theoretically, under the certificate system on a competitive basis anyone could be a salt merchant. Monopoly rights to salt were not granted to any merchants during the early Ming, but in 1370, salt merchants were asked to transport

MOVEMENT OF SALT IN CH'ING CHINA

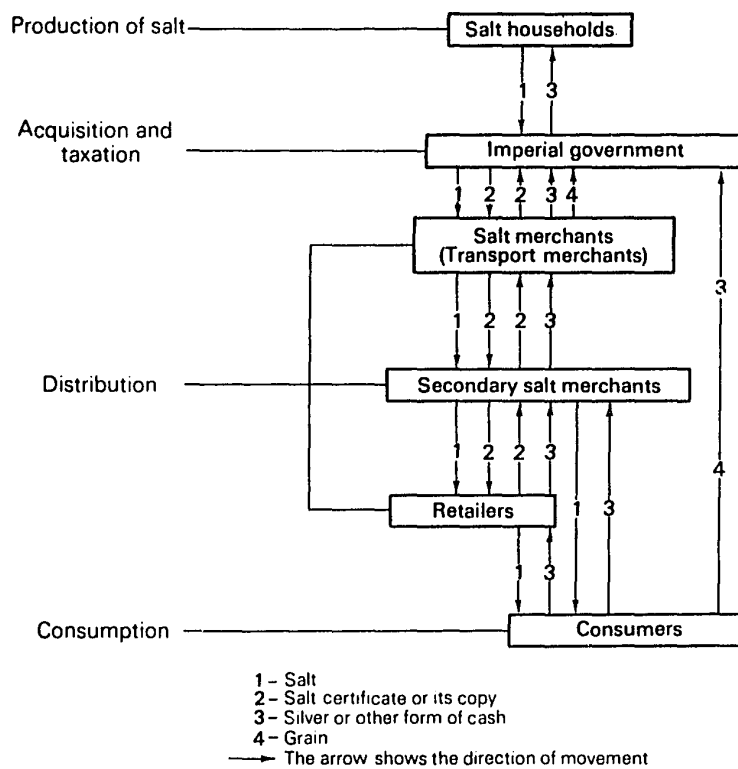


Figure 26

grain¹ to garrisons at northern frontier posts and were in turn awarded salt certificates which could be exchanged for the commodity at salt depots.² Hence, salt merchants who held such salt certificates would receive the right to sell salt in a designated market area. They therefore came to ship and sell salt to secondary merchants under a scheme known as k'ai-chung-fa or the bid-certificate system,³ which worked well until the last quarter of the fifteenth century,

¹At different times in certain areas, other kinds of merchandise such as horses, iron, cloth and forage were also delivered to exchange for yin-p'iao. See Chang T'ing-yü et al., Ming-shih (History of the Ming Dynasty) (1739; Reprinted edition; Taipei, n.d.), "Shih-huo chih" (Essay on Economics), Vol. 2, pp. 837-845; reference on pp. 839-845; and Ho Wei-ning, Chung-kuo yen-cheng shih (History of the Chinese Salt Administration) (Taipei, 1955), p. 221.

²To save the trouble and the cost of transporting grain to the frontier, the merchants later hired the native poor as farm workers and organized commercial colonization (shang-t'un). For a short description of this commercial colonization, see Harold J. Wiens, Han Chinese Expansion in South China (Hamden, Conn., 1967), pp. 198-200. For a study in detail, see Wang Ch'ung-wu, "Ming-tai ti shang-t'un chih-tu" (The System of Commercial Colonization during the Ming Dynasty), Yü-kung (Chinese Historical Geography), Vol. 5, No. 12 (1936), pp. 1-15.

³In a sense, k'ai-chung-fa was a bidding system. The character "k'ai" used here means to publish the list of successful or chosen salt merchants. "Chung" means to substitute one commodity for the salt. Therefore, "k'ai-chung-fa" could be translated as "substitute system." For a recent study of k'ai-chung-fa, see Lee Lung-wah, "Ming-tai ti k'ai-chung-fa" (The Grain-Salt Exchange System in Ming China), Journal of the Institute of Chinese Studies of the Chinese University of Hong Kong, Vol. 4, No. 2 (1971), pp. 371-493.

when financial exigencies and the general trend of fiscal policy made it desirable to substitute cash for grain. In return for cash, salt merchants were then given salt certificates at a rate favorable to the government. During the late fifteenth century, however, the government issued an excessive number of salt certificates, and some salt merchants with salt certificates in hand were unable to obtain salt by the date on which the certificate was due. Between 1614 and 1617, therefore, the government instituted the group system, whereby all salt merchants in each market area were divided into ten groups (kang). Each year, nine groups used current salt certificates, and the tenth used dated ones. Thus, the system fixed the total annual quota for the sale of salt in a market area. The right to sell salt was always given to those merchants who were able to pay the tax in advance, and the names of successful bidders were then entered in the official register (kang-ts'e) of salt merchants. Since the salt business was not profitable at the time, however, few businessmen showed any interest in the trade. The imperial government thus instituted the right of sale as an incentive for merchants to buy more salt certificates. This right was not transferable, and eventually perennial purchasers of salt certificates became monopolists

who made handsome profits.⁴ The capital invested in the purchasing of salt certificates was called wo-pen.⁵ Theoretically, a person who was not an owner of wo-pen could not engage in the trade. But in the course of time, there arose a group of salt merchants who were not owners of wo-pen but held leases on these, usually for a term of from one to five years. As a result of the rapid population growth, the salt trade became highly profitable; and consequently, the rent for wo-pen rose steadily from the beginning of the Ch'ing period to an annual rate of two and a half taels per yin. In 1740, about one-half of the transport merchants were owners of wo-pen; and the remaining half, lease-holders in the Lianghuai salt region. The ratio between wo-pen owners and leaseholders remained little changed until the introduction of the ticket system in 1832.⁶ The group system

⁴Yüan Shih-chen, "Kang-ts'e fan-li" (General Rules of the Register of Salt Merchants), in Hsü Fu-yüan et al., eds., Huang-Ming ching-shih-wen-pien (Collected Works on Government Affairs of the Ming Dynasty) (ca. 1636; Reprinted edition; T'aipei, 1964), Vol. 29, pp. 355-364.

⁵For an interesting discussion of the meaning and origin of "chan-wo", see Fujii Hiroshi, "Senwa no igi oyobi kigen" (The Meaning and Origin of Chan-wo), in Mindai shi ronso (Collected Studies of the History of Ming Dynasty) (Tokyo, 1962), pp. 551-575.

⁶Chou Chi, "Huai-tso wen-ta" (A Dialogue on the Lianghuai Salt Administration), in Sheng K'ang, comp., Huang-ch'ao ching-shih-wen hsu-pien (Collected Works on Government Affairs of the Imperial Dynasty, Continued) (Shanghai, 1897), chüan 51, pp. 90-100.

existed for approximately two centuries, until it was abolished in the nineteenth century.⁷

The ticket system was innovated in Ming times and at the beginning was of only local importance in Chekiang Province. In the early sixteenth century, under the certificate system, salt merchants did not ship salt to thirty-six districts in the Liangche salt region because such trade was not sufficiently profitable. Trade in these areas was therefore taken over by smugglers. To correct the situation a ticket system was initiated, by which anyone who paid a tax was given a ticket which authorized him to sell salt freely in these districts, and as the tax was light, the salt was therefore able to compete with smuggled salt.⁸ The system was also adopted in other areas in the Ming period to combat smuggling.

In 1831, with strong support from the Emperor, Tao-kuang, T'ao Chu, then the Governor-General of Liangkiang

⁷For an excellent discussion of the salt merchants, see Ping-ti Ho, "The Salt Merchants of Yangchou: A Study of Commercial Capitalism in Eighteenth-Century China," Harvard Journal of Asiatic Studies, Vol. 17, Nos. 1 and 2 (1954), pp. 130-168. See also Fujii Hiroshi, "Mindai enjō no kenkyū" (A Study of the Saltworks of the Ming Dynasty), Hokkaidō Daigaku bungkubu kiyō (Bulletin of the Faculty of Arts of the University of Hokkaido), No. 1 (1952), pp. 65-100 and No. 3 (1954), pp. 89-132; reference on pp. 105-124.

⁸This was mentioned in a memorial by Wang Hua. See Chi Huang, Hsü wen-hsien t'ung-k'ao (Encyclopedia of the Historical Records, Continued) (ca. 1784; Reprinted edition; Shanghai, 1936), p. 2966.

(Anhwei, Kiangsi and Kiangsu) carried out a drastic reform of the marketing and distribution system in the Lianghuai salt region in order to break the monopoly of the hereditary salt merchants (owners of wo-pen) and to increase sales. Reductions in the tax rate and in the price were made, yet there was no loss of revenue.⁹ In the following year, the ticket system was instituted in the Huaipei region,¹⁰ with one ticket sanctioning the sale of 2,000 catties of salt. At the beginning, the new system worked well, since the situation under which the sale of salt in a market area was controlled by only a few influential wo-pen owners had ended. As a result, the retail price of salt was lowered and government revenue increased.¹¹ In 1850, the ticket system was also adopted in the Huainan region.¹²

⁹T'ao Chu, "Hui-t'ung ch'in-ch'ai ni-ting yen-wu chang-ch'eng che-tzu" (A Joint Memorial Submitting a Draft of Regulations of Salt Administration), in TWIKCC, Vol. 2, pp. 1049-1077.

¹⁰T'ao Chu, "Huai-pei chih-an ch'ing shih-hsing p'iao-yen fu-p'ien" (A Memorial Suggesting the Adoption of P'iao-fa in the Huaipei Area), in TWIKCC, Vol. 2, pp. 1153-1156.

¹¹Thomas A. Metzger, "T'ao Chu's Reform of the Huai-pei Salt Monopoly," Papers on China, No. 16 (1962), pp. 1-39.

¹²Lu Chien-ying, "Cho-i Huai-nan kai-p'iao chang-ch'eng shu" (A Memorial Suggesting Regulations of P'iao-fa for the Huainan Region), in Wang Yen-hsi and Wang Shu-min, Comp., Huang-Ch'ing Tao-hsien-T'ung Kuang tsou-i (Collections of Memorials of 1821-1908) (Shanghai, 1902; Reprinted edition; Taipei, 1966), Vol. 3, pp. 1787-1790.

Consequently, it was gradually adopted in such other areas as Hotung in 1852,¹³ and in Fukien and Liangche in 1865.¹⁴ Unfortunately, the T'ai-p'ing Rebellion later obstructed the transportation and marketing of salt by small ticket-merchants. Because of this, Tseng Kuo-fan, the succeeding Governor-General of Liangkang, set the limitation that for Anhwei Province a ticket merchant must sell annually at least 24,000 catties of salt and for Hupeh, Hunan and Kiangsi provinces the regulation stipulated 100,000 catties. Therefore, only rich merchants had the necessary capital to engage in the business.¹⁵ In 1866, Li Hung-chang, then the new Governor-General, introduced a rotation system in order to raise funds for increasing military expenses. Under this system, tribute from ticket merchants was collected, and a specified number of ticket merchants each year took turns selling salt. Such tribute was considered as license fees, and the ticket merchants' right to sell salt was thereafter made inalienable and inheritable¹⁶--a system that was later

¹³Tseng Yang-feng, Chung-kuo yen-cheng shih (History of the Chinese Salt Administration) (Shanghai, 1937; Reprinted edition; Taipei, 1966), p. 28.

¹⁴Tso Tsung-tang, "Li-chen Min-yen shih-hsin p'iao-yün chin-hsin shu" (A Memorial Detailing the Trial of the Ticket System in Fukien), in HCCSWHP, Vol. 1, pp. 874-876.

¹⁵Tseng Yang-feng, op. cit., footnote 13, p. 28.

¹⁶Ching Hsueh-ch'ien, ed., Yen-shui wen-t'i (The Problem of Salt Taxation in China) (n.p., 1930), pp. 213-225.

adopted in the Huaipei and Liangche regions.¹⁷ Obviously, this was the revival of the former certificate system which was continued well into the twentieth century.¹⁸

In the areas near salt-producing centers, a salt-ration tax system called kuei-ting-fa was installed, kuei-ting literally meaning that the salt tax was incorporated in the ti-ting tax.¹⁹ One reason for this system was to eliminate the sale of untaxed salt smuggled out of saltworks. The high tax on salt paid by consumers made smuggling profitable, and the proximity of consuming areas to saltworks facilitated the illegal trade. Under the salt-ration tax system, salt was distributed through ordinary business channels, and a tax was collected along with the land tax. As the price of salt was lowered, smuggling then became unprofitable and ceased. The system was first adopted in Kansu Province in 1723,²⁰ and then in Ch'ingchou,

¹⁷Tseng Yang-feng, op. cit., footnote 13, p. 28.

¹⁸The practice of the yin system was not terminated until January 1, 1942, when the Chinese government officially announced its abolishment.

¹⁹In Ch'ing China, the land tax generally had two component parts. The ti-ting tax which literally means "land tax and corvée combined" was collected in cash. The grain tax was originally collected in kind, but commonly converted into money payment in the late Ch'ing.

²⁰CS, Vol. 2, p. 1501.

Laichou and Tengchou prefectures of Shantung Province.²¹ It was also adopted in areas so far away from sources of salt supply that salt merchants did not ship to these areas because such trade was not sufficiently profitable. The decrease in the sale of salt resulted in a loss of government revenue and in consequent yen-huang (salt famine) in these areas. For this reason, among others,²² in 1778, the system was also adopted in such districts of Shansi Province as Hsi Chou, Taning and Yungho,²³ and in 1792, in the entire Hotung salt region.²⁴ The following year (1793), it was applied in the remaining parts of Shensi Province,²⁵ and finally in 1828 in thirty-one hsien of Szechwan Province.²⁶

²¹Wang Ch'ing-yün, Hsi-ch'ao chi-cheng (Collected Works on Government Affairs of Our Glorious Dynasty) (n.p., 1898; Reprinted edition; Taipei, 1966), chüan 5, p. 256.

²²Other reasons include low purchasing power in market areas and decreasing salt production. In either case, salt merchants would lose their sale.

²³Wang Ch'ing-yün, op. cit., footnote 21, chüan 5, p. 356.

²⁴See Ta-Ch'ing li-ch'ao shih-lu (Veritable Records of Successive Reigns of the Ch'ing Dynasty) (Reprinted edition; Taipei, 1963-1964), "Ch'ien-lung," chüan 1381, pp. 3a-b (or Vol. 28, p. 20518); chüan 1382, pp. 19-20 (Vol. 28, p. 20536); chüan 1385, pp. 21b-22 (Vol. 28, p. 20589).

²⁵Ching Hsueh-ch'ien, ed., op. cit., footnote 16, p. 27.

²⁶CS, Vol. 2, p. 1505. The kuei-ting-fa was first adopted in Pa Chou. The number of chou and hsien that adopted the system increased to thirty-one by 1828, forty-one by ca. 1875 and sixty-eight by 1908. See CYFC, chüan 253, pp. 4 and 6-7. See also CS, Vol. 2, p. 1512.

A fifth system involved official transport in outlying areas such as Kwangsi Province, where the salt trade might not otherwise have proved sufficiently profitable to keep salt merchants engaged in the trade. For the merchants one means to profit was to delay tax payment, and so salt merchants who stayed in the business did not pay taxes on due dates. In 1724, an official transport system was then instituted for the first time in Kwangsi Province.²⁷ Under this system, the distribution of salt was handled mainly by a network of public salt-transport bureaus established at strategic points and supplemented by contract-salt merchants. Retail trade remained in the hands of ordinary small stores. To ensure an ample supply of salt at low prices, the system was of particular benefit in areas far from sources of supply. Other advantages were the creation of a unified system of distribution that serviced an entire region rather than only a part, the elimination of profiteering by former transport merchants, the removal of gratuities demanded by corrupt local officials along salt routes, and the establishment, to a certain degree, of a free competitive market that was not enjoyed by small merchants (san-shang), as previously. This system was gradually adopted in other areas, as in the eighteenth century in the

²⁷Ching Hsüeh-ch'ien, ed., op. cit., footnote 16, p. 25.

Ch'aochiao area of the Liangkwan salt region²⁸ and in four maritime prefectures of Fukien Province;²⁹ as well as in the Kweichow and Yunnan sections of the Szechwan salt region,³⁰ in the Shantung salt region,³¹ in the remainder of Fukien Province,³² in the Shensi and Honan sections of the Hotung salt region,³³ and in the nineteenth century, in several parts of the Lianghuai salt region;³⁴ and finally in the Shensi section of the Hotung salt region,³⁵ and parts of coastal Chihli Province.³⁶ By the end of the Ch'ing, the system was thus practiced in large parts of China Proper.³⁷

²⁸CS, Vol. 2, p. 1511.

²⁹Ibid., p. 1509.

³⁰Wu To, "Ch'uan-yen kuan-yün chih shih-mo" (The Government Monopoly in the Transportation and Marketing of Salt in Szechwan), CCCYC, Vol. 3, No. 2 (1935), pp. 141-261; reference on pp. 162-167.

³¹Tseng Yang-feng, op. cit., footnote 13, p. 25; and CS, Vol. 2, p. 1504.

³²CS, Vol. 2, p. 1509.

³³YFTC, chüan 4, p. 19.

³⁴Ching Hsueh-ch'ien, ed., op. cit., footnote 16, pp. 33-34. See also T'ao Chu, "Huai-pei p'iao-yün shang-yün chih-wai jeng cho-yün kuan-yen fu-pien" (A Memorial on Official Transport in addition to the Ticket System), in TIKCC, Vol. 3, pp. 1209-1212; reference on pp. 1210-1211.

³⁵YFTC, chüan 4, p. 19.

³⁶CS, Vol. 2, p. 1112.

³⁷For a detailed study of the institution of the official transport system in the Szechwan salt region, see Wu To, loc. cit., footnote 30.

A sixth system, called chiu-ch'ang cheng-shui (taxation at the saltworks), was of local importance in Yünnan Province, where the concentration of saltworks in several restricted areas and the paucity of market outlets made control at the saltworks practical. Under this system, salt was taxed at the source of production, after which salt remained a free trade-commodity within the whole Yünnan salt region. This system was inaugurated in the T'ang period; however, in Ch'ing times, had been much discussed but never adopted outside Yünnan. It was fully adopted in Yünnan at the beginning of the nineteenth century.³⁸ A significant difference between the ticket system and the taxation-at-the-saltworks system was that under the former, salt merchants obtained salt from government salt depots rather than directly from salt-producing households; while under the latter, salt was obtained directly from the producers.³⁹

The Flow of Salt: Trade Network

Since salt is a manufactured commodity, its distribution proceeded down from producers to wholesalers, to retailers, and finally to consumers; or, in a spatial sense,

³⁸Ching Hsueh-ch'ien, ed., op. cit., footnote 16, p. 25.

³⁹See T'ao Chu, "Hui-t'ung ch'in-ch'ai fu-tsou t'i-ch'a Huai-pei p'iao-yen ch'ing-hsing che-tzu" (A Joint Memorial on the Implementation of the Ticket System in Huaipai Region), in TWIKCC, Vol. 3, pp. 1239-1250; reference on p. 1243.

from producing centers to collecting centers, to regional distribution centers, to local distribution centers, and finally to local retailers and individual consumers. In the early eighteenth century, salt was a bulky international commodity in Western Europe. For example, large amounts from France, Portugal and Italy were shipped into the Baltic area.⁴⁰ But in Ch'ing China, salt was a domestic commodity; thus, its flow was purely internal. The flow of Ch'ing China can be analyzed at two levels--regional and local. Three types of general flow patterns can be identified at the regional level. Within the nine coastal salt regions, the salt moved along navigable waterways (Figure 27). In three inland regions, whose sources of supply were centrally located, the direction of movement was toward the periphery. And in the Shenkan salt region of northwestern China, where the salt-producing centers were along the northern and northwestern borders, salt moved southward and southeastward.

The Lianghuai salt region serves to illustrate in detail the movement of the trade. There, it was collected

⁴⁰See C. T. Smith, An Historical Geography of Western Europe before 1800 (New York, 1967), p. 438.

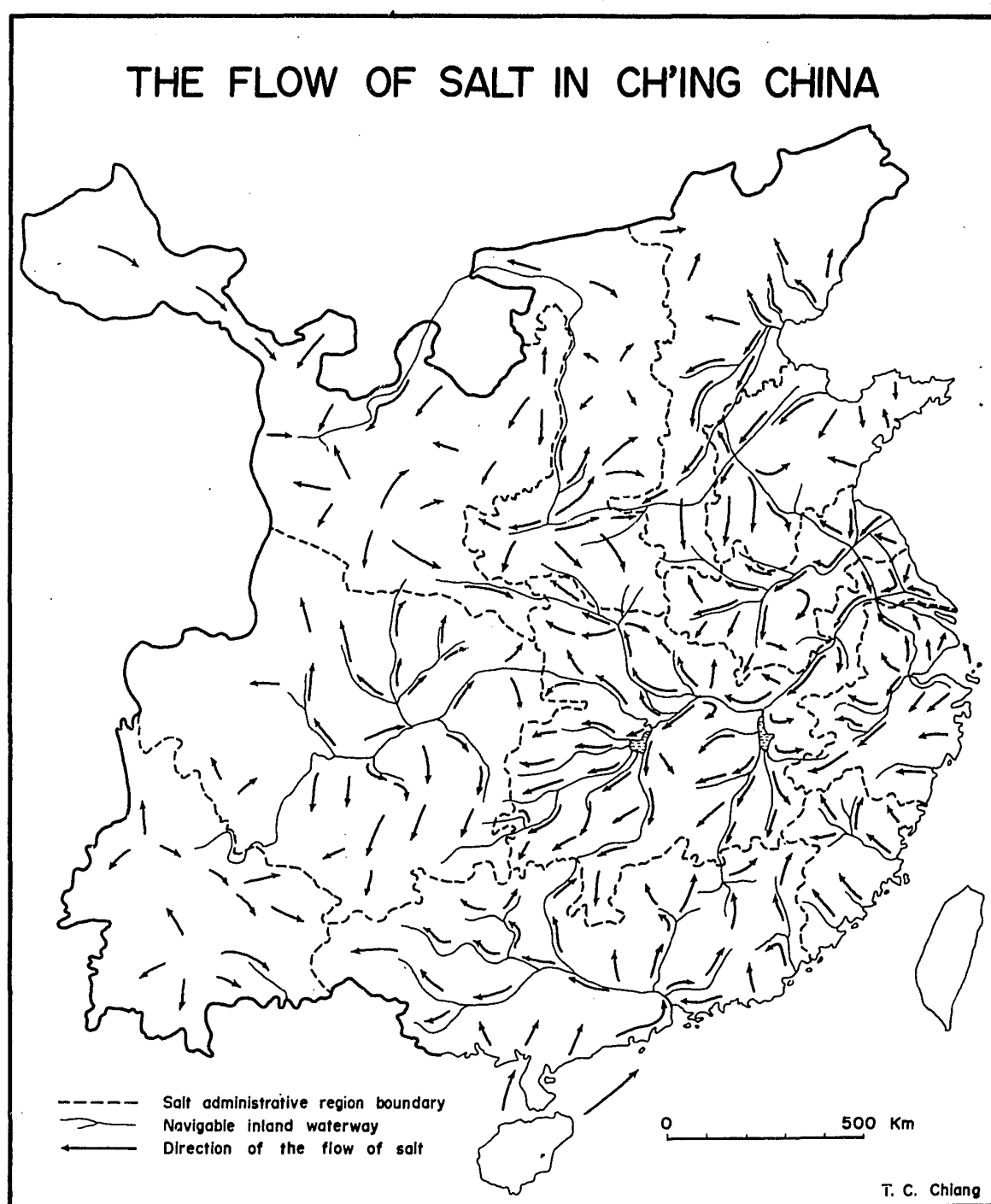


Figure 27

at thirty salt bureaus from some 15,000 salt-producing households⁴¹ scattered along the east coast of Kiangsu Province, north of the Yangtze River. In the immediate hinterland of the saltworks, salt was shipped directly from saltworks to nineteen districts⁴² in Kiangsu Province, twelve in Huaipai and seven in Huainan. For areas further inland, salt was shipped to two major collecting centers, Hsipa⁴³ in the north and Shiherhwei in the south. From Hsipa, it was then transported directly to fourteen districts in the south eastern part of Honan Province and twenty-seven districts in northern Anhwei Province. From Shiherhwei, salt was shipped directly to twelve districts in Kiangsu Province and twenty-three districts in southern Anhwei, and indirectly to fifty-six districts in Kiangsi Province by way of Nanch'ang, and to 119 districts in Hupeh and Hunan provinces, via Hankow. Nanch'ang and Hankow were the regional distribution centers

⁴¹Chu T'ing-li, *Yen-cheng chih* (Accounts on the Salt Administration in China), chüan 4, cited in Hiroshi, op. cit., footnote 7, p. 75.

⁴²The term "district" refers to a civil administrative district, hsien, chou or t'ing.

⁴³Huaian used to be the collecting center until 1832, when Hsipa was established as a new collecting and distribution center for the Huaipai salt region under the ticket system. See Lin Chen-han, *Huai-yen chi-yao* (Essentials of the Salt Industry in Lianghuai Region) (Shanghai, 1928), pp. 195-196.

for Kiangsi, and for Hupeh and Hunan provinces, respectively. Both Hsipa and Shiherhwei had a dual function: the former served as the collecting and regional distribution center of the Huaipai salt region; while the latter was the collecting center of the Huainan salt region and the regional distribution center of an area covering parts of Kiangsu and Anhwei provinces (Figures 28 and 29).

Although the shipment of salt usually followed natural trade routes, in a number of cases the movements were uneconomical. For example, the salt sold in four districts of Luchow Fu of Anhwei Province on the north bank of the Yangtze River did not come from Shiherhwei, to which it was linked by navigable waterways, but from Hsipa, the regional distribution center for the Huaipai area, which lay across the Huaiyang Mountains. The route from Hsipa was three times as long as the route from Shiherhwei, and since a quarter of this was by overland transport through the Huaiyang Mountains, transportation costs were proportionally even higher.

Salt that was destined for certain districts on the northern border of Kiangsi Province was distributed from Shiherhwei. It was first shipped to the regional distribution center at Nanch'ang, passing through the very districts in which it was to be sold. After the salt was delivered in Nanch'ang by the transporters it was carried northward again to the consuming districts, and since Nanch'ang was about

Figure 28

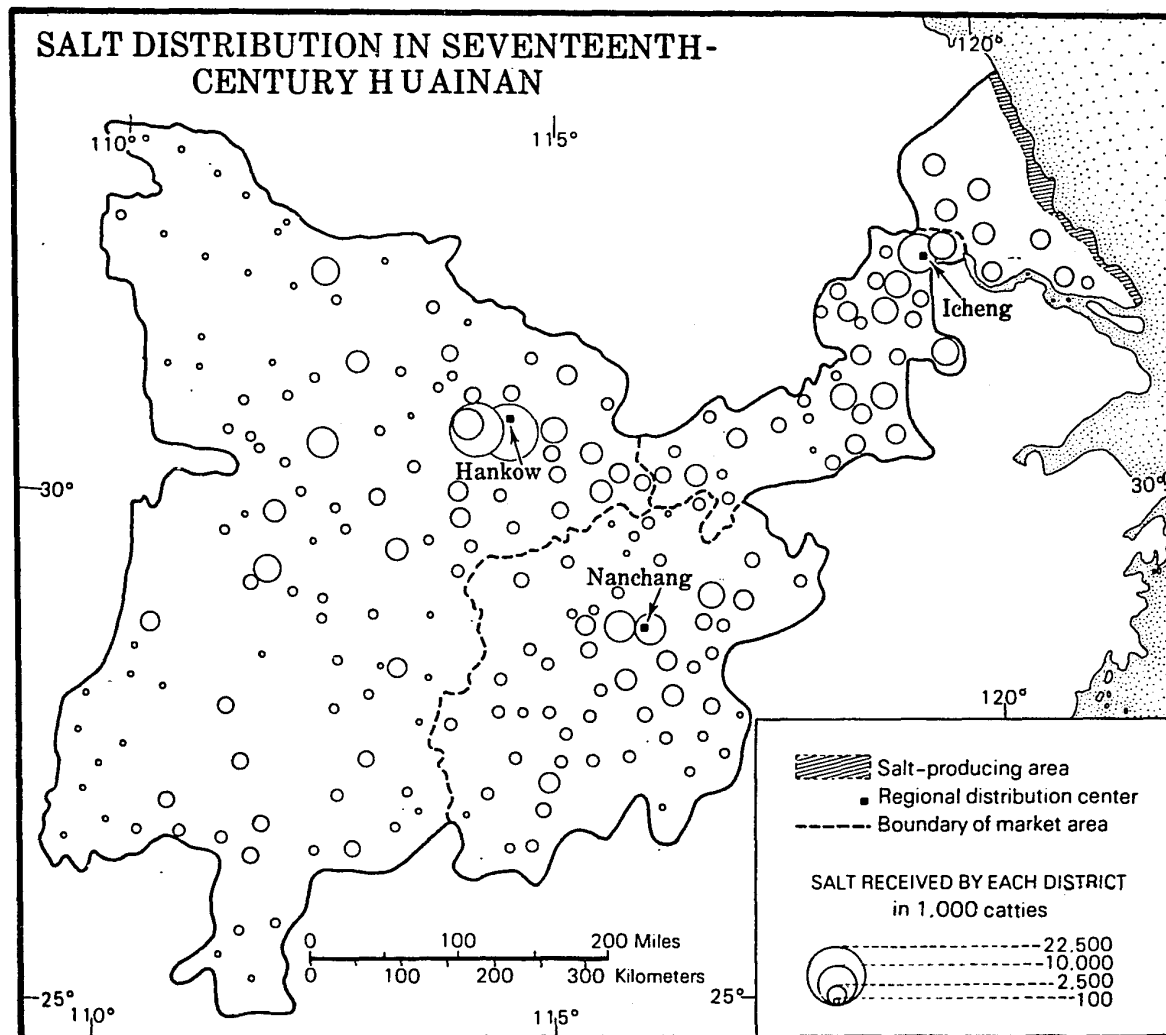
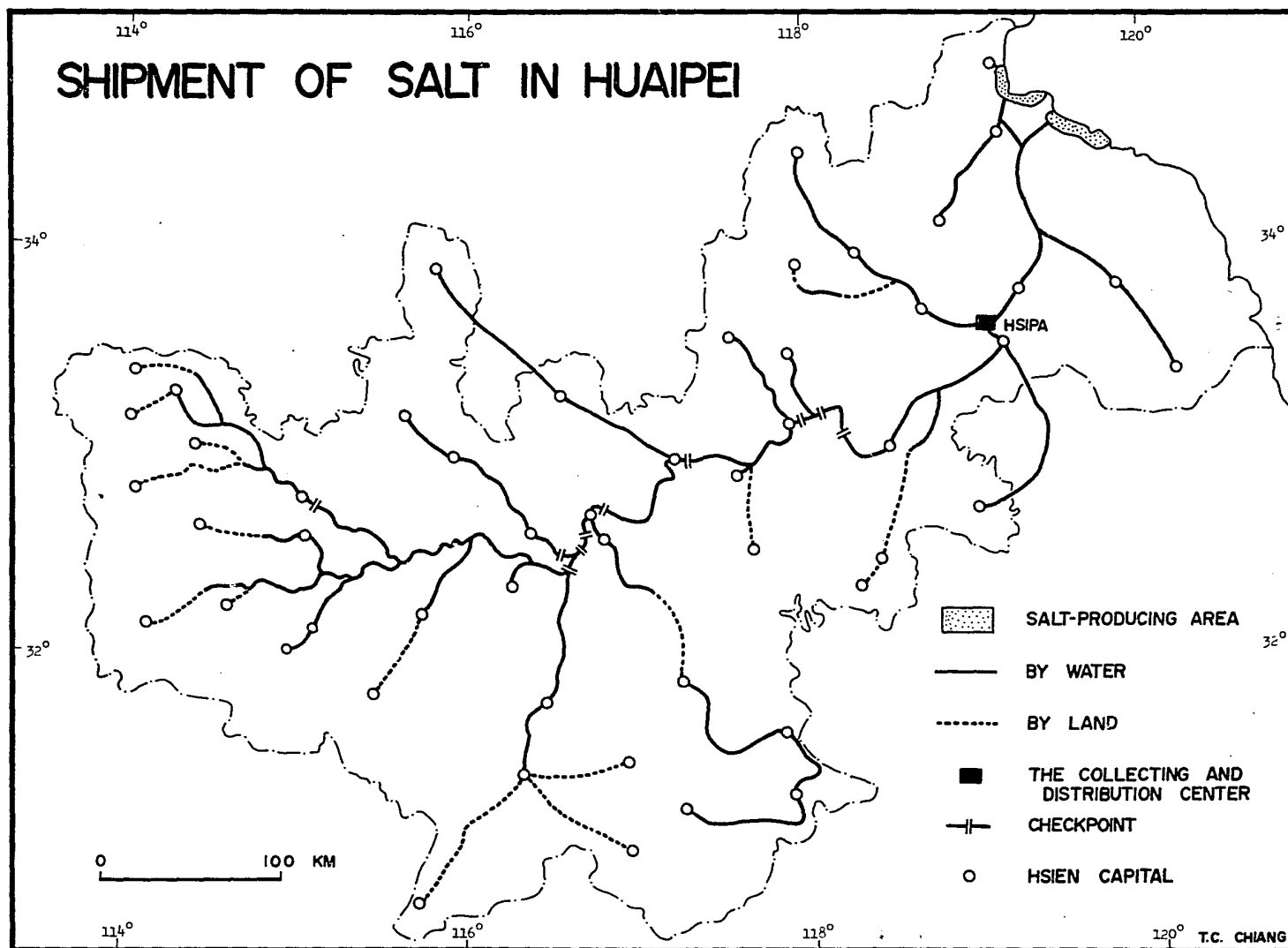


Figure 29



250 kilometers distant, additional handling charges and transport costs were incurred for the unnecessary 500 kilometer round-trip. Similar situations were found in Hupeh Province and elsewhere.⁴⁴

In general, the pattern of salt movement within each district was a miniature version of the regional pattern. At the local level, the hsien capital was the distribution center of a hsien, to which salt was first shipped from a regional distribution center. The direct shipment of salt to a hsien capital is mentioned in virtually all the compendia of the salt administration for Ch'ing China. This was even true during the Second World War in central Yünnan, as reported by a sociologist in 1948, who noted that salt was transported from the salt-producing center directly to the hsien capital of Imen.⁴⁵ From a hsien capital, the salt was

⁴⁴This shortcoming was mentioned in two of T'ao Chu's memorials. See T'ao Chu, "Ch'ien-tsou pan-li ts'o-wu ch'ing-hsing shang-yu wei-chin chin-tsai lü-ch'en che-tzu" (A Memorial Re-reporting the Salt Affairs of the Lianghuai Region), in TWIKCC, Vol. 3, pp. 1433-1460; reference on p. 1457; and "Hui-t'ung ch'in-ch'ai ni-ting yen-wu chang-ch'eng che-tzu," op. cit., footnote 10, reference on pp. 1070-1071.

⁴⁵See Hsiao-tung Fei and Chih-i Chang, Earthbound China (London, 1948), p. 168. "Imen" was spelled as "Yen-men" in the book.

then distributed to market towns⁴⁶ throughout the entire area of the hsien's jurisdiction. Actually, as one official pointed out in a memorial, in Kiangsi Province, salt as taxed merchandise was sold only in market towns, which in extreme cases, were located about thirty kilometers apart.⁴⁷ According to Skinner, in traditional rural China the average distance to market towns traveled by the most disadvantaged villagers was four-and-a-half kilometers.⁴⁸ Salt is said to have been one of several daily necessities that were sold in periodic markets in Kwangtung Province,⁴⁹ but after all,

⁴⁶The term "market town" used here refers to the settlements in which there was at least a salt retailer in its market. It is also called "standard market town" (Skinner), or "basic market town" (Yang), or "rural market town" (Hsiao) by other scholars.

⁴⁷See Shou Huan-piao, "I Fu-chien yen-yin yü Min t'ung-hsiao pin" (A Memorial Suggesting the Inclusion of Fuchou Fu and Chien-ch'ang Fu in the Fukien Salt Region), in Shen K'ang, comp., loc. cit., footnote 6, chüan 52, pp. 83-86a. See also Ch'u-chou fu-chih (Gazetteer of Ch'uchou Prefecture) (1877 edition), chüan 24, p. 2a. It was also reported that salt could be brought in market centers only in central Yünnan. See Hsio-tung Fei and Chih-i Chang, op. cit., footnote 45, p. 163.

⁴⁸G. William Skinner, "Marketing and Social Structure in Rural China," Part 1, Journal of Asian Studies, Vol. 24 (Nov. 1964), pp. 3-43; reference on p. 34.

⁴⁹Kao Sung, "Hsü-shih lun" (On Periodic Markets), in Shen K'ang, comp., loc. cit., footnote 6, chüan 55, pp. 6-7a.

it had been among the few imported items in Chinese periodic markets since at least the twelfth century.⁵⁰ The number of market towns varied from one district to another.⁵¹ Except in a few cases, a hsien capital was the largest trade center and hence the biggest market town.⁵² Whether a hsien capital was a central⁵³ or an intermediate market town,⁵⁴ salt was first shipped to the hsien capital, as the salt trade was under government control and the administrative headquarters of a hsien was located there. Here, the hsien magistrate was given the responsibility of supervising the

⁵⁰Ch'uan Han-sheng, "Sung-tai Nan-fang ti hsü-shih" (Periodic Markets in South China during the Sung Dynasty), Li-shih yü-yen yen-chiu-so chi-k'an (Bulletin of the Institute of History and Philology, Academia Sinica), Vol. IX (1947), pp. 265-274; reference on p. 272.

⁵¹Kung-chuan Hsiao, Rural China (Seattle, 1960), pp. 20-23.

⁵²Sen-dou Chang, "Some Aspects of the Urban Geography of the Chinese Hsien Capital," Annals of the Association of American Geographers, Vol. 51 (March 1961), pp. 23-45; reference on p. 42.

⁵³Ching-kun Yang, A North China Local Market (New York, 1944), pp. 6-10.

⁵⁴Skinner, loc. cit., footnote 48, p. 9.

the sale of salt.⁵⁵ At a hsien capital, it would be convenient for the magistrate to monitor the flow of salt so as to prevent smuggling. Furthermore, the cost of transporting salt within the hsien boundary constituted only a small portion of the total cost. The further a hsien was from the origin of the salt supply, the smaller was the portion represented by local transport in the total cost. Still another factor that made a hsien capital the local salt distribution center was that trade in salt in a hsien was normally in the hands of a single dealer. For example, though it had a population of about 400,000 in the early twentieth century, Ting Hsien had only one salt-dealer,⁵⁶ who, for his own protection, lived and maintained storage facilities in the hsien capital.

⁵⁵During the Ch'ing dynasty, a magistrate of a hsien was required to see that the total amount of salt designated for the hsien was sold in due time. His success or failure in the discharge of the responsibility was taken into account in his record of accomplishment. A magistrate who failed to carry out this duty was punished according to the percentage of salt quota unsold: ten percent or less, suspension of promotion; twenty to thirty percent, reduction in nominal salary; forty percent, demotion of one grade; fifty to seventy percent, demotion of two to four grades and transfer to another post; eighty percent or above, dismissal. See T'ung-tsu Ch'u, Local Government in China under the Ch'ing (Cambridge, Mass., 1962; Paperback edition; Stanford, California, 1969), pp. 144-147.

⁵⁶See Sidney D. Gamble, Ting Hsien, a North China Rural Community (New York, 1954), p. 168.

At both the regional and local levels, the movement of salt was opposite to the flow of rice. In the middle and lower Yangtze basin, for example, rice moved downstream. Surpluses of rice were shipped from Hupeh, Hunan, Kiangsi and Anhwei provinces to the Yangtze delta. Rice had been shipped downstream along the Yangtze River from Hunan, Hupeh and Kiangsi from at least the twelfth century,⁵⁷ and this practice was continued into modern times.⁵⁸ One reason for this was the large concentration of urban centers in the Yangtze delta area; and another was because of the shipment of large quantities of tribute rice from the Yangtze delta to North China via the Grand Canal. Salt, in contrast, moved upstream from Shiherhwei to become available to most of the drainage basin of the Yangtze River below Kueichou in western Hupeh Province. This two-way movement of cargo naturally made more efficient use of shipping space at a lower cost. For example, in 1732, the acting Governor-General of Hukwang reported in a memorial that in a three-month period from December 1731 to March 1732 there were

⁵⁷ Ch'uan Han-sheng, "Nan-Sung tao-mi ti sheng-ch'an yü yün-hsiao" (The Production and Marketing of Rice in Southern Sung China), Li-shih yü-yen yen-chiu-so chi-k'an, Vol. X (1948), pp. 403-432; reference on pp. 416-422.

⁵⁸ Chang P'ei-kang and Chang Chih-i, Che-chiang-sheng shih-liang chih yün-hsiao (The Marketing of Grains in Che-kiang Province) (Ch'angsha, 1940), pp. 36-37. See also Hua Sung-nien, Liang-shih kuan-li-lun (Administration of Grains in China) (Taipei, 1953), pp. 127-129.

more than 400 rice junks and many more large salt junks transporting rice from Hankow downstream.⁵⁹ Similarly, the concentration of non-agricultural populations and hence the largest centers of food consumption were market towns in which rice was collected and salt distributed to farmers from the surrounding countryside.

Means of Transportation

Transport methods varied from place to place. Water transport was preferred, as it was the cheapest. In the 1870's, Ferdinand von Richthofen found "that freight by land is from twenty to forty times more expensive than it is by water,"⁶⁰ and in the 1910's Richard Dane reported, also, "Salt transported by land by human carriers, by pack animals and by carts, even if it has paid no duty to the government, cannot . . . compete with duty-paid salt transported by water."⁶¹ Where possible, small boats or junks were

⁵⁹See Yung-cheng chu-p'i yü-chih (Vermilion Endorsements and Edicts of the Yung-cheng Period, 1723-1735, including the Memorials Concerned) (Reprinted edition, Taipei, 1965), Vol. 9, pp. 5757-5758.

⁶⁰Ferdinand von Richthofen, Baron Richthofen's Letters, 1870-1872 (2nd edition; Shanghai, 1903), p. 39.

⁶¹Richard Dane, Report on the Reorganization of the Salt Revenue Administration in China, 1913-1917 (Peking, 1918), p. 17.

used.⁶² For example, in the immediate coastal plain hinterland of the Huainan saltworks, there were canals and rivers which were actually called yün-yen-ho (salt canals).⁶³

Small boats and junks were used to ship salt to Shihherhwei, where the salt was then transferred to larger junks plying the Yangtze and its tributaries. Since the drainage basin of the middle and lower Yangtze has many lakes, rivers and canals, water transport was by far the most important means

⁶²No reference about the costs of different types of transport is available at this moment. Further research is needed. However, one source says that native-sailboat transport for salt on the Han River, a tributary of the Yangtze in Hupeh Province, averaged slightly less than five cents silver per ton mile during the early 1930's. Szechwan salt consumed in western Hupeh reached various ports along the Yangtze by native boats and was then carried by porters to its eventual market in loads of one hundred pounds or less. The cost of transporting salt here averaged thirty-five cents per ton mile through rugged country. See Joseph E. Spencer, "Salt in China," Geographical Review, Vol. 25 (July 1935), pp. 353-366; reference on pp. 364-365. According to Buck, transport by junk cost less than any other native means of transportation; i.e., twenty-one cents per ton-mile by junk, forty by animal-drawn cart, sixty-three by wheel-barrow, seventy-one by pack donkey, and one dollar and thirty-nine cents by runner using a carrying pole. See J. Lossing Buck, Land Utilization in China (Nanking, 1937), Tables 4 and 5, pp. 346-347. Another field survey of the transport cost in Chekiang Province in 1926 shows that the cost of native boats was the cheapest transportation means in shipping grain. It was about two-thirds of the cost by steamer, one-third to two-thirds of that by train, and one-seventh of that by human carrier. See Chang P'ei-kang and Chang Chih-i, op. cit., footnote 58, pp. 112-115.

⁶³See Joseph Needham et al., Science and Civilisation in China, Vol. 4 (Cambridge, England, 1970), p. 317 and Figure 903.

of shipping salt in the south during the Ch'ing dynasty. Wheelbarrows, ox carts,⁶⁴ animals⁶⁵ and human porters were used, however, in the overland transport of salt between the break-of-bulk point on a navigable river and the final destination.⁶⁶

A similar pattern was seen in the Huaipei salt region. Small boats and junks were used first to ship salt from three Huaipei saltworks to Hsipa where it was then transferred to larger junks sailing Lake Hungtze and along the Huai and its tributaries. Beyond the break-of-bulk point on a navigable river, of course, overland transport

⁶⁴Salt from Ch'anglu saltworks sold in Honan Province was, for example, transported in part by carts. Each cart had a load of twenty packages of about three hundred kilograms of salt. See YFTC, chüan 53, p. 6 and Ling Wen-yüan, Chung-kuo yen-yeh tsui-chin chuang-k'uang (Present Conditions of the Salt Industry in China) (Peking, 1913), Vol. 2, p. 129. In Hotung salt region, each cart had a load of twenty packages of sixty kilograms of salt. Apparently, the cart had a much smaller carrying capacity than those employed in the Ch'anglu region. See CYFC, chüan 80, p. 3b.

⁶⁵A Chinese-Communist mimeographed notice indicates that animals were the major means of transportation of salt in northern Shensi Province in the 1930's. See Chung-yang kuo-min-ching-chi-pu t'ung-chih: kuang-yü yün-yen wen-t'i (Notice of the Ministry of National Economic Affairs, Chinese Communist Party: Problem of Salt Transportation) (Mimeographed, issued on July 10, 1936). A copy of the original notice is in the Hoover Institution, Stanford University. Pack animals were also used in Yunnan. See Hsiao-tung Fei and Chih-i Chang, op. cit., footnote 45, p. 49.

⁶⁶This situation remained the same even in the early twentieth century. See Spencer, loc. cit., footnote 62, pp. 361-365.

was used. For example, eight of the fourteen districts in the southeastern part of Honan Province adopted overland transport for the final section of long-distance salt shipments as they all were located beyond the limits of navigable waterways (Figure 29). In low-water seasons, the navigable limits of many rivers might move downstream, and the mileage of overland transport was then lengthened. In other words, the means of water transportation also faced seasonal differences, depending upon the hydrologic regime of a river.⁶⁷ In North China, the freezing of rivers in the winter months had a similar effect on the means of transportation.

While in the south water transport was generally more important than that by land, the situation was reversed in the north. Here, in the Hotung salt region, for example, salt was transported mainly by overland means.⁶⁸ In north and northwest China, transport was mainly by cart and pack animal, while in southwest China, pack animals were used almost entirely, supplemented by human portage. In Yünnan where boats could not be used and where the terrain was too

⁶⁷For example, salt had to be transferred on small boats from larger junks at Ch'ingshan and other points on the Yangtze River before it was shipped to its destinations in Kiangsi Province due to the lower water-level. See YFTC, chüan 53, p. 41.

⁶⁸YFTC, chüan 51, p. 6 and chüan 56, p. 1.

rugged for wheelbarrows, human carriers were especially important,⁶⁹ a condition that was also found in western Hupeh.⁷⁰ For a short period near the end of the Ch'ing dynasty, railroads were used to ship salt in Chihli and Shantung provinces,⁷¹ and modern steamers were similarly employed on the Yangtze River.⁷²

In order to prevent transporters from selling salt before it reached its destination, transportation from regional to local distribution centers proceeded according to a timetable. In the Hotung salt region, for example, delivery time was specified as within two days from YÜn-ch'eng to Yungchi, while it was eight days to T'ungkuan, and twenty-four days to Sian. The time allotted was fifteen

⁶⁹See CS, Vol. 2, p. 1499. See also Hsiao-tung Fei and Chih-i Chang, op. cit., footnote 45, pp. 41, 48-49. For an interesting and sympathetic description of the human portage, see Charles P. Fitzgerald, The Horizon History of China (New York, 1969), p. 153.

⁷⁰Spencer, loc. cit., footnote 62, p. 365.

⁷¹See CYFC, chüan 16, p. 11; chüan 20, p. 1 and chüan 30, p. 2. See also Ho Wei-ning, Hsin Chung-kuo yen-yeh cheng-ts'e (New China's Salt Industry Policy) (2nd edition; Shanghai, 1947), p. 65.

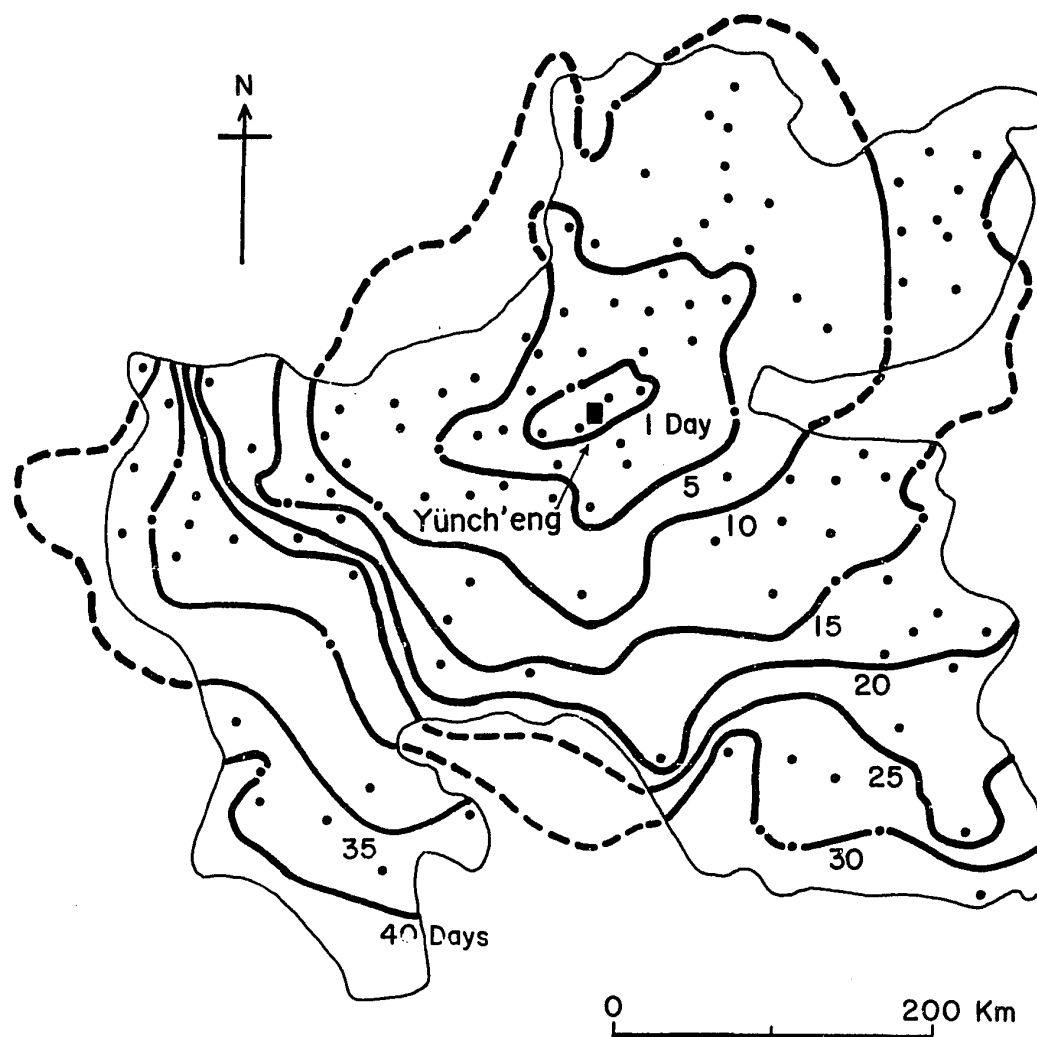
⁷²See S. A. M. Adshead, The Modernization of the Chinese Salt Administration, 1900-1920 (Cambridge, Mass., 1970), pp. 48-51. There was opposition to the use of modern steamers. See Li Tsung-hsi, "Fu Li Shao-ch'üan chung-t'ang lun lun-ch'uan yün-yen shu" (A Letter Answering Li Hung-chang on the Use of the Steamer for Transporting Salt), in HCCSWHP, Vol. 1, p. 855.

kilometers a day by oxcart and twenty-five by pack mule or boat (Figure 30). Along the Yangtze, the timetable was scheduled according to the size of the junk. A small vessel with a carrying capacity of from 240,000 to 420,000 catties of salt was required to deliver the shipment from Icheng to Hankow in thirty days; a medium-sized one carrying 480,000 to 720,000 catties, forty days; and a large one carrying 780,000 to 1,500,000 catties, sixty days.⁷⁴

Geographical changes in salt production among large salt regions between the fourteenth and nineteenth centuries were due mainly to differences in regional population growth. Since modern transportation was introduced in the late nineteenth and early twentieth centuries, however, the situation changed drastically. Table 28 summarizes the evidence for these changes. In the first three decades of this century, the total salt production of the Ch'anglu, Shantung and Huaipai regions almost tripled, while that of the Huainan and Hotung regions actually decreased. Huainan was no longer the leading salt-producing region, nor was Hotung a major one. The annual salt production of Huainan in 1931-35 was less than one-fourth that of 1900, while the

⁷⁴T'ao Chu, "Cho-ting Ch'u-hsi yen-ch'uan tao-an hsien-ch'i ping wei-yuan hsün-ch'i i-tu chia-tai tao-mai ko-pi che-tzu" (A Memorial on the Time Allowance for Salt Junks Sailing to Hankow and the Appointment of Salt Officials to Combat Smuggling), in TWIKCC, Vol. 2, pp. 1131-1138.

AN ISOCHRONIC MAP OF THE SALT TRANSPORT FOR THE HOTUNG REGION



YÜNCH'ENG IS THE POINT OF ORIGIN.
DOTS REPRESENT LOCAL DISTRIBUTION CENTERS.
DASHED LINES ARE APPROXIMATED.

T.C. CHIANG

Figure 30

Table 28.
Geographical Changes in Annual Salt Production
in Four Salt Regions

Region	1 9 0 0* (A)	1931 - 1935* (B)	C h a n g e (B/A X 100)
Huainan	5,000	1,191	24
Hotung	1,500	1,276	85
Ch'anglu	4,000	6,816	170
Shantung	3,000	9,350	312
Huaipei	1,400	8,495	607

*In thousand piculs.

Sources: S. A. M. Adshead, The Modernization of the Chinese Salt Administration, 1900-1920 (Cambridge, Mass., 1970), p. 11; Tseng Yang-feng, Chung-kuo yen-cheng shih (History of the Chinese Salt Administration) (Shanghai, 1937), pp. 209-210.

same ratio for the Hotung region was eighty-five percent. With such modern facilities as railway and steamer transportation, the Ch'anglu, Shantung and Huaipei regions could make inroads into the Hotung and Huainan market areas. Salt from Ch'anglu could be easily shipped by the Peking-Hankow Railway to southern Honan Province, while Shantung and Huaipei salt could be more economically transported to Hupeh Province by steamers than by native junks.⁷⁵ A recently

⁷⁵See Ling Wen-yüan, Chung-kuo yen-yeh tsui-chin chuang-k'uang (Present Conditions of the Salt Industry in China) (Peking, 1913), Vol. 2, pp. 61-62.

published local gazetteer indicates that Ch'anglu salt was sold in Hsiaokan, a district about fifty kilometers northwest of Hankow. Apparently, salt was transported there from North China by the Peking-Hankow Railway,⁷⁶ rather than, as in olden times, being shipped in on the Yangtze River from Huainan. From this evidence, it is clear that transportation costs have played a key role in the salt trade. Salt resources in northwestern China were not well-developed in fact, mainly because of the prohibitive cost of transportation.

Spatial Structure of Market Areas

As mentioned in Chapter III, in the Ch'ing dynasty, China Proper was divided into ten salt administrative regions, all of which developed from marketing areas of different salt-producing centers, although each was actually the market area of a salt-producing center. That each salt-producing center had a well-defined market area was an exceptionally important feature of the salt industry in traditional China. The origin of this can be traced to the beginning of the ninth century when the trading area of each producing center was very loosely defined. This situation obtained until A.D. 800, when salt from the North China coast began to enjoy such popularity in the Hotung trading

⁷⁶See Hsiao-kan-hsien chien-chih (Gazetteer of Hsiaokan) (Wuhan, 1959), p. 85.

area that normal trade was disrupted. Finally, the Salt Commissioner of Hotung sent a memorial to the Court to ask that the sale of salt in his trading area by neighboring producers be stopped. The petition was granted, and from that time forward, boundaries of salt marketing-areas were gradually delimited.⁷⁷ The major salt-marketing areas were established by the late eleventh century.⁷⁸ Minor boundary changes in these areas did happen thereafter, but the basic spatial structure of the market areas of the Ch'ing dynasty was about the same as those of the eleventh century.

These were to a great extent delineated according to the geographical factor of inland riverine transport (Figure 31). The most outstanding example was the Huainan salt region which covered the middle and lower Yangtze basin, with the Yangtze River as its traffic artery. The Huai basin, similarly, formed the Huaipai salt region; the Si River basin, the Liangkwan salt region; the Min, the Fukien salt region; the Hai Ho system, the Ch'anglu salt region; and the Szechwan basin, the Szechwan salt region. Kuangnan Fu of Yunnan Province was not a part of the Yunnan salt

⁷⁷Wang P'u et al., T'ang hui-yao (History of the Administrative Statutes of the T'ang Dynasty) (A.D. 961; Reprinted edition; Shanghai, 1935), chüan 88, Vol. 15, p. 1604.

⁷⁸Tai I-hsüan, Sung-tai ch'ao-yen chih-tu yen-chiu (A Study of the Salt-Note System of the Sung Dynasty) (Shanghai, 1957), pp. 73-78.

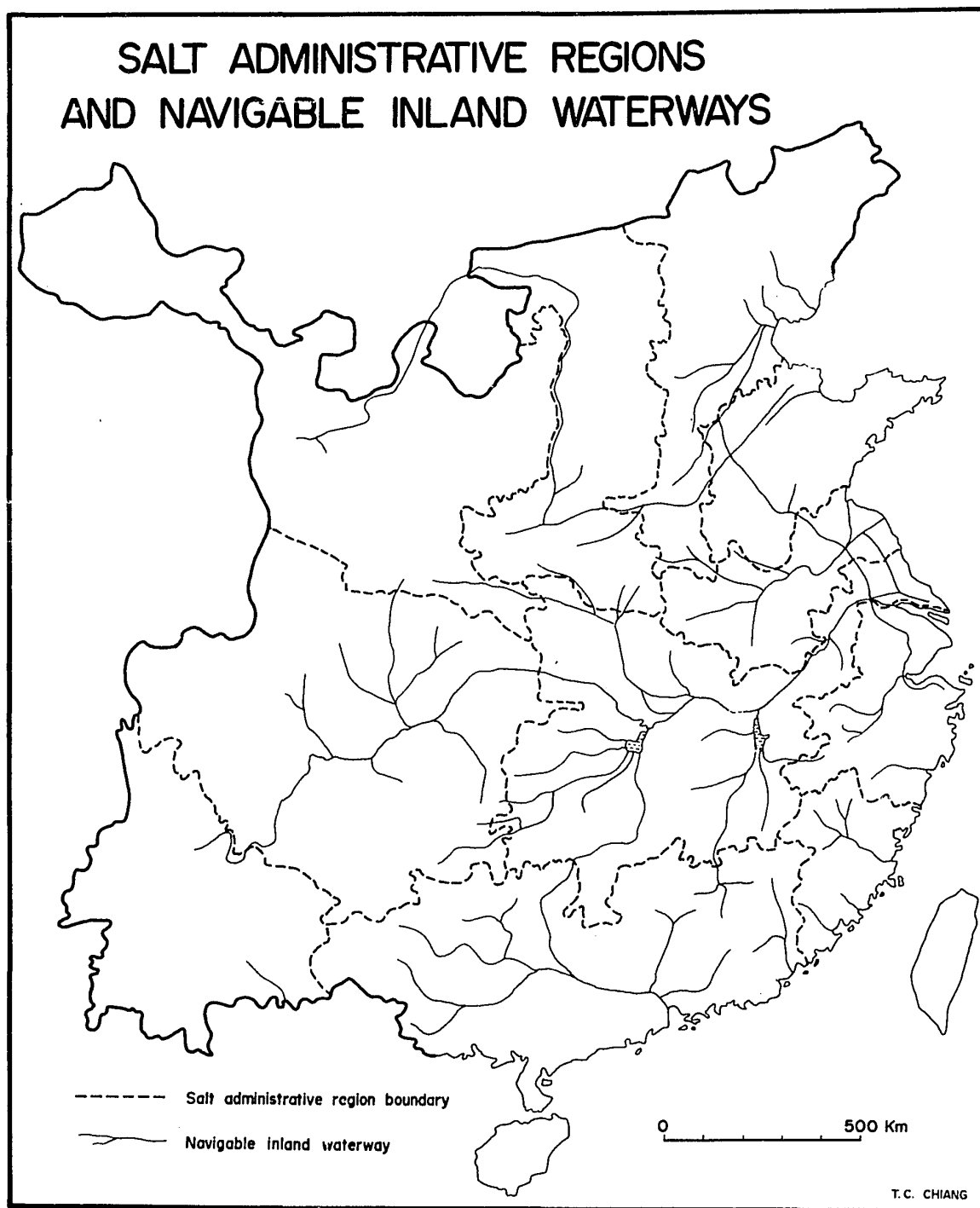


Figure 31

region but was assigned to the Liangkwan salt region because of its location in the upper Si Basin. On the other hand, Tingchou Fu was a part of Fukien Province but was assigned to the Liangkwan salt region as it occupied the upper Han basin.⁷⁹ For the same reason, Huichou Fu of Anhwei Province did not obtain salt from Huainan but from Liangche. It is clear that the structure of these salt regions is highly rational in terms of inland-waterway transportation.

As to lesser market areas within each salt region, the Liangche and Shantung salt regions may be taken as examples. Within the Liangche salt region, the southern part of Chekiang Province formed a separate small market area occupying the whole of Ou Chiang basin plus two smaller independent river basins to the south. Salt was produced in four saltworks on the coast, for all of which, Yungchia was the collecting and distribution center. From there, salt was distributed to fifteen districts. To the north of the Ou Chiang basin lies the Ling Chiang basin, which formed another small market area of the Liangche salt region, and in which salt from the three coastal saltworks was distributed to six districts of T'aichou prefecture through Linhai, the collecting and distribution center of the area (Figure 32).

⁷⁹YFTC, chüan 5, p. 9.

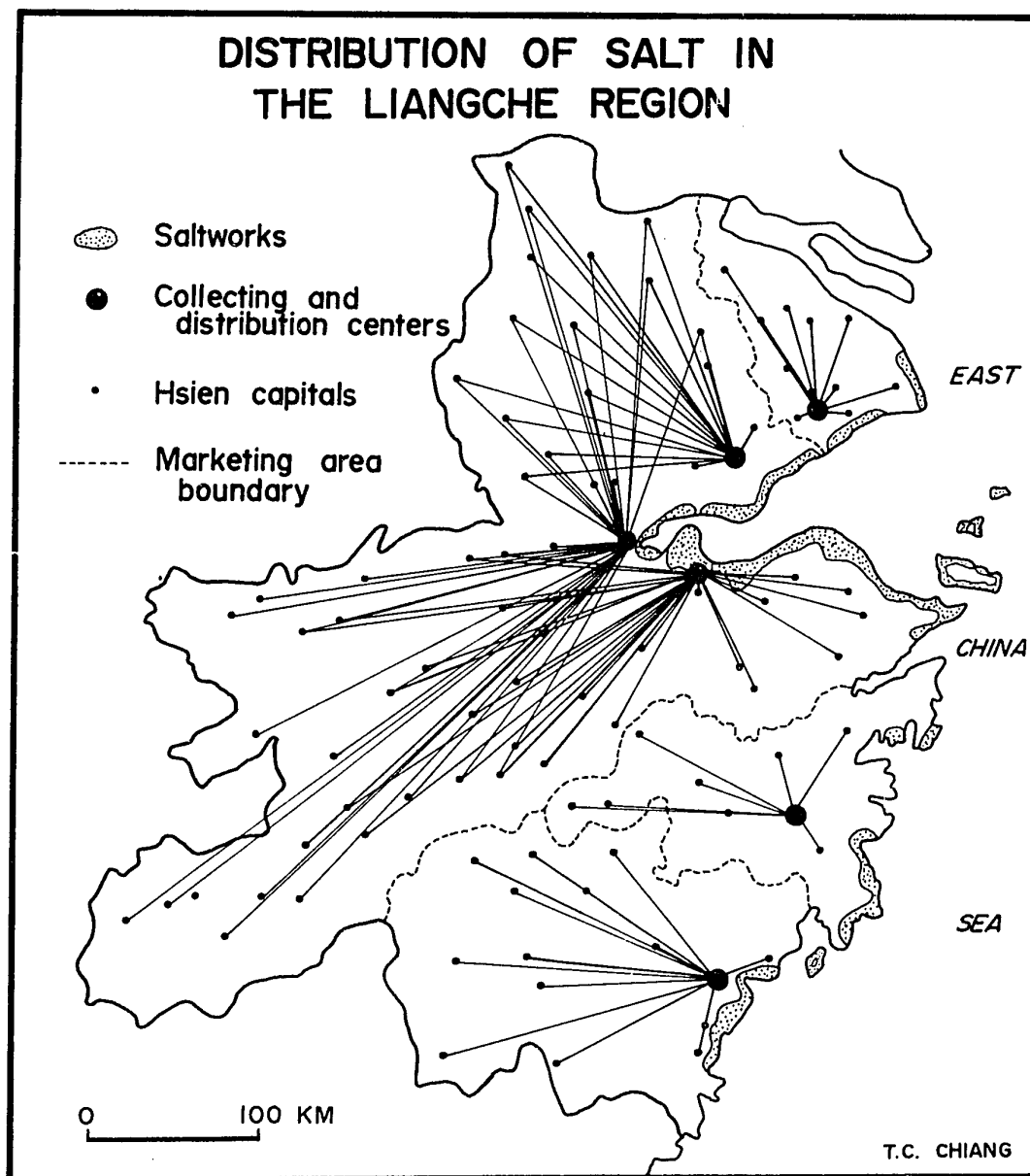


Figure 32

The Shantung salt region of North China had seven market areas. The eastern half of the province, because of its rugged topography and dispersed drainage patterns and its scattered saltworks on the coast, was subdivided into six small market areas. The western half of the province, combining twelve additional districts to the south in Ahnwei, Honan and Kiangsu provinces because of the fairly uniform flat plain, constituted a single, large market area with the lower Hwang Ho and Grand Canal as its regional framework. Salt distributed in the area was from saltworks on the coast of northern Shantung (Figure 33).

As the principal trade routes were riverine, government control of the flow of salt was then possible through a series of checkpoints. There were, for example, ten major checkpoints in the Huai basin. Salt junks en route from Hsipa to Honan Province, for example, had their papers checked and cargo examined three times before reaching Wuho; once more at Huaiyuan and additional five times before Chengyangkuan, and for destinations beyond Hsintsan, there was even another checkpoint (Figure 29).

Boundaries of salt marketing areas ordinarily followed the boundaries of the administrative units hsien, chou and t'ing, with some shifting back and forth through time between two marketing areas by certain peripheral parts which were able to buy salt from different producing centers at the same time. The boundary of a market area was not

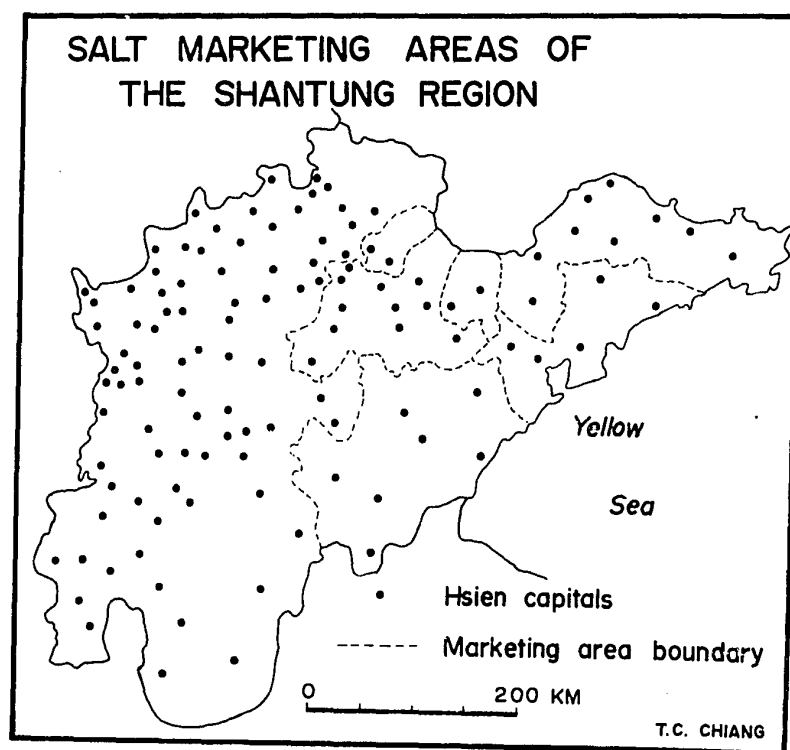


Figure 33

permanent, and a peripheral part of one area might overlap another. In Hunan prior to the mid-nineteenth century, for example, salt from Liangkwang was sold in three hsien, the remainder of the province forming part of the salt trading area of Huainan. The disruption of the Yangtze trade routes during the T'ai-p'ing Rebellion gave Liangkwang salt a ready market in Hunan. After that, in one fu (Yungchou) and in the greater part of another (Hengchou) the Lianghuai authorities were officially constrained to permit the sale of Liangkwang salt in competition with that of Huainan. This was because of the lower price of Liangkwang salt compared to that of Huainan. Liangkwang salt continued to advance. By 1910, the whole of Hengchou and another fu, Paoch'ing, had shifted to the trading area for Liangkwang salt. The governor-general of Kwangtung consistently pressed in memorials for a revision of the boundary to include Yungchou, Hengchou, and Paoch'ing in the Liangkwang market area.⁸⁰

The production capacity of a salt-producing center also affected its market size. Saltworks in inland Chihli, for example, and in northern and central Shansi, central Shensi, the K'aifeng area of Honan and the Yingch'eng of

⁸⁰China, Imperial Maritime Customs, Salt: Production and Taxation, V Office Series, Customs Papers, No. 81 (Shanghai, 1906), pp. 68-72; Ta Ch'ing li-ch'ao shih-lu, op. cit., footnote 24, Hsüan-t'ung Reign, chüan 49, p. 15; and YFTC, chüan 39, pp. 27-28.

Hupei, each had a very limited local market area because of limited production capacity. On the other hand, salt from Chiehch'ih in southern Shansi had a much larger market area than that from adjacent central Shensi because of a much larger quantity of lake salt at the former, while there was only a limited amount of earth salt produced in the latter. A temporary drop in output by a salt-producing center might result in a shortage of salt supply for a market area, whereby salt from a neighboring producing center, which has some extra capacity, could be shipped in to remedy the shortage. During the T'ai-p'ing Rebellion, the spatial pattern of salt flow thus changed, as exemplified when Szechwan salt was sold in Hupei Province.⁸¹

Salt merchants, local gentry and local government officials were all deeply involved in the salt trade. Any change in existing market areas, which might be economically irrational but would often have meant a loss of profit would therefore have met strong resistance. This may be illustrated by the following examples. In 1724, the governor-general of Liangkiang suggested transferring Chenchiang prefecture from the Liangche to the Huainan salt region. This was opposed by the governor-general of Chekiang, as such would have meant a gain of salt sales in Huainan and a loss

⁸¹YFTC, chüan 55, pp. 14-15.

in Liangche.⁸² Until the 1850's, except for Shihnan prefecture, Hupeh Province was a very important part of the Huainan salt marketing area, but as the shipment of Huainan salt was disrupted during the T'ai-p'ing Rebellion, there was a shortage of salt in Hupeh Province, and salt was brought in from Szechwan. With the ending of the Rebellion, the Huainan authorities had every reason to restore the Huainan salt monopoly in Hupeh Province, for it meant a large revenue.⁸³ That in eastern Hupeh was restored, but for the west, the restoration never materialized because of the opposition of Szechwan and Hupeh authorities.⁸⁴

The flow of salt and its marketing structure were, in general, greatly influenced by the civil administration. Hsien (or chou or t'ing) were always the basic units for the distribution of salt. A hsien was never divided to form a part of more than one market, and obtained salt from only one salt-producing center. Even a fu, a higher administrative unit than a hsien, was rarely assigned to more than one

⁸²YFTC, chüan 11, pp. 2-3.

⁸³Tseng Kou-fan, "Ch'ing shou-hui Huai-nan yin-ti shu" (A Memorial Suggesting the Restoration of the Huainan Salt Market in Hupeh Province), HCCSWHP, Vol. 1, pp. 853-855.

⁸⁴P'eng Tsu-hsien, "Liang-huai i-chien chi-ch'u ch'uan-yeen yin-chang shih-to chih-ai nan-hsing shu" (A Memorial on the Difficulties in Decreasing the Amount of Sales of Szechwan Salt in Hupeh Province), HCCSWHP, Vol. 1, pp. 893-895. Also see S. A. M. Adshead, op. cit., footnote 72, pp. 33-36.

market. This can be illustrated by the following examples. Both Yingshan Hsien and Hsishui Hsien were located in the valley of the Hsi River, a tributary of the Yangtze. Yet, Yingshan Hsien obtained salt from Huaipai and Hsishui Hsien from Huainan, as the former was a part of Luchow Fu of Anhwei Province while the latter was a part of Huangchow Fu of Hupeh. The route distances from Nanyang Fu and Yünyang Fu to Hankow were almost equal, and both were in the Han valley; yet, the former was assigned to the Hotung salt region and the latter to the Huainan. In fact, Yüench'eng, the regional salt distribution center of the Hotung salt region, was even a little closer to Yünyang Fu than to Nanyang Fu. The assignment of market areas in this case was greatly influenced by the traditional provincial boundaries, Nanyang Fu being a part of Honan Province and Yünyang Fu a part of Hupeh.

Water transport was so cheap that salt transported by land could not possibly compete with that shipped by water. Therefore, transportation cost must have been an important locational factor affecting the spatial structure of the salt industry in Ch'ing China. The Huainan saltworks had the largest market area among the ten salt regions of China Proper because of the cheap water transport provided by the Yangtze and its tributaries. Thanks to water transport, salt from the Huainan works on the coast of Kiangsu Province could extend its market to areas with an air distance of

more than 1,200 kilometers. On the other hand, centered at its sole producing center, Chiehch'ih, because of its great dependence on land transport, the Hotung salt marketing area had a radius of less than 400 kilometers.⁸⁵

The spatial structure of major salt marketing areas did not undergo basic changes after their formation in the late eleventh century, as traditional Chinese transportation remained the same until the late nineteenth century, when modern transportation was introduced to China for the first time.

In conclusion, different marketing systems were employed to eliminate untaxed salt and to maximize government revenue. In the course of time, privileged salt merchants became so powerful financially that the machinery of the public salt administration could only co-operate to ensure easy tax collection. The network of the salt trade and the spatial structure of marketing areas responded mainly to the geographical distribution of sources and inland waterways, but were modified here and there by the structure of Ch'ing China's civil administrative hierarchy. Water transport

⁸⁵ In the expansion of the salt trade in the twelfth and thirteenth centuries in Western Europe, transport cost was also a major factor. Related to this, the relative advantage of water transport over land routes was important. See C. T. Smith, op. cit., footnote 40, pp. 345-346.

was the main means for it was the cheapest; it was also the means by which the flow of salt could be controlled to its maximum extent.

Chapter VII

SUMMARY AND CONCLUSIONS

As a permanent feature of the Ch'ing economy, the salt industry was extremely important. As a disguised form of poll tax, the salt tax provided the Ch'ing government with a reliable source of revenue. The fact that several million people were engaged in the production and distribution of salt made the salt industry the largest single economic enterprise in Ch'ing China. As a daily necessity of human life and a major source of government revenue, salt had been an important factor in historical events of national importance. Salt was also an indicator of the spatial organization of the traditional Chinese economy because of its widespread sources of raw materials, its use of different production methods and of varied means of transportation, its presence in all rural markets, and its geographical variation in taxation.

Ch'ing China had a very complicated system of salt administration which had been inherited from the past. Because of its inability to engage directly in the production and distribution of salt, the Ch'ing administration controlled the industry by leaving the production of salt in the hands of small producers and by subcontracting the

distribution of salt to licensed merchants. Therefore, the government, the merchants and the producers constituted the three components of the salt industry. The producers made the salt; the merchants distributed it; and the government supervised the production and distribution, prevented salt smuggling, and, above all, collected the tax levied on the salt.

Seawater, lake water, brine from deep wells, saline rock and salty earth were the principal raw materials. They were widespread. Different production methods were employed because of diversified physical environments and varied raw materials. The methods were primitive and inefficient. Neither the government nor the merchants had ever tried to improve production methods. From the salt officials' point of view, any innovations involved risk and consequently might lead to loss of rank or even to their dismissal from position. To salt merchants, the incentive for investing in salt production had been less than that for holding the monopoly right by bribing salt officials. Unlike European merchants who formed a strong middle class in the cities, Chinese merchants had no way to escape from government control. The small producers were subsistent, and they had no means to invest in the improvement of production methods. The boiling method was widely favored because of its simplicity in operation. The solar evaporation method continued to take the place of the boiling method as fuel became

scarcer year after year. The amount of salt produced by a producing center was defined primarily by the size of the population in its market area, as salt was for human consumption, not a raw material for chemical industries. Therefore, the geographical changes in the quantity of salt production were mainly the results of regional differences in population growth.

As vegetables and cereals constituted the most important part of the Chinese diet, the annual per-capita salt consumption was about thirteen catties. Based on the estimated per-capita salt consumption, the annual total consumption of salt in Ch'ing China was estimated at nearly 2,200 million catties in the middle-eighteenth century and 5,500 million catties in the middle-nineteenth century. The actual consumption of taxed salt was only half that amount. The difference indicates the magnitude of the illicit salt trade.

Throughout the Ch'ing dynasty, the industry was characterized by state control through six systems; i.e., the certificate system, group system, ticket system, salt ration-tax system, official-transport system and taxation-at-saltworks system. Each was designed to cope with a different situation to ensure the more efficient collection of the salt tax. The basic system was the certificate system, under which each salt-producing center had a well-defined market, and the distribution of salt was monopolized

by salt merchants. Gradually, the privileged salt merchants became so influential that any change at the expense of their interests could not be easily implemented.

Just as the Chinese inland-trade patterns were river-basin oriented, fundamentally the marketing of salt in Ch'ing China was also river-basin oriented. The flow of salt followed inland, navigable waterways wherever possible, as water transport was the cheapest form of transportation. Furthermore, it was much easier for the government to control the flow of salt along a navigable river through checkpoints as strategic positions along the river. Therefore, the distribution of inland, navigable waterways delineated the basic spatial pattern of salt distribution. The movement of salt generally followed natural trade routes. However, in a number of instances, the flow of salt was not economical. Abnormality and dysfunction were the characteristics of the salt industry of Ch'ing China because of government monopoly, among other factors. The structure of the civil administrative hierarchy was another important factor that influenced the spatial structure of marketing. It was universal that a hsien capital was the local distribution center, as the salt industry was a quasi-government business. The network of salt administration and salt distribution paralleled closely the civil administrative hierarchy of Ch'ing China.

Traditional Chinese rural economy has been thought to have been self-sufficient. The whole country consisted of numerous economic cells. Each cell was a market area centered at a market town that drew foodstuffs and raw materials from close at hand, within a radius of 80 to 120 kilometers. Certainly, this notion could not apply to salt. Even though sources of salt were widespread in Ch'ing China, many localities obtained salt from far away. Salt was often an imported commodity, not a native product.

Salt was so much taxed that an illegal trade of salt co-existed with the legal one. The legal and the illegal trade of salt interacted. As salt was generally an inelastic commodity, if the legal trade increased, the illegal one would decrease, and vice versa. The higher the tax, the more illegal salt flowed into the market. As illegal salt increased, the revenue that the government could collect decreased. Therefore, the government had to lower the tax in order to sell more salt so as to increase salt-tax revenues. Furthermore, the salt tax was a regressive one. There was a geographical inequality in salt taxation, as people in some areas had more difficulty avoiding the tax than those in other areas. The former paid more than the latter.

Since the salt industry provided a major source of revenue, the whole system of salt administration was devised to maximize the salt tax. But in the course of time, all

kinds of frauds, abuses and irregularities on the part of merchants, officials and smugglers occurred. Decreases in the salt revenue followed. Reforms of the system were thus carried out to restore the revenue from the salt tax. The salt administration continued to make structural changes within its system to cope with forces from outside and from within. To generalize this process, a functional change model can be devised as shown in Figure 34.

The slow progress in the production and distribution of salt throughout the Ch'ing period provided a good index of the persistence of traditional ways and suggests why modernization was slow in China.

A FUNCTIONAL CHANGE MODEL

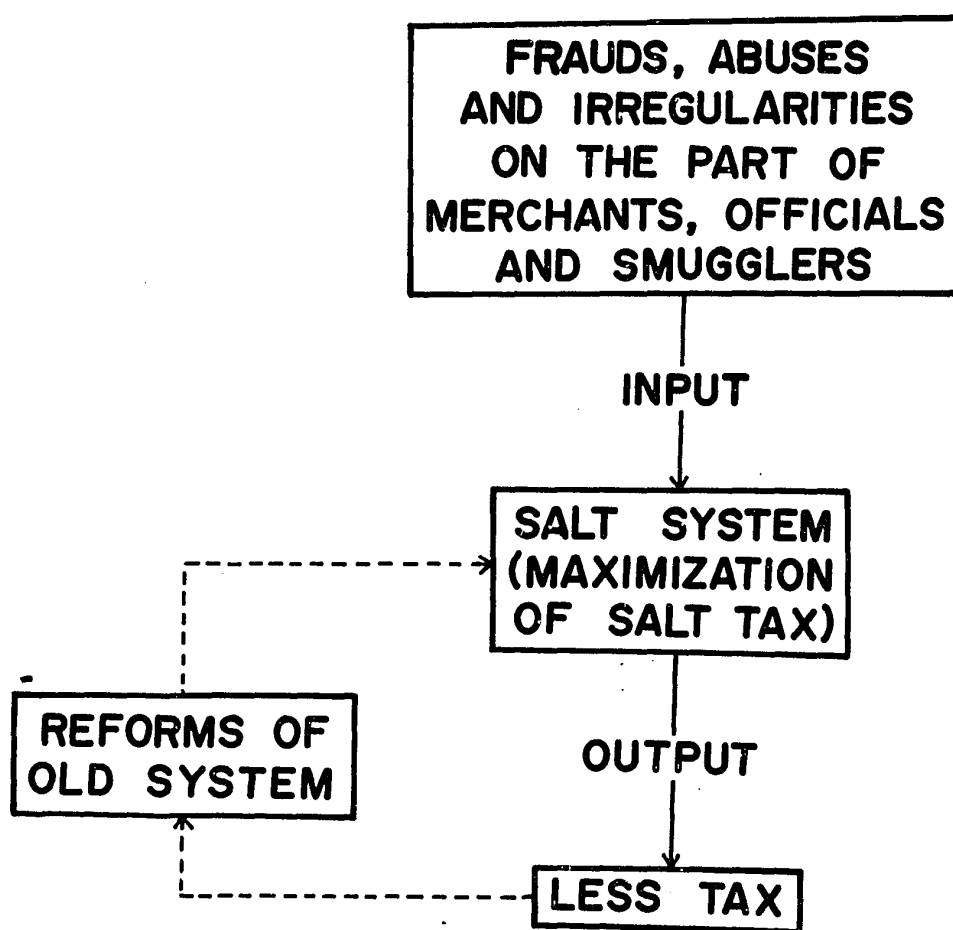


Figure 34

Appendix A

THE CONVERSION OF YIN

In quantitative analysis, it is necessary to have a thorough understanding of numbers and units in use. This is particularly true when one works with Chinese historical texts, as a prominent scholar has warned that certain precautions should be observed in the use of numbers and units in Chinese texts (See Lien-sheng Yang, "Numbers and Units in Chinese Economic History," Harvard Journal of Asiatic Studies, Vol. 12, June 1949, pp. 216-225). In the case of the salt industry in Ch'ing China, the yin as a measuring unit is of prime importance. The production of salt, the consumption of salt, as well as the taxation of salt were all measured in one way or another by yin. The quantity of a yin was not uniform, but varied with place and with time. It had a very wide range from only one hundred catties to as many as ten thousand catties. It was rather confusing when one cited only the number of yin for it could not indicate the actual quantity at all. For example, one source said that one million and seven thousand yin of salt were distributed at the beginning of the Ch'ing dynasty (See Chao Erh-sun et al., Ch'ing-shih kao [Draft History of the Ch'ing

Dynasty], Mukden, 1937; Reprinted edition; Hong Kong, n.d., Vol. 1, p. 448). This figure is meaningless as, in this case, the quantity of a yin ranged from one hundred catties in the coastal prefectures in Fukien Province to five thousand catties in Szechwan Province. In order to make them comparable regionally as well as chronologically, they have to be weighted or converted into a uniform unit of measurement. By sorting a large number of source materials, ten conversion tables of yin have been prepared, one for each salt region of China Proper. Subsequently, in this dissertation all quantities originally in yin were converted into catties according to these tables.

CONVERSION TABLES OF YIN AS A MEASURING UNIT

Table 1.
Ch'anglu Salt Region

Period	Specifications	Equivalent of one yin in catties	References*
1644-1676		205	(1) 16:1; (13) 2: 129; (14) 7:2.
1677-1722		250	(18) 100:4068; (9) 10:3.
1723-1740		280	(1) 16:1.
1741-1806		330	(5) 70:12; (18) 100:4070.
1807-1820		300	(5) 51:2.
1821-1827		335	(13) 2:130.
1828-1840		355	(13) 2:130; (18) 100:4075.
1841-1847		315**	(13) 2:130.
1848-1899		465	(13) 2:130.
1900-1911		485	(5) 51:3; (13) 2:130.

*For reference citation, the number in parenthesis refers to the item in the list of references of these tables, followed by volume (chüan) number and page numbers for works bound and paginated in traditional style or followed by page numbers for works in modern style.

**One source indicates it was 300 catties. See Wang Hsi-sun, "Hu-pu Shan-tung-ssu chi-shih" (A Record of the Bureau of Shantung), in Ts'ung-cheng lu (A Personal Record of Public Affairs) (ca. 1841), chüan 3 (not paged).

Table 2.
Fukien Salt Region

Period	Specifications	Equivalent of one yin in catties	References
1644-1911	Coastal areas*	100	(1) 197:8; (3) 124:19;
	Inland areas**	675	(5) 54:12; (16) 54:31a.

*Including Shaowu Fu, Yenp'ing Fu and five hsien of Chienning Fu, i.e., Chienan, Chienyang, Ch'ungan, Üning and P'uch'eng.

**Including Changchou Fu, Ch'uanchou Fu, Fuchou Fu, Funing Fu, Hsinghua Fu, Lungyen Chou, Yungch'un Chou and two hsien of Chienning Fu, i.e., Chengho and Sungchi.

Table 3.
Hotung Salt Region

Period	Specifications	Equivalent of one yin in catties	References
1644-1677		200	(1) 80:1-3; (6) 3:29a; (20) 70:45.
1678-1724		225	(1) 80:1-3.
1725-1818		240*	(1) 80:1-3; (20) 70:47b.
1819-1911		250	(1) 80:1-3; (20) 70:47b.

Table 3.
Hotung Salt Region
(Continued)

*Starting from 1777, for each yin of salt that was shipped from a salt depot in the fifth through eighth months of the lunar calendar was added extra five catties of salt for wastage in transportation.

**One source says it was 240 catties. See Wang, op. cit., note of Table 1 of Appendix A.

Table 4.
Liangche Salt Region

Period	Specifications	Equivalent of one yin in catties	References
1644-1645	Regular <u>yin</u>	300	(7) 5:1.
	<u>P'iao-yin</u>	100	(7) 5:3.
1646-1676		200	(7) 5:1; (19) 83:17b.
1677-1724		250	(5) 51:11a.
1725-1735		285	(5) 51:11a; (19) 83:26.
1736-1848	Released by the Inspectorates of Chiahsing, Hangchou and Shaohsing (CHS)	335	(5) 51:12a.
	Released by the Inspectorates of Sungchiang, T'aichou and Wenchou (STW)	400	(5) 51:12a.
1849-1873	Released by the Inspectorate of Shaohsing	355	(5) 51:12a.

Table 4.
Liangche Salt Region
(Continued)

Period	Specifications	Equivalent of one yin in catties	References
1874-1911	Released by the Inspectorates of Chiahsing and Hangchou (CH)	375	(5) 51:12a.
	Released by STW	400	(5) 51:12a.
	Distributed to Ch'angshan Hsien	335	(5) 51:13b.
	Released by the Inspectorate of Shaohsing	355	(5) 51:13b.
	Released by CH	375	(5) 51:13b.
	Distributed to Chingchiang Hsien	396.5	(5) 51:13b.
	Released by the Inspectorate of Sungchiang	400	(5) 51:13b.
	<u>Chien-yin</u> *	800	(5) 51:13b.
	<u>Chu-yin</u> **	400	(5) 51:13b.

*Refers to salt distributed by salt peddlers in areas nearby saltworks.

**Refers to salt distributed by salt store-retailers in areas nearby saltworks.

Table 5.
Lianghuai Salt Region

Period	Specifications	Equivalent of one yin in catties	References
1644-1675		200	(8) 7:1b.
1676-1703		225	(8) 7:5b.
1704-1723		267	(5) 51:8b; (17) 81:19b.
1724	Distributed to Kiangsi, Hunan and Hupeh pro- vinces, and Shangyuan Hsien	317	(5) 51:8b; (17) 81:21b.
	To other areas	267	(5) 51:8b.
1725-1731		317	(5) 51:9a.
1732-1747		344	(5) 51:9a.
1748-1749		354	(12) p. 218.
1750		364	(12) p. 218.
1751-1757		355	(5) 35:14.
1758-1799		400	(5) 35:14.
1800-1820		364	(5) 51:9b.
1821-1911	Huaipei	400	(4) p. 2; (10) 3:217.
	Huainan	600	(4) p. 1; (10) 3:217.

Table 6.
Liangkwang Salt Region

Period	Specifications	Equivalent of one yin in catties	References
1644-1911*	Kwangtung and Kwangsi provinces; Ting-chou Fu of Fukien Province; Kueiyang Chou and three <u>hsien</u> of Pin Chou (Ichang, Hsingning and Yunghsing) of Hunan Province.	235	(5) 51:14 and 54:22; (15) 165:17b-18a.
	Kanchou Fu and Ningtu Chou of Kiangsi Province	264	
	Nanan Fu of Kiangsi Province	322**	

*In 1678, for every 200 catties of salt, an extra wastage allowance of 25 catties of salt was added. See (15) 165:19a.

**Another source says that it was 323 catties. See Wang, op. cit., note of Table 1 of Appendix A.

Table 7.
Shantung Salt Region

Period	Specifications	Equivalent of one yin to catties	References
1644-1676		200	(1) 57:9; (2) 7:6.

Table 7.
Shantung Salt Region
(Continued)

Period	Specifications	Equivalent of one yin to catties	References
1677-1690		225	(1) 57:9.
1691-1699		235	(5) 54:19.
1700-1747		225	(1) 57:9.
1748		247.5	(1) 57:9.
1749-1827		225	(1) 57:10.
1828-1848	North Transport Bureau (NTB)	255	(1) 57:10.
	South Transport Bureau (STB)	260	(5) 51:4.
1849-1896	NTB	330	(5) 51:4.
	STB	335	(5) 51:4.
1897-1899	NTB	320	(10) 3:21b.
	STB	325	(10) 3:21b.
	Salt distri- buted by the ticket system	225	(10) 3:217.
1900	NTB	400	(5) 51:5.
	STB	405	(5) 51:5.
1901-1908	North merchant transport	390	(5) 51:5.
	South merchant transport	395	
	Honan: govern- ment transport	300	

Table 7.
Shantung Salt Region
(Continued)

Period	Specifications	Equivalent of one yin to catties	References
	Anhwei: govern- ment transport	390	
	Joint govern- ment and mer- chant transport	390	
1909-1911	NTB	390	(1) 57:12.
	STB*	395	
	Kueite Fu of Honan Province	325	
	Su Chou and Wo- yang Hsien of Anhwei Province and Tungshan Hsien of Kiangsu Province	355	
	Civil trans- port**	225	

*Salt was distributed in Feng Hsien, Pei Hsien, Tangshan Hsien and Hsiao Hsien of Kiangsu Province.

**Salt was not transported by merchants but rather by ordinary inhabitants of the area. Salt tax was included in the land tax.

Table 8.
Shenkan Salt Region

Period	Specifications	Equivalent of one yin in catties	References
1644-1911	Chingyuan Hsien of Lanchou Fu; Kungch'ang Fu (excluding Hsiho Hsien); Ch'in Chou, Ch'ingshui Hsien and Ch'inan Hsien of Ch'in Chou	178.3125	(5) 64:15.
	Ch'ingyang Fu, Ninghsia Fu and P'ingliang Fu	200	(5) 64:15.
	Hsiho Hsien of Kungch'ang Fu; Chieh Chou; Liangtang Hsien, Hui Hsien and Li Hsien of Ch'in Chou	200.125	(5) 64:15.
	Fenghsiang Fu, Hsingan Fu and Pin Chou	240	(5) 76:43b.
	Hanchung Fu, Yenan Fu, Yülin Fu, Fu Chou and Suite Chou	100 or 200	(5) 76:43b.

Table 9.
Szechwan Salt Region

Period	Specifications	Equivalent of one yin in catties	References
1644-1849	Overland transported	400	(1) 255:11a; (5) 51:15a.
	Waterway transported	5,000	
1850-1899	<u>Hua-yen</u> * from <u>Yünyang</u> and Taning	6,750	(11) pp. 466-468.
	<u>Payen</u> ** from <u>Fuyung</u> , Hsiawu- tang, Chienwei, Loshan, and Shehung	8,000	
	<u>Hua-yen</u> from <u>Fuyung</u> and Shehung	10,000	
1900-1911	<u>Pa-yen</u> from <u>Fushun</u> , Chien- wei and Loshan	8,000	(11) pp. 143-144.
	<u>Hua-yen</u> from <u>Fuyung</u> , Yün- yang and Taning	10,000	

*Salt of very small size of crystals. Also known as yü-tzu-yen, literally "fish egg salt".

**Salt of rather large size of lumps, like rice crusts formed in a cooking pan.

Table 10.
YÜnnan Salt Region

Period	Specifications	Equivalent of one yin in catties	References
1644-1911		300	(5) 52:27.

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Appendix B

NUMBER OF RECORDED SALT-PRODUCING DISTRICTS AND SALT BUREAUS IN CH'ING CHINA

Province	Number of Districts	Number ^a of Salt Bureaus	Number of Districts without Salt Bureau
Anhwei	3	-	3 ^b
Chekiang	23(1,1) ^c	29	1 ^d
Chihli	55(7,0)	20	46 ^{e,o}
Fukien	13	27 ^f	-
Honan	35(3,0)	-	35 ^{g,o}
Hunan	9(1,0)	-	9 ^h
Hupeh	4	1	3 ^g
Kansu	22	10	12
Kiangsi	2	-	2 ^j
Kiangsu	14(2,0)	38	1 ^k
Kwangsi	-	-	-
Kwangtung	23(2,0)	41 ^l	-
Kweichow	10(2,0)	-	10 ^m
Shansi	44(5,3)	3	42 ⁿ
Shantung	36(5,0)	20	26 ^o
Shensi	12(2,0)	-	12
Szechwan	36(6,0) ^p	30	2

Province	Number of Districts	Number of Salt Bureaus	Number of Districts without Salt Bureau
Yünnan	14(4,5)	34	-
Total	351 ^q	253	204

^aSee text footnote 3 of Chapter IV.

^bThere were highly possibly more districts that produced earth salt in northern Anhwei Province.

^cNumbers in parenthesis refer to chou and t'ing.

^dSalt was produced as a by-product on gypsum mines in Ch'uchou Fu and Hangchou Fu.

^eIn sixteen of these forty-six districts, there were public saltpeter works. Two thirds of the land area of Chihli were reported to be suitable for production of earth salt.

^fFive saltworks were on the southwest coast of Taiwan.

^gMore than six percent of the land area of Honan Province were directly used for production of earth salt.

^hSalt deposit of large quantity was discovered recently at Ch'ashanyao in Hengyang Hsien. See Chu Mo-lin, Fei-ch'ü yen-wu kai-k'uang (Account on Salt Administration on Mainland China)(Taipei, 1962), p. 55.

ⁱWell salt was produced in Patung. Saltworks there were shut down because of the interference by salt merchants. Earth salt was produced in other localities in northern Hupeh Province.

^jSpring that contained salt was found in Kaoan and Ichun, but there was no commercial production.

^kHsüchou Fu was recorded as producing earth salt. Earth salt was very possibly produced in all of the eight districts of the prefecture.

¹Eleven saltworks were on Hainan Island. The writer is unable to locate three of them.

^mSalt deposits were found in Pichien. Because of salt merchants' interference, the resource was not developed.

ⁿOne source indicates that no district in Shansi did not produce salt. See YFTC, chüan 38, p. 30b.

^oThe writer believes that earth salt could have been produced in many other localities on both flanks of Yellow River in Shantung, Chihli and Honan provinces.

^pOne source indicates that there were thirty-five salt-producing districts in 1723-1735. See YFTC, chüan 2, p. 31. Sixty-four districts were recorded as producing salt during the T'ang dynasty (A.D. 618-906). See Ho Wei-ning, Chung-kuo yen-cheng shih (History of the Chinese Salt Administration) (Taipei, 1955), p. 69.

^qIncluding 40 chou, 302 hsien and 9 t'ing.

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Appendix C

SALINITY OF BRINE

Saltworks	Type of Brine	Salt Content in Percentage by Weight
Chekiang		
Shuangtui	seawater	1.93
Ch'anglin	seawater	1.44 - 2.43
Chihli		
Fengts'ai	seawater	0.93
Yenchen	seawater	2.50
lut'ai	seawater	3.43
Shihpei	seawater	4.06
Haifeng	seawater	4.68
Hupei		
Yingch'eng	gypsum mine brine	1.00 - 13.00
Kansu		
Hsiho	well water	2.00
Kaot'ai	lake water	30.00
Suwushan	lake water	25.50
Yapulai	lake water	29.5
Kiangsu		
Huaipai	seawater	2.50 - 4.00
Chungcheng	seawater	4.94
Panp'u	seawater	4.94
Linhsing	seawater	3.93
Kwangtung		
Kanpai	well water	1.98 - 3.46
	seawater	1.49 - 2.46
Shihch'iao	seawater	1.49
Haichia	seawater	1.49 - 2.47

Saltworks	Type of Brine	Salt Content in Percentage by Weight
Shantung		
Yungfu	seawater	1.25
Yungli	seawater	1.25
T'aolo	seawater	1.87
Fukuo	seawater	3.12
Shihho	seawater	3.12
Kuant'ai	seawater	3.12
Wangkang	seawater	3.12
Hsiyu	seawater	3.75
Szechwan		
Tatsu	well water	3.45
Wanhsien	well water	1.56
Shehung	well water	2.81 - 13.00
Chienyang	well water	3.00 - 9.00
Lochih	well water	3.00 - 10.00
Sant'ai	well water	2.50 - 11.00
P'engch'i	well water	4.00 - 13.00
Chungchiang	well water	3.43 - 8.43
Suining	well water	4.06 - 8.43
Mienyang	well water	2.81 - 9.00
Yent'ing	well water	3.00 - 13.00
Hsich'ung	well water	2.00 - 13.00
Langchung	well water	3.00 - 9.68
Nanpu	well water	3.00 - 9.68
Fushun	well water	4.37 - 27.69
Yunghsien	well water	4.37 - 27.69
Chienwei	well water	5.62 - 8.75
Loshan	well water	5.93 - 12.81
Chingyen	well water	3.43 - 7.50
Jenshou	well water	3.43 - 7.50
Yünyang	well water	1.87 - 4.00
Yenyüan	well water	2.00 - 7.50
Tzuchung	well water	2.81 - 5.31
K'aihsien	well water	0.62 - 3.43
P'engshui	well water	1.87 - 3.43
Taning	well water	4.87
Fengchieh	well water	6.25 - 9.06
Chunghsien	well water	1.87

Saltworks	Type of Brine	Salt Content in Percentage by Weight
Taiwan (Average)	seawater	2.50 - 3.00
Yunnan		
Heiyenching	well water	6.25 - 27.50
P'aiyenching	well water	8.75 - 12.50
Ch'iaohouching	well water	25.00 - 50.00
Langching	well water	18.75 - 25.00
Yünlungching	well water	1.56 - 19.68
Alouching	well water	12.50
Paomuching	well water	18.75
Hsiangyenching	well water	50.00
Anpanching	well water	50.00
Moheiching	well water	56.25
Shihkaoching	well water	25.00
Yüanhsingching	well water	18.75 - 25.00
Yungchiching	well water	25.00
Lachimingching	well water	40.62

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Appendix D

A NOTE ON TRANSLITERATION

The author uses the modified Wade-Giles system as found in "List of Syllabic Headings" in the American edition of Mathew's Chinese-English Dictionary (Wakefield, Massachusetts, 1952), pp. xviii-xxi, omitting the circumflex and breve. For general terms, hyphens are used to form meaningful units, for example, chiu-ch'ang chuan-mai. For provincial names and well-known place names, the standard post office spellings are employed; for others Wide-Giles without hyphens between elements.

Glossary

General Terms

ao	廠	Salt depot
ao-shang	廠商	Salt storage merchant
chan	棧	Salt depot
chang	丈	A measuring unit-equal to 3.581 meters
ch'ang-p'ing-yen	常平鹽	Price-regulating salt
ch'ang-shang	場商	Yard merchant
chan-wo	占窩	To hold salt certificates

General Terms (Continued)

che-chung	折中	Equal-value system
ch'eng	埕	Salt pan
chiao-yin	交引	Salt certificates
chien-yin	肩引	Shoulder certificate related to salt distributed by salt peddlers in areas nearby salt-works
ch'ih	池	Salt field or pan
ching-hu	井戶	Brine-well household
chiu-ch'ang	cheng-hsui 就場徵稅	Taxation at saltworks
chiu-ch'ang	chuan-mai 就場專賣	Monopoly at saltworks
chou	州	District, subprefecture
chuan	卷	Book, chapter
chuan-shang	yin an 專商引岸	Monopoly-merchant with exclusive marketing area
chuan-yen	磚鹽	Brick salt
chung-yen	種鹽	Salt-planting
chu-yin	住引	Salt certificate related to salt distributed by salt store-retailers in areas nearby saltworks
fu	府	Prefecture
hsia-fei	匣費	Public relations fund
hsiang	餉	Servicemen's pay
hsiao-shang	銷商	Local distributor and retailer
hsien	縣	District
hsi-hu	畦戶	Salt field household

General Terms (Continued)

hsün-chien	巡檢	Salt inspector
hsün-fu	巡撫	governor
hsün-yen yü-shih	巡鹽御使	Salt censor
hsün-yüan	巡院	Salt patrol and inspection station
hua-yen	花鹽	Salt of small size of crystals
huo-fu-fa	火伙法	Brine-boiling-period system
Hu-pu	戶部	Board of Revenue
k'ai-chung-fa	開中法	Bid-certificate system
kang	綱	Group
kang-fa	綱法	Group system
kang-shang	綱商	Group merchants
kang-ts'e	綱冊	Official register of salt merchants
k'o	課	Tax
kuo-yen	鍋鹽	Pan salt
kuan-pan	官搬	Government transportation
kuan-tu shang-hsiao	官督商銷	Merchant distribution under government supervision
kuan-yün	官運	Official transport
kuei-ting-fa	歸丁法	Salt ration-tax system
kung-pen	工本	Labor cost
kung-yüan	公垣	Public salt depot
k'u-ta-shih	庫大使	District treasury keeper
liang-yen tao	糧鹽道	Grain and salt intendant

General Terms (Continued)

liao-t'ai	料台	Salt depot
likin	厘金	Internal transit tax
lu	埧	Salt pan
mu-yen	木鹽	Wood salt
pao-chia	保甲	Civil division
pa-yen	巴鹽	Salt of large size of lumps
p'eng-yen	蓬鹽	Grass salt
p'iao	票	Ticket
p'iao-fa	票法	Ticket system
p'iao-shang	票商	Ticket merchant
p'iao-yin	票引	Weight unit of salt under the ticket system
p'ing-chun-fa	平準法	Price-balancing system
p'i-yen-so ta-shih	批驗所大使	Salt examiner
san-shang	散商	Scattered small merchants
shai-sha	晒沙	Sun-dry sands
shang-chuan-mai	商專賣	Merchant monopoly
shang-yüan	商垣	Commercial salt depot
shang-t'un	商屯	Commercial colonization
Shan-tung ch'ing-li-ssu	山東清吏司	Bureau of Shantung
sheng-yüan	生員	Government students
tan	坦	Salt pan
t'ang-hu	鹽戶	Salt pan household
tang-ti	蕩地	Reed-growing land

General Terms (Continued)

tao	道	Circuit
ta-shih	大使	Saltworks superintendent
ta-tsung-shang	大總商	Principal head merchant
t'ien-hui	天灰	Natural ashes
t'ing	廳	Subdistrict
t'ing-hu	埧戶	Salt shed household
ti-ting	地丁	Land tax and corvée combined
t'o	坨	Salt depot
t'o-shang	坨商	Salt storage merchant
ts'ang	廠	Salt depot
ts'ao-ch'uan	漕船	Grain tribute junks
tsao-hu	灶戶	Salt stove merchant
tso-shang	坐商	Salt storage merchant
tsung-shang	總商	Head merchant
tsung-ts'ui	總催	Headman of a group of salt-producing households
tsung-tu	總督	Governor-general
t'uan	團	Rural district
t'uan-chang	團長	Headman of a t'uan
Tu-ch'a yüan	都察院	The Censorate
tu-chuan yün-yen shih	都轉運鹽使	Salt controller
t'ung-yen	筒鹽	Tube salt
Tu-pan yen-cheng-ch'u	督辦鹽政處	Supervisory Bureau of Salt Administration
wo-pen	窩本	Capital invested in purchasing salt certificates

General Terms (Continued)

yang-lien-feng	養廉俸	Extra salary
yen-ch'ang	鹽場	Saltworks
yen-ch'ao	鹽鈔	Salt notes
yen-ch'ao-fa	鹽鈔法	Salt note system
yen-cheng	鹽政	Salt commissioner
yen-ch'eng	鹽埕	Salt pan
Yen-cheng-yüan	鹽政院	Bureau of Salt Administration
yen-fa tao	鹽法道	Salt intendant
yen-hu	鹽戶	Salt-producing household
yen-huang	鹽荒	Salt famine
yen-k'an	鹽坎	Salt pan
yen-k'o-ssu	鹽課司	Salt bureau
yen-k'o ta-shih	鹽課大使	Saltworks superintendent
yen-lu	鹽漏	Salt pan
yen-shang	鹽商	Salt merchant
yen-t'an	鹽坦	Salt pan
yin	引	Certificate, weight unit of salt
yin-fa	引法	Certificate system
yin-p'iao	引票	Salt certificate
yin-shang	引商	Licensed salt merchant
yin-ti	引地	Marketing area
yuan	元	Dollar
yüan	垣	Salt depot
yüan-shang	垣商	Salt storage merchant

General Terms (Continued)

yün-p'an	運判	Deputy salt controller
yün-shang	運商	Transport merchant
yün-yen-ho	運鹽河	Salt canals
yü-tzu-yen	魚子鹽	Fish egg salt (salt of small size of crystals)

Personal Names

An Lu-shan	安祿山	Li Hung-chang	李鴻章
Chang Shih-ch'eng	張士誠	Liu Yen	劉晏
Chang T'ang	張湯	Ma Hsin-i	馬新貽
Chao Ti	昭帝	San Hung-yang	桑弘羊
Chia-ch'ing	嘉慶	Ssuma Ch'ien	司馬遷
Ch'ien-lung	乾隆	T'ao Chu	陶澍
Ch'ih-yu	蚩尤	Tao-kuang	道光
Fang Kuo-chen	方國珍	Tiwu Ch'i	第五奇
Fan Hsiang	范祥	Tseng Kuo-fan	曾國藩
Hsüan-t'ung	宣統	Wei Yüan	魏源
Huan	桓	Wu Ti	武帝
Huang Ti	黃帝	Yang Ch'ang-chün	楊昌濬
Kuan Chung	管仲	Yen Chen-ch'ing	顏真卿
Kuang-wu Ti	光武帝		

Place Names

Alouch'ing	阿陋井	Chiahsing	嘉興
Anhwei	安徽	Chiang	絳
Ani	安邑	Chiang Chou	絳州
Anliang	安樂	Chiangning	江寧
Anpanching	按板井	Chiangning Fu	江寧府
Chahar	察哈爾	Chiangning Tao	江寧道
Ch'angchih	長治	Chiangshan	江山
Ch'anglin	長林	Ch'iaohouching	喬后井
Ch'anglu	長蘆	Chichou	吉州
Ch'angpao Tao	常寶道	Chiehch'ih	角年池
Changchou Fu	漳州府	Chieh Chou	角年州, 階州
Ch'angsha	長沙	Chiehchou	解州
Ch'angshan Hsien	常山縣	Chienan	建安
Ch'angt'ing	長亭	Ch'ienchiang	前江
Ch'angtzu	長子	Ch'iench'ing	錢清
Changwan	漳灣	Chienning Fu	建寧府
Chaoch'eng	趙城	Chienwei	犍為
Ch'aochiao	潮橋	Chienyang	建陽
Ch'ashanyao	茶山坳	Chihli	直隸
Chechou Fu	澤州府	Ch'inan Hsien	秦安縣
Cekiang	浙江	Chinan Fu	濟南府
Chenchiang	鎮江	Ch'in Chou	沁州, 秦州
Chengho	政和	Chingchiang Hsien	靖江縣
Chengyangkuan	正陽關	Ch'ingchou	青州
Ch'i	齊	Ch'ingchou Fu	青州府

Place Names (Continued)

Ch'ingch'uan	清泉	Ch'üwo	曲沃
Ch'ingshan	青山	Fenchou Fu	汾州府
Ch'ingshui Hsien	清水縣	Fengchieh	奉節
Ch'ingts'un	青村	Fenghsiang Fu	鳳翔府
Ch'ingyang Fu	慶陽府	Feng Hsien	豐縣
Chingyen	井研	Fent'ai	鳳台
Chingyuan Hsien	靖遠縣	Fengt'ien	奉天
Chining Chou	濟寧州	Fengts'ai	豐財
Chinpei	晉北	Fenhsi	汾西
Chinshan	金山	Foushan	浮山
Ch'inshui	沁水	Fu Chou	鹿州
Chishan	稷山	Fuchou Fu	福州府
Chiuchiang	九江	Fukien	福建
Chiunglai	邛崃	Fukuo	富國
Cholu	涿鹿	Funing Fu	福寧府
Choushan	舟山	Fushun	富順
Ch'üanchou Fu	泉州府	Fuyung	富榮
Ch'uanshan	穿山	Haichia	海甲
Chuchi	諸暨	Haifeng	海豐
Ch'uchou	處州	Hai Ho	海河
Chungan	崇安	Hainan	海南
Chungcheng	中正	Haisha	海沙
Chungchiang	中江	Han	漢韓
Chunghsien	忠縣	Hangchou	杭州
Chungking	重慶	Hanchung Fu	漢中府

Place Names (Continued)

Hankow	漢口	Hsich'ung	西充
Heilungchiang	黑龍江	Hsiho	西和
Heiyenching	黑鹽井	Hsiho Hsien	西和縣
Hengchou	衡州	Hsilu	西路
Hengp'u	橫浦	Hsinchiang	新疆
Hengyang Hsien	衡陽縣	Hsin Chou	忻州
Hochin	河津	Hsinghua Fu	興化府
Honan	河南	Hsingning	興寧
Hopeh	河北	Hsinhsing	新興
Hotung	河東	Hsintsan	新蔡
Hsi	涿	Hsipa	西霸
Hsia	夏	Hsishui	涿水
Hsiang	湘	Hsiyu	西繇
Hsiangling	襄陵	Hsüchou Fu	徐州府
Hsiangning	襄寧	Hsüts'un	許村
Hsiangshankang	象山港	Huai	淮
Hsiangtan	湘潭	Huaian	淮安
Hsiangyüan	襄垣	Huainan	淮南
Hsiaokan	孝感	Huaipei	淮北
Hsiangyenching	香鹽井	Huaiyang	淮陽
Hsiao Hsien	蕭縣	Huaiyüan	懷遠
Hsiasha	下砂	Huangchou Fu	黃州府
Hsiawutang	下五壩	Huangwan	黃灣
Hsi Chou	隰州	Huangyen	黃岩
Hsichou	隰州	Huichou Fu	徽州府

Place Names (Continued)

Hui Hsien	徽縣	K'ai Hsien (K'aihsien)	開縣
Hukuan	壺關	Kanchou Fu	章州府
Hukwang	湖廣	Kan Hsien	章縣
Hunan	湖南	Kanpai	墩白
Hungt'ung	洪同	Kansu	甘肅
Hungtze	洪澤	Kaoan	高安
Huo Chou	霍州	Kaop'ing	高平
Huochou	霍州	Kaot'ai	高台
Hupeh	湖北	Kiangsi	江西
Hwang Ho	黃河	Kiangsu	江蘇
Ichang	宜章	Kirin	吉林
Icheng	儀徵	K'oupei	口北
Ich'eng	翼城	Kuangnan	廣南
Ichou Fu	沂州府	Kuant'ai	官台
Ichun	宜春	Kueichou	歸州
Ihsien	桓縣	Kueite Fu	歸德府
Ilung	儀隴	Kueiyang Chou	桂陽州
Imen	易門	Kungch'ang Fu	鞏昌府
Ishih	猗氏	Kwangsi	廣西
Jehol	熱河	Kwangtung	廣東
Jenho	仁和	Kweichow	貴州
Jenshou	仁壽	Lachimingching	喇鷄鳴井
Juich'eng	芮城	Laichou	萊州
Junan	汝南	Laichou Fu	萊州府
K'aifeng	開封	Lanchi	蘭谿

Place Names (Continued)

Lanchou	蘭州	Luan Fu	潞安府
Lanchou Fu	蘭州府	Luch'eng	潞城
Langchung	閬中	Luchou Fu	廬州府
Li Hsien	禮縣	Luli	蘆瀝
Liangche	兩浙	Lut'ai	蘆台
Lianghuai	兩淮	Lungt'ou	龍頭
Liangkiang	兩江	Lungyen Chou	龍岩州
Liangkwang	兩廣	Lungyu	龍游
Liangtang Hsien	兩當縣	Lüssu	呂四
Liao	遼	Mienyang	綿陽
Liao Chou	遼州	Min	閩
Liaotung	遼東	Mingho	鳴鶴
Lich'eng	黎城	Minyüeh	閩越
Lienho	蓮河	Moheiching	磨黑井
Linchin	臨晉	Mukden	瀋陽
Linch'ing Chou	臨清州	Nanan Fu	南安府
Linfen	臨汾	Nanch'ang	南昌
Ling Chiang	靈江	Nankang	南港
Lingch'uan	陵川	Nanking	南京
Lingshih	靈石	Nanpu	南部
Linhai	臨海	Nanyang Fu	南陽府
Linhsing	臨興	Ninghsia Fu	寧夏府
Lochih	樂至	Ningteh	寧德
Loshan	樂山	Ningtü Chou	寧都州
Lot'ing	樂亭	Ningwu Fu	寧武府

Place Names (Continued)

Ou Chiang	歐江	P'ut'ien	莆田
Ouning	甌寧	P'utung	浦東
Pa Chou	巴州	Sanchiang	三江
Paiyenching	白鹽井	Sant'ai	三台
Panp'u	板浦	Shanghai	上海
Paoch'ing	寶慶	Shangyuan Hsien	上元縣
Paolang	鮑郎	Shanhaikuan	山海關
Paomuching	抱母井	Shansi	山西
Paoteh Chou	保德州	Shantung	山東
Patung	巴東	Shaoan	紹安
Pei Hsien	沛縣	Shaohsing	紹興
Peking	北京	Shaowu Fu	邵武府
P'engchi	蓬溪	Shehung	射洪
Pengshui	彭水	Shensi	陝西
Pichien	畢節	Shenkan	陝甘
Pin Chou	彬州, 邠州	Shihch'iao	石橋
Pingch'a	拼茶	Shiherhwei	十二圩
P'ingliang Fu	平涼府	Shihho	石河
P'inglu	平陸	Shihkang	石港
P'ingting Chou	平定州	Shihkaoching	石膏井
P'ingyang Fu	平陽府	Shihnan	施南
Popai	博白	Shihpei	石硤
P'u	蒲	Shihyen	石堰
P'uch'eng	浦城	Shuangtsui	雙穗
P'uchou Fu	蒲州府	Si	西

Place Names (Continued)

Sian	西安	Tengkuan Ch'ang	鄧關場
Si Kiang	西江	Tingch'i	丁溪
Su Chou	宿州	Tingchou Fu	汀州府
Suining	遂寧	Ting Hsien	定縣
Suite Chou	綏德州	Ts'aochou Fu	曹州府
Sungchi	松溪	Ts'aongo	曹娥
Sungchiang	松江	Ts'aoyen	草堰
Suwushan	蘇武山	Tsinling	秦嶺
Szechwan	四川	Tungch'ang Fu	東昌府
T'aian Fu	泰安府	Tungchiang	東江
Tai Chou	代州	Tungho	東何
T'aichou	台州	T'ungkuan	潼關
Tainan	台南	Tungshan Hsien	銅山縣
Taipei	台北	Tungt'ai	東台
T'ai-p'ing	太平	T'unliu	屯留
Taishan	岱山	Tutu	杜濬
Taiwan	台灣	Tzuchung	資中
T'aiyuan Fu	太原府	Tzuliuching	自流井
Tangshan Hsien	唐山縣	Wanch'uan	萬泉
Taning	大寧	Wanhsien	萬縣
T'aolo	濤雒	Wangkang	王岡
Tasung	大嵩	Wenchou	溫州
Tatsu	大足	Wenhsi	聞喜
Tengchou	登州	Woyang Hsien	潯陽縣
Tengchou Fu	登州府	Wuch'ang	武昌

Place Names (Continued)

Wuch'ang Tao	武昌道	Yüanlin Tao	袁臨道
Wuhan	武漢	Yüanp'u	袁浦
Wuho	五河	Yüch'üan	玉泉
Wuting Fu	武定府	Yüeh	越
Wuyu Ch'ang	伍祐場	Yühsiang	虞鄉
Yangch'eng	陽城	Yüch'eng	運城
Yangchou	揚州	Yungchi	永濟
Yangtze	揚子	Yungchiching	永濟井
Yapulai	雅布賴	Yungchia	永嘉
Yenan Fu	延安府	Yungchou	永州
Yenchen	嚴鎮	Yungch'un Chou	永春州
Yenchou	兗州	Yungfu	永阜
Yenp'ing Fu	延平府	Yungho	永和, 榮河
Yent'ai	烟台	Yungli	永利
Yent'ing	鹽亭	Yunghsien	榮縣
Yenyüan	鹽源	Yunghsing	永興
Yingch'eng	應城	Yünkwei	雲貴
Yingshan Hsien	英山縣	Yünlungching	雲龍井
Yoyang	岳陽	Yünnan	雲南
Yüanch'u	垣曲	Yünyang	鄧陽, 雲陽
Yüanhsingching	元興井	Yüyao	餘姚

Other Names

Chin	金
Ch'in	秦
Ch'ing	清
Chou	周
Fan-kung-ti	范公堤
Han	漢
Liao	遼
Ming	明

Nanchao	南昭
Peking-Hankow	平漢
Sui	隋
Sung	宋
T'ang	唐
T'ung-jen-t'ai	同仁泰
Yehlang	夜郎
Yüan	元

Appendix E

MAJOR SOURCES OF MAPS

Figure 1. POLITICAL DIVISIONS OF CHINA PROPER UNDER THE CH'ING

Albert Herrmann, An Historical Atlas of China, ed. by Norton Ginsburg (Chicago, 1966), pp. 52-53; and Muchanga, ed., Chia-ch'ing Ta-Ch'ing i-t'ung-chih (Comprehensive Gazetteer of Ch'ing China during the Chia-ch'ing Reign) (Reproduction of 1842 edition, Taipei, 1967).

Figure 2. SALT ADMINISTRATIVE REGIONS

CYFC; YFTC; and Chao Erh-sun et al., Ch'ing-shih kao (Draft History of the Ch'ing Dynasty) (Mukden, 1937).

Figure 3. THE ADMINISTRATIVE STRUCTURE OF THE LIANGHUAI SALT REGION

Wang Ting-an et al., Liang-huai yen-fa chih (Compendium on Salt Administration of Lianghuai Region) (Nanking, 1905).

Figure 5. SALT TAX RATE, CA. 1911

Hu Kuang-chih, comp., "Ch'uan-kuo ko yen-ch'ü shui-lü teng-ch'a piao" (A Table of Salt Tax Rates in China), YCTC, Vol. 1, No. 1 (Dec. 1912), Tiao-ch'a pp. 1-8; No. 2 (Jan. 1913), Tiao-ch'a pp. 9-20; No. 3 (March 1913), Tiao-ch'a pp. 21-27.

Figure 6. SALTWORKS IN CHINA PROPER, 1644-1911

See sources of Appendix B of this dissertation.

Figures 7-14.

"Ko-ch'ü yen-ch'ang tsui-chin ssu-nien ch'an-shu piao" (Salt Production in All Saltworks, 1910-1913), YCTC, Vol. 2, No. 6 (May 1915), T'ung-chi pao-kao pp. 1-10.

Figures 15-17.

Wang Ting-an et al., Liang-huai yen-fa chih (Compendium on Salt Administration of Lianghuai Region) (Nanking, 1905), chüan 16 and 17.

Figure 18. PORTABLE WOODEN PANS, CA. 1911

YFTC, chüan 35, p. 13; and Lin Chen-han, Huai-yen chi-yao (Essentials of the Salt Industry in Lianghuai Region) (Shanghai, 1928), Part II, p. 8.

Figure 19. SALT PRODUCTION IN LIANGCHE, CA. 1911

Fan Yün-shu, "Che-chiang ch'ang-ch'an chi-hua-shu" (A Plan for the Production of Salt in Chekiang), YCTC, Vol. 2, No. 7 (Aug. 1915), Chuan-chien III pp. 4-7.

Figure 20. ANNUAL PRODUCTION OF SALT IN CHINA

Shen Shih-hsing et al., Ming hui-tien (Institute of the Ming Dynasty) (Reproduction of 1787 edition; Shanghai, 1936), pp. 903-976; Wang Hsi-sun, "Hu-pu Shan-tung ssu chi-shih" (A Record of the Bureau of Shantung), in Ts'ung-cheng lu (Personal Records of Public Affairs), chüan 3, in Chiang-tu Wang-shih ts'ung-shu (Collected Works of Wang Hsi-sun) (ca. 1841; reprinted edition; Shanghai, 1931); Wang Ch'ing-yün, "Chih-sheng yen-k'o piao" (A Table of Salt Revenue), in Hsi-ch'ao chi-cheng (Collected Works on Government Affairs of Our Glorious Dynasty) (Reprinted edition; n.p., 1898), chüan 5, pp. 33-36; and "Ko-ch'ü yen-ch'ang tsui-chin ssu-nien ch'an-shu piao" (Salt Production in All Saltworks, 1910-1913), YCTC, Vol. 2, No. 6 (May 1915), T'ung-chi pao-kao pp. 1-10.

Figure 21. ANNUAL CONSUMPTION OF TAXED SALT IN EIGHTEENTH CENTURY CHINA

Lo Wen-ping et al., Ssu-ch'uan yen-fa chih (Compendium on Salt Administration of Szechwan Region) (n.p., 1882), chüan 17, pp. 17b-20a; Lu Chih-yü et al., Ch'ang-lu yen-fa chih (Compendium on Salt Administration of Ch'anglu Region) (Reproduction of 1726 edition; Taipei, 1966), chüan 7, pp. 54b-68; Shen Yeh-fu, Ho-tung yen-fa t'iao-chi chi (A Record

Figure 21. (Continued)

of the Salt Administration of Hotung) (n.p., 1784),
chüan 5, pp. 1-14; and YFTC, chüan 44, pp. 18-25;
chüan 46, pp. 5-18a; chüan 48, pp. 11b-22a; and
chüan 49, pp. 1-35a.

Figures 22-23.

Shan-hsi t'ung-chih (Gazetteer of Shansi Province)
 (1892 edition), chüan 65 and 70.

Figures 24-25.

Population statistics are obtained from Muchanga,
 ed., Chia-ch'ing Ta-Ch'ing i-t'ung-chih (Compre-
 hensive Gazetteer of Ch'ing China during the Chia-
 ch'ing Reign) (Reproduction of 1842 edition; Taipei,
 1967). For sources of salt consumption, see
 Figure 21.

Figure 27. THE FLOW OF SALT IN CH'ING CHINA

CYFC and YFTC.

Figure 28. SALT DISTRIBUTION IN SEVENTEENTH CENTURY
HUAINAN

Hsien K'ai-ch'ung et al., Liang-huai yen-fa chih
 (Compendium on Salt Administration of Lianghuai
 Region) (Reproduction of 1693 edition; Taipei,
 1966), chüan 4, pp. 17-60.

Figure 29. SHIPMENT OF SALT IN HUAIBEI

Hsien K'ai-ch'ung et al., Liang-huai yen-fa chih
 (Compendium on Salt Administration of Lianghuai
 Region) (Reproduction of 1693 edition; Taipei,
 1966), chüan 4, pp. 14-28 and 61-64.

Figure 30. AN ISOCHRONIC MAP OF THE SALT TRANSPORT FOR THE
HOTUNG REGION

Chu I-feng et al., Ch'ih-hsiu Ho-tung yen-fa chih
 (Compendium on Salt Administration of Hotung Re-
 gion) (n.p., ca. 1727; reprinted edition; Taipei,
 1966), chüan 4, pp. 286-378.

Figure 32. DISTRIBUTION OF SALT IN THE LIANGCHE REGION

Feng P'ei et al., Ch'in-ting ch'ung-hsiu Liang-che yen-fa chih (Compendium on Salt Administration of Liangche Region)(n.p., ca. 1802), chüan 1, pp. 25-35a.

Figure 33. SALT MARKETING AREAS OF THE SHANTUNG REGION

Shan-tung t'ung-chih (Gazetteer of Shantung Province)(1892 edition), chüan 86, pp. 33-45a.

Appendix F

ABBREVIATIONS USED IN NOTES AND MAP SOURCES

CCCYC	<u>Chung-kuo chin-tai ching-chi-shih yen-chiu chi-k'an</u>
CS	Chang Ch'i-yün <u>et al.</u> , eds., <u>Ch'ing-shih</u>
CYFC	Chang Mao-chiung <u>et al.</u> , <u>Ch'ing yen-fa chih</u>
HCCSWHP	Ko Shih-chün, comp., <u>Huang-ch'ao ching-shih-wen hsü-pien</u>
HCCSWP	Ho Ch'ang-ling, comp., <u>Huang-ch'ao ching-shih-wen-pien</u>
TWIKCC	T'ao Chu, <u>T'ao Wen-i-kung ch'üan-chi</u>
YCTC	<u>Yen-cheng tsa-chih</u>
YFTC	Chou Ch'ing-yün, ed., <u>Yen-fa t'ung-chih</u>

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