

THE CONSONANTAL SYSTEM OF OLD CHINESE

by E. G. PULLEYBLANK

SIGNS AND ABBREVIATIONS

- K. Karlgren's "Ancient Chinese" (as in KARLGREN 1957)
 K.* Karlgren's "Archaic Chinese" (as in KARLGREN 1957)
 M. Middle Chinese (as here reconstructed)
 * reconstructed forms earlier than Middle Chinese

AM	<i>Asia Major</i>
BEFEO	<i>Bulletin de l'École Française d'Extrême-Orient</i>
BMFEA	<i>Bulletin of the Museum of Far Eastern Antiquities</i>
BSL	<i>Bulletin de la Société Linguistique de Paris</i>
BSOS, BSOAS	<i>Bulletin of the School of Oriental (and African) Studies</i>
CHHP	<i>Ch'ing-hua hsieh-pao</i>
CYYY	<i>Kuo-li Chung-yang yen-chiu yüan, li-shih yü-yen yen-chiu-so chi-k'an</i> (Bulletin of the Institute of History and Philology, Academia Sinica)
HJAS	<i>Harvard Journal of Asiatic Studies</i>
JA	<i>Journal asiatique</i>
JAOS	<i>Journal of the American Oriental Society</i>
JRAS	<i>Journal of the Royal Asiatic Society</i>
MSOS	<i>Mitteilungen des Seminars für Orientalische Sprachen zu Berlin</i>
MTB	<i>Memoirs of the Research Department of the Tôyô Bunko</i>
T.	<i>Taishô Tripitaka</i>
TP	<i>T'oung Pao</i>
TPS	<i>Transactions of the Philological Society</i>
YCHP	<i>Yen-ching hsieh-pao</i>
ZDMG	<i>Zeitschrift der Deutschen Morgenländischen Gesellschaft</i>

BIBLIOGRAPHY: EARLIER CHINESE WORKS

- Chi lei pien* 雞肋編 2 ch., by Chuang Cho 莊綽 (Southern Sung), reprint in Ts'ung-shu chi-ch'eng.
Han-shu shu-cheng 漢書疏證 36 ch., by Shen Ch'in-han 沈欽韓 (1775-1832).
Kuang-ya shu-cheng 廣雅疏證 10 ch., by Wang Nien-sun 王念孫 (1744-1832).
Shui ching chu 水經注 40 ch., by Li Tao-yüan 酈道元 (d. A.D. 527), edition of Wang Hsien-ch'ien 王先謙 reprinted in Sau-pu pei-yao (single volume edition, n.d.).
Shuo-wen chieh-tzu chu 說文解字注 32 ch., commentary by Tuan Yü-ts'ai 段玉裁 (1735-1815), Wan-yu wen-k'u edition.
Shuo-wen sheng-hsi 說文聲系 14 ch., by Yao Wen-t'ien 姚文田 (1758-1827), Ts'ung-shu chi-ch'eng.
T'ai-p'ing yü-lan 太平御覽 1000 ch., by Li Fang 李昉 and others, completed 983. Reduced reprint in four volumes (1959) of Commercial Press photolithographic reprint of Sung edition (1935).
Wen-hsüan 文選 60 ch., compiled by Hsiao T'ung 蕭統 (501-531), single volume, edition of Shih-chieh shu-chü 1935.
Yün-ching 韻鏡, anon., Ts'ung-shu chi-ch'eng.
 The dynastic histories are cited in the Erh-shih-wu shih edition of the K'ai-ming shu-tien.

BIBLIOGRAPHY: MODERN BOOKS AND ARTICLES

- AKANUMA 1931: Akanuma Chizen 赤沼智善, *Indo bukkyô koyû meishi jiten* 印度佛教固有名稱辭典.
 ARISAKA 1944: Arisaka Hideyo 有坂秀世, *Kokugo on'inshi no kenkyû* 國語音韻史の研究 (new ed. 1957).
 BAILEY 1938: H. W. Bailey, "Hvatanica III", *BSOS* 9 (1938) pp. 521-43.
 BAILEY 1942: H. W. Bailey, "Hvatanica IV", *BSOS* 10 (1942) pp. 886-924.
 BAILEY 1945: H. W. Bailey, "Asica", *Transactions of the Philological Society* (1945) pp. 1-38.
 BAILEY 1946: H. W. Bailey, "Gandhâri", *BSOAS* 11 (1946) pp. 764-97.
 BAILEY 1949: H. W. Bailey, "Indo-Iranica II", *BSOAS* 13 (1949) pp. 121-39.
 BAILEY 1954: H. W. Bailey, *Indo-scythian studies, being Khotanese texts* II.
 BAILEY 1958: H. W. Bailey, "Languages of the Saka" in B. Spuler, *Handbuch der Orientalistik. Erste Abteilung: Der nahe und der mittlere Osten. 4er Band. Iranistik. Erster Abschnitt: Linguistik.*
 BAILEY 1959: H. W. Bailey, "Iranian ARYA- and DAHA-", *Transactions of the Philological Society* (1959) pp. 71-115.
 BARTHOLD 1928: W. Barthold, *Turkestan down to the Mongol invasion* (second edition 1958).
 BENEDICT 1939: P. Benedict, "Semantic differentiation in Indo-Chinese", *HJAS* 4 (1939) pp. 213-29.
 BENEDICT 1940: P. Benedict, "Studies in Indo-Chinese phonology", *HJAS* 5 (1940-41) pp. 101-27.
 BENEDICT 1948: P. Benedict, "Archaic Chinese *g and *d", *HJAS* 11 (1948) pp. 197-206.
 BODMAN 1954: N. C. Bodman, *A linguistic study of the Shih Ming*, Harvard-Yenching Institute Studies XI.
 BOODBERG 1937: Boodberg, "Proleptical remarks on the evolution of Archaic Chinese", *HJAS* 2 (1937) pp. 329-72.
 BURROW 1937: T. Burrow, *The Language of the Kharoṣṭhi documents from Chinese Turkestan.*
 CHAO 1941: Chao Yuanren 趙元任, "Distinctions within ancient Chinese", *HJAS* 5 (1941) pp. 203-33.
 CHAVANNES 1903: E. Chavannes, "Voyage de Song Yun dans l'Udyâna et le Gandhâra", *BEFEO* 3 (1903).
 CHAVANNES 1905: E. Chavannes, "Les pays d'occident d'après le Wei-lïo", *TP* 6 (1905) pp. 519-71.
 CHAVANNES 1907: E. Chavannes, "Les pays d'occident d'après le Heou Han-chou", *TP* 8 (1907) pp. 149-234.
 CH'EN 1949: Ch'en Yin-k'o 陳寅恪, "Ts'ung shih-shih lun Ch'ieh-yün 從史實論切韻", *Ling-nan hsieh-pao* 9 (1949) pp. 1-18.
 CHOU Fa-kao 1948: 周法高, "Kuang-yün ch'ung-niu-ti yen-chiu 廣韻重紐的研究", *CYYY* 13 (1948) pp. 49-117 ("Studies on the fan-tsie doublets in Kwang-yün").
 CHOU Fa-kao 1948(2): "Ch'ieh-yün yü yü chih in-tu chi ch'i liu-pien 切韻魚虞之音讀及其流變", *CYYY* 13 (1948) pp. 119-52 ("A reconstruction of the finals 魚 and 虞 in Ancient Chinese and their later development").
 CHOU Fa-kao 1948(3): "Ku-yin chung ti san-teng yün chien lun ku-yin ti hsieh-fa 古音中的三等韻兼論古音的寫法", *CYYY* 19 (1949) pp. 203-33.
 CHOU Fa-kao 1948(4): "Hsüan-ying fan-ch'ieh k'ao 玄應反切考", *CYYY* 20 (1948) pp. 359-444 ("Studies on the fan-tsie in Hsüan-ying's 'Yi-tsie ching yin-yi'").
 CHOU Tsu-mo 1937: 周祖謨, *Kuang-yün chiao-k'an chi* 廣韻校勘記, 2 vols. (reprint of 1958).
 CHOU Tsu-mo 1957: *Han-yü ku-yin lun-wen chi* 漢語古音論文集.
 DEMIÉVILLE 1950: P. Demiéville, "Archaïsmes de prononciation en chinois vulgaire", *TP* 40 (1950) pp. 1-59.

- DIEN 1957: Albert E. Dien, "A note on *Hsien* 天 'Zoroastrianism'", *Oriens* 10 (1957) pp. 284-8.
- DOWNER 1959: G. B. Downer, "Derivation by tone-change in Classical Chinese", *BSOAS* 22 (1959) pp. 258-90.
- DOWNER 1961: G. B. Downer, "The phonology of the word in highland Yao", *BSOAS* 24 (1961) pp. 531-41.
- DUBS 1957: H. H. Dubs, *A Roman city in China*, China Society Sinological Series, No. 5.
- EGEROD 1957: Seven Egerod, "The eighth earthly branch in Archaic Chinese and Tai", *Oriens* 10 (1957) pp. 296-9.
- ENOKI 1961: Enoki Kazuo 榎一雄, "Yü-ni-ch'êng and the site of Lou-lan", *Ural-altaische Jahrbücher* 33 (1961) pp. 52-65.
- FAN 1958: Fan Hsiang-yung 范祥雍, *Lo-yang ch'ieh-lan chi chiao-chu* 洛陽伽藍記校注.
- FORREST 1948: R. A. D. Forrest, *The Chinese language*.
- FORREST 1960: R. A. D. Forrest, "Les occlusives finales en chinois archaïque", *BSL* 55 (1960) pp. 228-39.
- FORREST 1961: R. A. D. Forrest, "Researches in Archaic Chinese", *ZDMG* 111 (1961) pp. 118-38.
- FUJITA 1923: Fujita Toyohachi 藤田富八, "Jōshi koku kō kō 倭支國考" reprinted in *Tōzai kōshōshi no kenkyū, saiki hen* 東西交滲史の研究, 西域編 (1943) pp. 211-52.
- GHIRSHMAN 1946: R. Ghirshman, *Bégram*.
- GHIRSHMAN 1948: R. Ghirshman, *Les Chionites-Hephthalites*.
- GILES 1934: Lionel Giles, "A topographical fragment from Tun-huang", *BSOS* 7 (1934) pp. 545-72.
- HALOUN 1937: G. Haloun, "Zur Üe-tsi-Frage", *ZDMG* 91 (1937) pp. 243-318.
- HAMILTON 1955: James Hamilton, *Les Outghours à l'époque des cinq dynasties d'après les documents chinois*.
- HAMILTON 1958: James Hamilton, "Autour du manuscrit Staël-Holstein", *TP* 46 (1958) pp. 115-33.
- HANEDA 1930: Haneda Tōru 羽田亨, "Tō Kōkei gannen shosha Shashū Ishū chishi zankan ni tsuite 唐光啓元年書寫沙州伊州地志殘卷について in *Ogawa hakushi kanreki kinen shigaku chirigaku ronsō* 小川博士還歴記念史學地理學論叢, pp. 131-52, reprinted in *Haneda hakushi shigaku rombunshū* I (1957) pp. 578-605.
- HAUDRICOURT 1948: A. G. Haudricourt, "Les phonèmes et le vocabulaire du thai commun", *JĀ* 236 (1948) pp. 197-238.
- HAUDRICOURT 1952: A. G. Haudricourt, "Les occlusives uvulaires en thai", *BSL* (1952) pp. 86-9.
- HAUDRICOURT 1954 (1): A. G. Haudricourt, "Comment reconstruire le chinois archaïque", *Word* 10 (1954) pp. 351-64.
- HAUDRICOURT 1954 (2): A. G. Haudricourt, "De l'origine des tons en vietnamien", *JĀ* 242 (1954) pp. 68-82.
- HENNING 1938: W. B. Henning, "Argi and the 'Tokharians'", *BSOS* 9 (1938) pp. 545-71.
- HENNING 1948: W. B. Henning, "The date of the Sogdian ancient letters", *BSOAS* 12 (1948) pp. 601-15.
- HERRMANN 1938: A. Herrmann, *Das Land der Seide und Tibet im Lichte der Antike*.
- HIRTH 1885: F. Hirth, *China and the Roman Orient*.
- HÖBÖGIRIN: *Höbögirin, dictionnaire encyclopédique du bouddhisme d'après les sources chinoises et japonaises*, ed. by P. Demiéville, fasc. I-III and fasc. annexe, (1929-37).
- HUANG 1931: Huang Ts'ui-po 黃澤伯, *Hui-lin I-ch'ieh ching yin-i fan-ch'ieh k'ao* 慧林一切經音義反切考, *CYYY* Chüan-k'an 6 (1931).
- KARLGREN 1915, 1916, 1919: B. Karlgren, *Études sur la phonologie chinoise*, 3 fasc.
- KARLGREN 1922: B. Karlgren, "The reconstruction of Ancient Chinese", *TP* 21 (1922) pp. 1-42.

- KARLGREN 1923: B. Karlgren, *Analytic dictionary of Chinese and Sino-Japanese*.
- KARLGREN 1924: B. Karlgren, *Études sur la phonologie chinoise*, fasc. IV, Dictionary of Chinese dialects.
- KARLGREN 1928: B. Karlgren, "Problems in Archaic Chinese", *JRAS* (1928) pp. 769-813.
- KARLGREN 1931: B. Karlgren, "Tibetan and Chinese", *TP* 28 (1931) pp. 1-46.
- KARLGREN 1934: B. Karlgren, "Word families in Chinese", *BMFEA* 5 (1934) pp. 9-120.
- KARLGREN 1940: B. Karlgren, "Grammata Serica. Script and phonetics in Chinese and Sino-Japanese", *BMFEA* 12 (1940).
- KARLGREN 1954: B. Karlgren, "Compendium of phonetics in Ancient and Archaic Chinese", *BMFEA* 22 (1954) pp. 211-367.
- KARLGREN 1957: B. Karlgren, "Grammata Serica Recensa", *BMFEA* 29 (1957) pp. 1-332.
- KENNEDY 1952: G. A. Kennedy, "Voiced gutturals in Tangsic", *Language* 28 (1952) pp. 457-64.
- KŌNO 1939: Kōno Rokurō 河野六郎, "Chōsen kanjion no ichi tokushitsu 朝鮮漢字音の一特質", *Gengo kenkyū* 3 (1939).
- KŌNO 1955: Kōno Rokurō, "Erin shūkyō ongi no hansetsu no tokushoku 懸麻采經音義の反切特色", *Chūgoku bunka kenkyūkai kaihō* 5 (1955) pp. 85-8.
- KU 1932: Ku Yeh-ch'ing (Ko I-ch'ing 葛毅綱), "On the consonantal value of 喻 class words", *TP* 29 (1932) p. 102.
- LAUFER 1919: B. Laufer, *Sino-Iranica. Chinese contributions to the history of civilization in Ancient Iran*.
- LI Fang-kuei 1943: 李方桂 "The hypothesis of a series of pre-glottalized consonants in primitive Tai", *CYYY* 11 (1943) pp. 177-87.
- LI Fang-kuei 1945: "Some old Chinese loan words in the Tai languages", *HYAS* 8 (1944-5) pp. 333-42.
- LI Fang-kuei 1948: "The distribution of initials and tones in the Sui language", *Language* 24 (1948) pp. 160-7.
- LI Jung 1952: 李榮, *Ch'ieh-yün yin-hsi* 切韻音系.
- LIGETI 1950: L. Ligeti, "Mots de civilisation de Haute Asie en transcription chinoise", *Acta Orientalia Ac. Sc. Hungaricae* I (1950) pp. 141-88.
- LIU 1958: Liu Mau-tsai, *Die chinesischen Nachrichten zur Geschichte der Ost-Türken (T'u-küe)*, 2 vols.
- LO 1931: Lo Ch'ang-p'ei, 羅常培, "Ch'ieh-yün yü yü chih yin-chih chi ch'i so chü fang-yin k'ao 切韻魚虞之音值及其所據方音攷", *CYYY* 2 (1931). ("On the values of the Ch'ieh Yün rimes 魚 and 虞 and the ancient dialects on which their distinction was based.")
- LO 1931 (2): Lo Ch'ang-p'ei, "Chih ch'e ch'eng niang yin-chih k'ao 知徹登孃音值考", *CYYY* 3 (1931) pp. 121-57. ("The ancient pronunciation of initials *chih*, *ch'e*, *ch'eng*, *niang*.")
- LO 1951: Lo Ch'ang-p'ei, "Evidence for amending B. Karlgren's Ancient Chinese j to γ", *HYAS* 14 (1951) pp. 285-90.
- LO and CHOU 1958: Lo Ch'ang-p'ei and Chou Tsu-mo, *Han Wei Chin Nan-pei ch'ao yün-pu yen-pien yen-chiu* 漢魏晉南北朝韻部變遷研究, vol. I.
- LU 1939: Lu Chih-wei 陸志韋, "San ssu teng so-wei yü-hua 三四等與所謂喻化", *YCHP* 26 (1939) pp. 143-73.
- LU 1947: Lu Chih-wei, "Ku-yin shuo-lüeh 古音說略", *Yen-ching hsüeh-pao chüan-k'an* 20.
- MARKWART 1901: Joseph Marquart, *Éranjahr nach der Geographie des Ps. Moses Xorēna'i*.
- MARKWART 1938: Joseph Marquart, *Wehröt und Arang*.
- MARTIN 1953: Samuel E. Martin, *The phonemes of ancient Chinese*, Supplement to *JĀOS*, No. 16.
- MASPERO 1920: H. Maspero, "Le dialecte de Tch'ang-ngan sous les T'ang", *BEFEO* 20/2 (1920) pp. 1-124.

- MASPERO 1930: H. Maspero, "Préfixes et dérivation en chinois archaïque", *Mem. Soc. Ling. de Paris* 23 (1930) pp. 313-27.
- MILLER 1956: Roy Andrew Miller, review of BODMAN 1954, *TP* 44 (1956) pp. 266-87.
- MINORSKY 1937: V. Minorsky, *Hudud al-'Alam*, "The regions of the world".
- MIYAZAKI 1939: Miyazaki Ichisada 宮崎市定, "Jōshi to Daishin to Seikai 條支と大秦と西海", *Shirin* 24 (1939) pp. 55-86.
- MIZUTANI 1957: Mizutani Shinjō 水谷眞成, "Tōdai ni okeru Chūgokugo gotō biin denasalization no shinkō katei", *Tōyō gakuho* 39 (1957) pp. 1-31. ("The process of denasalization of initial nasals during the T'ang period.")
- MIZUTANI 1958: Mizutani Shinjō, "Kyō kō ryōseibo no taiin 曉匣兩聲母の對音", *Tōyō gakuho* 40 (1958) pp. 041-090 ("On the sound values of *hsiao* and *hsia* initials").
- NAGEL 1942: Paul Nagel, "Beiträge zur Rekonstruktion der Ts'ieh-Yün Sprache auf Grund von 陳禮 Ch'en Li's 切韻考 Ts'ieh-Yün-K'au", *TP* 36 (1942) pp. 95-158.
- NAKA 1915: Naka Michiyō 那珂通世, *Naka Michiyō isho* 那珂通世遺書.
- PELLIOT 1914: Paul Pelliot, "Les noms propres dans les traductions chinoises du Milindapañha", *JĀ* ser. 11, t. 4 (1914) pp. 379-419.
- PELLIOT 1921: Paul Pelliot, "Note sur les anciens itinéraires chinois dans l'Orient Romaine", *JĀ* ser. 11, t. 17 (1921) pp. 139-45.
- PELLIOT 1923: Paul Pelliot, "Note sur les anciens noms de Kuča, d'Aqsu et d'Uč-Turfan", *TP* 22 (1923) pp. 126-32.
- PELLIOT 1929: Paul Pelliot, "Neuf notes sur des questions d'Asie centrale", *TP* 26 (1929) pp. 205-265.
- PELLIOT 1932: P. Pelliot, Review of Fujita Toyohachi, "Sur Yeh-t'iao, Szu-t'iao et Szu-hē-t'iao", *TP* 29 (1932) p. 184.
- PELLIOT 1933: Paul Pelliot, "Päpiyān > Po-siun", *TP* 30 (1933).
- PELLIOT 1934: Paul Pelliot, "Tokharien et koutchéen", *JĀ* 224 (1934) pp. 23-106.
- PELLIOT 1938: Paul Pelliot, "Le nom du xwārizm dans les textes chinois", *TP* 34 (1938-39) pp. 146-52.
- PELLIOT 1944: Paul Pelliot, "Tāngrim > tārim", *TP* (1944) pp. 165-85.
- PELLIOT 1959: Paul Pelliot, *Notes on Marco Polo*, vol. I.
- PETECH 1950: Luciano Petech, *Northern India according to the Shui-ching chu*.
- PULLEYBLANK 1952: Edwin G. Pulleyblank, "A Sogdian colony in Inner Mongolia", *TP* 41 (1952) pp. 317-56.
- PULLEYBLANK 1960: Edwin G. Pulleyblank, "Studies in early Chinese grammar", *AM* 8 (1960) pp. 36-67.
- RAPSON 1920-29: A. M. Boyer, E. J. Rapson, E. Senart, and P. S. Noble, *Kharoṣṭhī inscriptions discovered by A. Stein in Chinese Turkestan*, vol. I (1920), vol. II (1927), vol. III (1929).
- SCHAFER 1950: E. Schafer, "The camel in China down to the Mongol dynasty", *Sinologica* 2 (1950) pp. 165-94.
- SHEN 1945: Shen Chien-shih 沈兼士, *Kuang-yün sheng-hsi* 廣韻聲系.
- SHIRATORI 1928: Shiratori Kurakichi 白鳥庫吉, "A study on Su-t'e or Sogdiana", *MTB* 2 (1928) pp. 81-145.
- SHIRATORI 1929: Shiratori Kurakichi, "The queue among the peoples of North Asia", *MTB* 4 (1929) pp. 1-69.
- SIMON 1927, 1928: W. Simon, "Zur Rekonstruktion der alchinesischen Endconsonanten", *MSOS* 30 (1927) pp. 147-67, 31 (1928) pp. 175-204.
- SIMON 1929: W. Simon, "Tibetisch-chinesische Wortgleichungen, ein Versuch", *MSOS* 32 (1929) pp. 157-228.
- SIMON 1938: W. Simon, "The reconstruction of Archaic Chinese", *BSOS* 9 (1938) pp. 267-88.
- SIMON 1956: W. Simon, "Tibetan *so* and Chinese *ya* 'tooth'", *BSOAS* 18 (1956) pp. 512-3.
- SOOTHILL 1937: W. E. Soothill and Lewis Hodous, *A dictionary of Chinese Buddhist terms*, 1937.

- THOMAS 1935, 1951, 1955: F. W. Thomas, *Tibetan literary texts and documents concerning Chinese Turkestan*, Parts I, II, III.
- TŌDŌ 1957: Tōdō Akiyasu 藤堂明保, *Chūgokugo on'inron* 中國語音韻論.
- TSUNODA and GOODRICH 1951: Tsunoda Ryūsaku and L. C. Goodrich, *Japan in the Chinese dynastic histories*.
- TUNG 1948: Tung T'ung-ho 董同龢, "Kuang-yün ch'ung niu shih shih 廣韻重紐試釋", *CYYY* 13 (1948) pp. 1-20. ("A preliminary study of the fan-ts'ie doublets in the Kuang-yün.")
- TUNG 1948 (2): Tung T'ung-ho, "Shang-ku yün piao kao 上古韻表稿", *CYYY* 18 (1948), pp. 1-249. ("Tentative Archaic Chinese phonologic tables.")
- TUNG 1953: Tung T'ung-ho, *Chung-kuo yü yin shih* 中國語音史.
- WALEY 1918: "Notes on Chinese prosody", *JRAS* (1918).
- WANG Ching-ju 1931: 王靜如, "Chung T'ai Tsang Mien shu-mu tzu chi jen-ch'eng tai-ming tzu yü-yüan shih-t'an 中台藏韻數目字及人稱代名詞語源試探", *CYYY* 3 (1931) pp. 49-92. ("A comparative study of the numerals and the personal pronouns in Chinese, Tai, Burmese and Tibetan.")
- WANG Ching-ju 1948: "Lun ku Han-yü chih o-chieh-yin 論古漢語之唇介音", *YCHP* 35 (1948) pp. 51-94. ("The medial i in Ancient Chinese.")
- WANG Li 1935: 王力 *Chung-kuo yin-yün-hsiieh* 中國音韻學 (reprinted 1956).
- WANG Li 1936: "Nan-pei ch'ao shih-jen yung yün k'ao 南北朝詩人用韻考", *CHHP* 11 (1936), reprinted in *Han-yü shih lun-wen chi* 漢語史論文集 1956.
- WANG Li 1957: *Han-yü shih kao* 漢語史稿, 3 vols.
- WANG Lien-tseung 1957: 王聯曾 "Un dictionnaire phonologique des T'ang", *TP* 45 (1957) pp. 51-150.
- WENCK 1954, 1957, 1959: Günther Wenck, *Japanische Phonologie*, vols. I, II (1954), III (1957), IV (1959).
- WULFF 1934: K. Wulff, *Chinesisch und Tai, Sprachvergleichende Untersuchungen*.
- YAKHONTOV 1960: "Consonant combinations in Archaic Chinese", Paper presented at the 25th International Congress of Orientalists, Moscow, 1960.

In investigating the functions and mutual relationships of grammatical particles in Classical Chinese* I became increasingly convinced that further progress must depend on a better understanding of phonology. At the same time I was studying the history of the early relationships between the Chinese and their Inner Asian neighbours. Here too it became apparent that there was a great need for a more adequate reconstruction of sound values in order to interpret correctly the Chinese transcriptions of foreign words. From these two points of view I have been led to a re-examination of the basis of the work of Karlgren and others. In particular I have attempted to check the results of internal reconstruction by the external evidence of transcriptions of foreign words from the earliest period at which they become available. In the result I have been able to make some progress towards a new reconstruction for Old Chinese which will be both internally consistent and in agreement with the external evidence.

I have been encouraged to find that many of the modifications to Karlgren's system which I have been led to propose are points which have already been suggested by other scholars and further by my success in

* The continuation of "Studies in Early Chinese Grammar, Part I", *Asia Major* 8 (1961) has been postponed until the results of my phonological researches have been published.

making the picture essentially simpler and more coherent rather than more complex. Many uncertainties remain and many points of detail remain to be worked out but I think that a stage has been reached at which it may be worthwhile to present my ideas to my fellow-workers in the hope of receiving their criticisms and help in trying to solve the many difficult problems that are left.

What is presented here is first a revised and phonemicized system for the *Ch'ieh-yün* rhyme dictionary, representing the stage of the language denominated Ancient Chinese by Karlgren but which I prefer, following Chinese usage, to call Middle Chinese. Many of the emendations proposed incorporate corrections made by Lo Ch'ang-p'ei, Tung T'ung-ho, Li Jung, Tōdō Akiyasu and other scholars but the system as a whole is new. Following this I present my conclusions about the consonantal system of Old Chinese. During the course of the discussion it will be necessary to refer to the vowel system as well and I include in tabular form an outline of my proposals for the whole phonemic structure but I shall not give here an account of the detailed working out of the development of the *Ch'ieh-yün* rhymes from Old Chinese.

Karlgren believed the *Ch'ieh-yün*, completed in A.D. 601, to be based on the current speech of the Sui capital Ch'ang-an. This is quite untenable both on historical and linguistic grounds. None of the editors came from the Ch'ang-an region and it would be most unlikely for them to have adopted the dialect of the new, outlying capital in preference to those of the centres of culture in the east and south. It is clear from their preface that they intended to represent an ideal cultivated speech which should avoid regional faults but it also seems clear that their main basis was the speech of the educated classes of the lower Yangtze region (see Lo 1931). That the standard at the beginning of the seventh century was not that of Ch'ang-an is evident from the marked change in the system of transcribing Sanskrit sounds that becomes apparent from the end of the seventh century onward when the Ch'ang-an dialect did become the standard. The same characteristics are also found in Japanese Kan-on readings as compared to the earlier Go-on, which, *pace* Karlgren, is much closer to the *Ch'ieh-yün*, and in the transcriptions of Chinese in Tibetan, Brahmi and Uigur script from the ninth and tenth centuries found in Central Asia. The differences in sound values are too profound and appear too suddenly to be merely the result of sound change over a space of less than 100 years. Moreover in the sound glosses of Hui-lin (ninth century) which were based on the Ch'ang-an standard we find features of the *Ch'ieh-yün* system which differed from current northwestern speech stigmatized as "southern" or "Wu".*

* Chou Fa-kao 1948 (4) supports Karlgren's view that the *Ch'ieh-yün* is based on the speech of Ch'ang-an and argues against some of the points made here but I remain unconvinced.

The theory that the *Ch'ieh-yün* is simply an artificial construct and not based on any form of living speech is equally unacceptable. The great number of alternative readings of characters that are included is no doubt partly the result of drawing on dialect forms but the categories themselves turn out in almost every case to be phonologically meaningful in terms of the subsequent development of the language or its earlier history. It may be that no one dialect in A.D. 600 retained all the distinctions made by the *Ch'ieh-yün* but we may feel reasonably sure that all the distinctions were to be found currently in some variety of cultivated speech.

It is more difficult to decide what one means by Old Chinese. Karlgren regarded his Archaic system as that of the *Shih-ching*, which he took to be the dialect of Ch'ang-an ca. 700 B.C., that is the lineal ancestor of his Ancient Chinese. In fact one leans even more on the structure of the characters than on the rhymes and though there is a general correspondence between the phonological categories indicated by the two sorts of material there is by no means perfect agreement. But from what place and what point in time do the *hsieh-sheng* series come? The great watershed, the point, if any, to which one should look for a systematic standardization of the script is of course the Ch'in script reform at the end of the third century B.C., but the process of building up the characters had been going on for a thousand years and more before that.

For the time being one can only be somewhat vague about what one means by Old Chinese. One can only try to make as coherent and consistent a system as possible that will account by a rational historical process for the evidence of earlier and later times and then check it by whatever external evidence we can find. This is what gives the Han period its special importance, since it is the first time that we get any body of transcriptions. Before then we are in a closed world, with only comparison with cognate languages widely separated from Chinese in time to help us.

I should like to express my appreciation to Professor Sir Harold Bailey for his helpful advice on many points.

THE CH'IEH-YÜN SYSTEM

The system outlined below is used in place of Karlgren's Ancient Chinese as a basis for the reconstruction of Old Chinese. It will be termed Middle Chinese and words spelt in it will be prefixed with the letter M. Many of the modifications of Karlgren's system have already been suggested by others and I have felt it unnecessary in such cases to go fully into all the arguments.

A. Initials¹

Laryngals:	•	h ²	h ^{2,3}			
Velars:	k	kh	g ⁴	ŋ		
Palatals:	c ⁵	ch ⁵	j ⁴	ń ⁶	ś	(z) ⁷ y ⁸

Dentals:	t	th	d ⁴	n	l		
	ts	tsh	dz ⁴			s	z
Supradentals:	tʰ	thʰ	ɕ ^{4,9}	ŋ ⁹			
	tʂ	tʂh	ɕʂ ⁴			ʂ	(z) ¹⁰
Labials:	p	ph	b ⁴	m			

¹ Karlgren's distinction between yodized and unyodized velar and labial initials is non-phonemic and is therefore disregarded, as is largely done by Karlgren himself in his later works. See Chao 1941, Li Jung 1952, pp. 100-105.

² Laryngals *h* and *h̄*, as in modern Wu, instead of velar fricatives *χ* and *γ*. See Martin 1953, p. 16, Kennedy 1952, Tōdō 1957, p. 161, Mizutani 1958.

³ My *h̄j-* = Karlgren's *jj-*. On the phonemic identity of Karlgren's *γ-* and *j-* see Ku 1932, Chao 1941, Lo Ch'ang-p'ei 1951, Li Jung 1952, p. 105. At a later stage of the language than that represented by the *Ch'ieh-yün* *h̄j-* > *j-* and became phonemically linked with initial *y-*. That is, we have an initial 0 followed by the two varieties of medial semivowel. This hypothesis will account for the placing of *h̄j-* in the *Yün-ching* and later rhyme tables, where it does not occupy the same column as *h̄-* but is placed together with *y-*, the one occupying Division III, the other Division IV, of the same column. Initial *y-* in its turn had ceased to be regarded as a consonantal phoneme and had become identified fully with the medial semivowel *-y-*. (On the distinction between medial *-j-* and *-y-* see below.) (See also Tōdō 1957, p. 163.)

⁴ There is some evidence for the presence of aspiration in association with the voiced stops and affricates in transcriptions from Sanskrit of the eighth century (Maspero 1920). Earlier, Chinese voiced stops and affricates were used for Sanskrit unaspirated voiced consonants and special devices were used when it was felt necessary to indicate Sanskrit voiced aspiration. In any case there is no phonemic distinction in Chinese between aspirated and nonaspirated voiced stops and the mark of aspiration included in Karlgren's transcription is superfluous. It has been plausibly suggested that the Chinese voiced stops and affricates should be analysed as clusters of the unvoiced stops and affricates with the voiced laryngal *h̄-g=k̄h̄*, *dz=tsh̄*, etc.—an analysis which is widely applicable to the voiced consonants of the modern Wu dialects (Martin 1953, Bodman 1954, p. 23). The aspiration of the Chinese voiced consonants, if present, was probably much weaker than that found in Indian languages. As far as transcriptions are concerned the presence of voicing is in general much more important than aspiration and it will be most convenient to use the symbols for voiced consonants.

Whether or not we regard the Middle Chinese voiced consonants as aspirated, it does not of course authorize us to suppose, as Karlgren does,

that at an earlier stage there were contrasted aspirated and non-aspirated voiced consonants as in Sanskrit. A threefold contrast among stops between unvoiced, aspirated, and voiced (with or without aspiration) is widespread in the East Asian linguistic area but such a fourfold contrast does not appear to exist at all.

⁵ I write *c*, *ch*, instead of Karlgren's *ts*, *ts'*.

⁶ *ñ* = Karlgren's *ñz*. The value of this phoneme in pre-T'ang and early T'ang transcriptions indicates a simple palatal nasal. In the dialect of Ch'ang-an during the T'ang period the nasal initials all developed a homorganic closure and became partially denasalized: *ŋ-* > *ŋg-*, *n-* > *n̄d-*, *ŋ-> n̄d->*, *m-> mb-* and *ñ-> ñj-*. This is shown by their use in transcriptions from the end of the seventh century onward to represent Sanskrit unaspirated voiced plosives and is also reflected in Kan-on and the transcriptions of Chinese in Brahmi, Tibetan and Uigur script. Traces of the newer usage can be found, according to Mizutani 1957, already at the beginning of the seventh century but the older usage whereby the nasals represented Sanskrit nasals remained predominant until the beginning of the eighth century. Last to be affected were syllables with nasal finals, so that for example 穰 M. *ñjan* is still used for Sanskrit *ña* when 若 M. *ña* is used for *ja*. Denasalization of *m-* to *mb-*, etc., is still found in some dialects of southern Shansi and is reflected in T'ang Min (Forrest 1948, p. 160). Denasalization of *ñ-* was much more widespread. In all northern dialects and some central ones the nasal element has been completely lost resulting, for example, in Pekingese in the voiced retroflex fricative written *j-* in the Wade system and *r-* in the new official romanization.

⁷ M. *j* = K. *z*, M. *z* = K. *dz'*. The *fan-ch'ieh* of the *Ch'ieh-yün* distinguish two initials which are arranged in the rhyme tables in such a way as to imply a voiced palatal affricate (= Karlgren's *dz'*) and a voiced palatal fricative (= Karlgren's *z*). Chou Tsu-mo has noted however that in earlier *fan-ch'ieh* represented by the *Yü-p'ien* and the *Ching-tien shih-wen* the two initials are not distinguished and that where other dictionaries keep the distinction they do not agree among themselves or with the *Ch'ieh-yün* as to the distribution (Chou Tsu-mo 1957 (1941), p. 146). There is no distinction in treatment between the two initials in modern dialects. In southern dialects they have mostly both become fricatives. In Mandarin the same has happened in oblique tones and before certain endings in level tone; otherwise both initials are represented by affricates. There is therefore some doubt as to how far the distinction made in the *Ch'ieh-yün* can be regarded as phonemic.

When we turn to transcription values we find that to postulate an affricate *j-* for the second initial is more satisfactory than Karlgren's *z-*. It regularly represents Sanskrit *j* up to and through the seventh century. (For examples see Li Jung 1952, tables opposite p. 165, Mizutani 1957, pp. 348ff.) Among Thai languages with early borrowings from Chinese, Diol represents

this initial as if it were a voiced affricate. Other Thai languages point to a sibilant but they also treat it as if it were voiceless so that we must evidently reckon with some special development within Thai.

Karlgren's *dz'*, which is found in many fewer words than initial *z*, is also sometimes found representing Sanskrit *j*, as in 阿順那 K. 'ā-dz'juēn-nā=Arjuna, 阿波羅質多 K. 'ā-puā-lā-dz'jēt-tā=Aparājita. Much more often however this initial is used like initial *y*- (=Karlgren's *j*), which, as we shall see, had the value of a palatal fricative in early Buddhist transcriptions, to represent a Prakrit *z* from Sanskrit *y* or *ś*, thus: 那述 K. nā-dz'juēt=nayuta (otherwise 那由他 K. nā-jū-t'ā or 那度多 K. nā-jū-tā), 阿述達 K. 'ā-dz'juēt-d'āt=Skt. āsuttā; cf. also 兜術陀 K. tū-dz'juēt-d'ā=Tuṣita (for *tuzit(?))—the use of the palatal **z* in Chinese could be explained by the lack of either a supradental *z* or, at the period of transcription, of a pure dental *z*. We even find the Chinese voiced initials *y* (K. *j*) and K. *dz'* used with a presumed value **z* for Sanskrit *ś* in initial position: 悅頭檀 K. jwāt-d'āu-d'ān=Śuddhodana (see Pelliot, 1959, p. 57), 術婆迦 K. dz'juēt-b'uā-kjā=śubhakarā, 實叉難陀 K. dz'jēt-tṣ'a-nān-d'ā=śikṣānanda, 實利 K. dz'jēt-lji=śārīra (besides the more normal 舍利 K. śja-lji. We probably have an example of the same phenomenon in one of the early transcriptions of śramaṇa found in the *Wei-lüeh*, 晨門 K. dz'jēn- (or *zjēn-*) muən (see Chavannes 1905, p. 550).

The close relation of the initial represented by K. *dz'* to M. *y* is further borne out by the rather numerous double readings, such as: 牘 K. jəng, dz'jəng, 射 K. ja, dz'ja, 蛇鈍 K. iə (=M. ye), dz'ja, 嗜驕 K. juēt, dz'juēt, 剡 K. jām, dz'jām. There are also some double readings in K. *z* and *dz'* but these are less numerous.

I suspect that the *Ch'ieh-yün* initial represented by K. *dz'* did not have a distinct origin in earlier Chinese but that it arose at a time when M. *j* was beginning to lose its affrication in some dialects, while at the same time the existing *z* was losing its friction and becoming M. *y*. In individual dialects the two processes no doubt kept in step and the two phonemes remained distinct but dialect borrowing might lead to a more conservative pronunciation of M. *y* being interpreted as the new fricative allophone of M. *j* and being treated subsequently as if it had been M. *j*.

It would be premature to exclude the possibility that there was a distinct third phoneme besides M. *j* and M. *y* and I shall write *z* for this initial. This will preserve the principle of including all the *Ch'ieh-yün*'s distinctions in the spelling. Unfortunately this transcription makes the distinction between M. *j* and M. *z* in the opposite sense from that indicated by the rhyme tables. These were however made much later than the *Ch'ieh-yün* and the authors would have had no means of recovering a distinction that had evidently only been an unstable transition stage.

⁸ Bodman 1954 gives this phoneme the value *z* in the Late Han period

and Bailey (1946) has shown that it had this value in transcribing *z* from *ś* or *y* in Central Asian Prakrit. In Sino-Vietnamese it is represented by *z*- which seems to indicate the persistence of friction in some dialect as late as the tenth century. Basing himself on Sino-Vietnamese Nagel (1942) transcribed this initial as *z* by which he meant some kind of dental fricative. In the *Ch'ieh-yün* system however it must be regarded as a frictionless palatal continuant. On the placing of this initial in the rhyme tables see (2) above.

⁹ Lo Ch'ang-p'ei (1931) showed that these initials, which Karlgren reconstructs as palatal stops and palatal *ñ*, were regularly used for transcribing Indian cerebrals. Karlgren (1954, p. 226) does not represent Lo's view correctly by saying that he proposed to reconstruct retroflex stops in Division II, and palatal stops in Division III. On the contrary Lo demonstrated clearly that these initials were used for Indian cerebrals before rhymes of both types and he reconstructed retroflex stops in both cases. He only said that in some dialects the medial *yod* of Division III had later palatalized these initials (not in Peking where according to Lo the present retroflex affricates can be explained by a direct development *tj*-> *t*-> *ts*-).

The principal reason why scholars have been slow to accept Lo's findings is no doubt that in the rhyme tables these initials seem to be the yodized complements of the pure dentals, which would be phonetically incompatible with their being supradentals. On this however see below.

¹⁰ In a very small number of words the *Ch'ieh-yün* appears to distinguish a voiced fricative supradental from the voiced affricate (see Li Jung 1952, p. 87). The only common character affected is 俟 M. *zjə'* (Karlgren's value *dz'i* follows the *Kuang-yün* which lacks this distinction). This word shows a fricative initial in all modern dialects except Cantonese, where it is read *tsi*, but in this respect it does not differ from words with initial *dz*- in the same rhyme: 士 M. *dzjə'*, 事 M. *dzjə'*, which have lost their affrication in all dialects including Cantonese (Karlgren 1916, pp. 406-8). There would scarcely seem to be sufficient evidence to set up a distinct phoneme *z* were it not for the fact that such a value would fit the transcription value of the character 俟. It occurs in the T'ang period in a Turkish title 俟斤 which appears to be the same as *irh(ā)n* in the Orkhon inscriptions. (The same title is found earlier among the Juan-juan.) Pelliot devoted a short article to the problem created by this transcription (Pelliot 1929). He noted the alternative reading M. *gjə'* (=K. *g'i*) and suggested somewhat tentatively that this might be compared to cases where a Turkish or other foreign vocalic initial is represented by the initial which Karlgren transcribed as *γ*- but which we have interpreted as *h*, the medial -r- being disregarded. This is clearly unsatisfactory since, while a voiced laryngeal fricative might well be used to represent a vocalic opening, the same is hardly true of a velar stop. If instead we read the character as M. *zjə'*, we have M. *zjə-kjən* which could represent **izkin* for **irkin* in the

same way that 室點蜜 M. *šjit-tem*\-myit, or 瑟帝米 M. *šjit-tei*\-mei represent Istāmi (Stembis) or 遺可汗 M. *ywi*\-kha'-han represents *āqayan* (see Liu Mau-ts'ai 1958, p. 499). Normally one would expect to find Middle Chinese -t used to represent medial or final -r and this appears in another transcription 乙斤 M. -jit-kjen. The value of final -t in the T'ang period was however probably not a true r but rather an interdental fricative -ð. A retroflex fricative ʒ would probably have seemed a better equivalent to a foreign r, when available; but it was a very uncommon phoneme. (On *irk(ā)n* see also Hamilton 1955, p. 98.)

The same character 侯 appears in another title 侯利 (or 列) 發 M. *zjə*'-lji' (or *lijet*)-pjat which is usually identified with Turkish *eltābir* but the phonetic equivalence is not exact and the identification seems to me somewhat doubtful.

Because of this possible corroboration for a special value for the initial in 侯 I shall follow the distinction of the *Ch'ieh-yün* and write ʒ. (See also p. 129 below.)

B.	<i>Medial semivowels</i>
Palatal: ¹	ʃ (= ʃ̄)/y ²
Labial:	w ³

¹ Karlgren's "vocalic i", regarded as characteristic of Division IV of the rhyme tables, is eliminated. The "pure" Division IV rhymes in which it was used: K. -iei, -ien, -iem, -ien, -ieu, -iet, -iep, -iek—all have the head vowel e which does not occur in Division I. For the *Ch'ieh-yün* system these rhymes must be amended to *ei, en, em*, etc., which is their value in pre-T'ang and early T'ang transcriptions. The yodization of these rhymes which made them fall together with *yei, yen*, etc. (K. -jāi, -jān) in the *fan-ch'ieh* of Hui-lin (eighth century) and led to their placing in Division IV of the rhyme tables was a development subsequent to the *Ch'ieh-yün*. Tōdō calls these rhymes "false Division IV". (Lu Chih-wei 1939, Li Jung 1952, p. 107, Tōdō 1957, p. 200, Wenck 1957 III, p. 66.)

² The theory of two types of medial -j-, a retracted -j̄- and a close, fronted -j̄-, was advanced by Arisaka 1944 (1937-39) and Kōno 1939 (see also Lu Chih-wei 1947) to account for the distinction, ignored in Karlgren's system, between words in certain rhymes with laryngeal, velar and labial initials separated by their *fan-ch'ieh* spellings and placed in Divisions III and IV respectively in the rhyme tables. The distinction is an important one, for it gave rise in various ways to divergent treatment of words in the two Divisions in Go-on, Sino-Korean, Sino-Vietnamese and modern Chinese dialects. Nagel 1942 and Tung T'ung-ho 1948 and 1948(2) treat the distinction as part of the rhyme. This is unsatisfactory, however, since it violates the essential principle of a rhyming dictionary. The authors of the *Ch'ieh-yün* have even been accused of being over-subtle in their

distinctions between rhymes. It seems unlikely that they would have placed together under the same rhyme words which they distinguished by the rhyme. Those who have proposed the theory of contrasted medial semivowels have regarded it as an original part of the phonological system reaching back into the Old Chinese period. A theory to the contrary which seeks to explain the origin of the difference will be presented below.

The distinction between Division III and Division IV in the same rhyme is found only after laryngeal, velar and labial initials and only in rhymes with close front head vowels (e and i). Elsewhere the distinction may be regarded as neutralized and I write simply -j-. Where the distinction is found I mark only the close variety of medial by writing -y- instead of -j-. When it appears in contrast to -y-, -j- is to be interpreted as -j̄- and could be so marked if desired.

³ It is unnecessary to distinguish two types of labial semivowel, u and w. See Chao Yuanren 1940.

After labial initials there is no contrastive distinction between words with medial -w- and words without, and I follow Li Jung in suppressing it in transcription—*pan, maəŋ* instead of Karlgren's *puān, mwəŋ*, etc. (see Chao Yuanren 1940, Li Jung 1952, pp. 123 ff.). Except before close front vowels the initial labial tended to impart a labialization to the syllable as a whole which resulted in its being classed as *ho-k'ou* and developing as such, but this can be regarded as implicit in the initial and need not be separately indicated in transcription. Li Jung retains the medial after labial initials in rhymes -uəi (-wəi), -uən (-wən), -juən (-jwən), i.e. where the *Ch'ieh-yün* sets up separate *ho-k'ou* rhymes. I regard these rhymes as capable of alternate phonemic interpretations—either as having head vowel u+ə or as having head vowel ə preceded by semivowel -w-. This leads to alternative spellings—*kuən/kwən, mjuən/mjən*, etc. (further discussed on pp. 81-2 below). In the case of rhymes 哈 -əi, 灰 -uəi (-wəi) there are some words with labial initials in the former as well as the latter but Li Jung has demonstrated that they are variant forms of words appearing under -uəi (-wəi). The uncertainty about their placing in the dictionary shows a vacillation in interpretation as between *p(w)əi* and *puəi* rather than a genuine phonological distinction.

C. Rhymes

1. Arranged according to the grouping of the rhyme tables:

					"Pure"
Class	Div. I	Div. II	Div. III	Div. III/IV	Div. IV
通	{ 東 uŋ 冬 oŋ ¹		東 juŋ 鍾 ioŋ ¹		
江	{	江 auŋ ²			
宕	{ 唐 aŋ		陽 iaŋ ³		

Class	Div. I	Div. II	Div. III	Div. III/IV	"Pure" Div. IV
梗		庚 aŋ ⁴	庚 iaŋ ⁴	清 (ieŋ)/ yeŋ ⁶	青 eŋ ⁸
曾		耕 aəŋ ⁷			
曾深	{ 登 əŋ		蒸 iəŋ ⁸		
咸	{ 覃 əm ¹⁰	咸 aəm ¹¹	凡 iam ¹³ (iam)	侵 iim/yim ⁹	
	{ 談 am	銜 am	殿 iam ¹³	鹽 iem/ yem ¹³	忝 em ¹⁴
臻	{ 痕 ən	臻 in ¹⁶	殷 iən	眞 iin/yin ¹⁶	
	{ 魂 uən (wən)		文 iuən ¹⁷ (iwən)	[諄 iwin ¹⁸]	
山	{ 寒 an	刪 an	元 ian ¹⁹	仙 ien/ yen ²⁰	先 en ²¹
	{ [桓 wan ²²]	山 aən ²¹			
止				支 ie/ye ²³	
				脂 ii/yi ²⁴	
				之 iə ²⁶	
蟹	{ 哈 əi	佳 ae ²⁷			
	{ 灰 uəi(wəi)	皆 aəi ²⁷			
	{ 泰 ai [\]	夬 ai [\] ²⁷	廢 iai [\] ²⁸	祭 jei [\] / yei [\] ²⁹	齊 ei ³⁰
果	{ 哥 a		[戈 ia ³⁰]		
假	{ [戈 wa ²⁰]	麻 a	麻 ia		
遇			魚 io ³¹		
流	{ 模 ou ³¹		虞 iou ³¹		
	{ 侯 u ³²		尤 iu ³²	幽 (iu)/yiu ³²	
效	{ 豪 au	肴 au		宵 ieu/ yeu ³³	蕭 eu

2. Arranged by head vowel

Vowel	+0	+i	+n	+ŋ	+m	+u
u	{ 侯 u	灰 uəi	魂 uən	東 uŋ		(侯 u)
		(wəi)	(wən)			
	{ 尤 iu	(微 iwəi)	文 iuən	東 iuŋ		(尤 iu)
		(iwən)				

Vowel	+0	+i	+n	+ŋ	+m	+u
o	{ 魚 io			冬 oŋ		模 ou
				鍾 ioŋ		虞 iou
ə	{ 之 iə	哈 əi	痕 ən	登 əŋ	覃 əm	
		微 iəi	殷 iən	蒸 iəŋ		
a	{ 哥 a	泰 ai [\]	寒 an	唐 aŋ	談 am	豪 au
	{ [戈 ia]	廢 iai [\]	元 ian	唐 iəŋ	殿 iam	
a	{ 麻 a	夬 ai [\]	刪 an	庚 aŋ	銜 am	肴 au
	{ 麻 ia			庚 iəŋ	凡 iam (iam)	
aə		皆 aəi	山 aən	耕 aəŋ	咸 aəm	
ae	佳 ae					
au	(肴 au)			江 auŋ		
e	{ 支 ie/ye	齊 ei	先 en	青 eŋ	忝 em	蕭 eu
		祭 jei [\] / yei [\]	仙 ien/ yen	清 (ieŋ)/ yeŋ	鹽 iem/ yem	宵 ieu/ yeu
i	{ 脂 ii/yi	(脂 ii/yi)	眞 iin/ yin		侵 iim/ yim	幽 yiu
i			臻 in			

N.B. In the tables level tone rhymes are considered to include the corresponding rising and departing tones (except in the case of rhymes ai[\], iai[\], ai[\], jei[\]/yei[\] which only occur in the departing tone). The entering tone rhymes (i.e. rhymes in -k, -t, -p) are likewise considered to be implied by the corresponding rhymes with nasal finals—*at* by *an*, etc. *Ho-k'ou* forms are listed only where they form separate rhymes in the *Ch'ieh-yün*, otherwise they are included under the corresponding *k'ai-k'ou*—*kwan* under *aŋ*, *iwək* under *iəŋ*, etc. The additional *ho-k'ou* rhymes of the *Kuang-yün* are placed in square brackets, e.g. [桓 wan]. Round brackets are used to indicate alternative spellings of the same rhyme, or alternative positions of the same rhyme in the table, or, in the case of (ieŋ) and (iu), theoretical Division III rhymes which are only doubtfully represented.

The level tone is not marked. Rising tone (*shang-sheng*) and departing tone (*ch'ü-sheng*) are marked as follows: *ka'*, *ka'*.

¹ oŋ, ioŋ = K. uong, iwong. I follow Li Jung 1952, p. 134, in suppressing the medial -u-, -w-. Karlgren's principal reason for inserting the medial was the designation of these rhymes as *ho-k'ou* in Sung rhyme tables and he found support for this also in the modern Wen-chou forms. The distinction *k'ai-k'ou*/*ho-k'ou* cannot, however, be mechanically reduced to the absence or presence of a labial semivowel. There is evidence that a rounded head vowel could itself lead to the designation *ho-k'ou*—note the designation of rhyme 哥 a as *ho-k'ou* in the *Yün-ching*, which can only indicate that the back a had already become rounded in this dialect, as it has in modern Peking: ko < M. ka. Moreover, in the *Yün-ching* rhymes 冬鍾 are

called *k'ai-ho* "open-close", not *ho* "close". See further regarding rhymes M. -*io*=K. -*jo* and M. -*ou*=K. -*uo* under (31).

² *auŋ*=K. -*äng*. This is in agreement with R. D. Forrest 1948, p. 154. It explains the fact that this ending caused the palatalization of velar initials, like -*a*. Cf. 加 M. *ka* > Peking *chia*, 江 M. *kaung* > Peking *chiang*. It is also in accordance with the interesting evidence from the *fan-ch'ieh* system of Hui-lin discovered by Kōno Rokurō (Kōno 1955). In this system there is a strong tendency to use words as initial spellers which agree in vocalism with the final spellers. Kōno shows that words in rhyme 江 are frequently spelled with initial spellers which have head vowel *a*. Chao Yuanren (1940) had already suggested that rhyme 江 could be considered as *aŋ*. This would leave out of account however the fact that it originates from a back vowel and still shows affinities with -*uŋ*, -*oŋ* by its placing in the *Ch'ieh-yün* and the rhyme tables and even occasional poetic rhymes in the T'ang period (Forrest 1948, p. 154, Waley 1918). Moreover we wish to interpret rhyme 庚 (=Karlgrén's *oŋg*) as *aŋ*. The hypothesis of a diphthongal ending *auŋ*, later simplifying to *aŋ*, which in turn became palatalized to *iaŋ*, is satisfactory both as a synchronic interpretation of the *Ch'ieh-yün* and, as we shall see below, in terms of the theory of the development of the special Division II rhymes.

³ Karlgrén writes *äng*, *jaŋg*. The close association of these rhymes in the *Ch'ieh-yün* and the rhyme tables and their similar treatment in many dialects justifies us in identifying the head vowels (Martin 1953, Tōdō 1957). Karlgrén's reason for differentiating the head vowels seems to have been that they are separated as different rhymes but he did not use this as a reason for distinguishing the head vowels of Division I and Division III rhymes in several other cases. In any case we require a distinct *aŋ*, *iaŋ* (see (4)). Another argument in favour of *iaŋ* rather than *jaŋ* is that this rhyme caused the dentilabialization of labial initials. According to Chao Yuanren's theory (1941) this happened before back vowels. Karlgrén's explanation in terms of medial -*ju*- or -*jw*- fails to account for the difference in treatment between his *piwŋg* (=M. *pjaŋ*) > *p*- and his *piwang* (=M. *pjaŋ*) > *f*-.

⁴ The identification of the head vowels of rhymes 庚 *aŋ*, 江 *iaŋ* (=K. *oŋg*, *joŋg*) and 元 *jan* (=K. *joŋ*) is an unfortunate error of Karlgrén's Ancient system. The principal reason for identifying the two head vowels was the apparent parallelism between the Division III rhymes: in both cases they are restricted to laryngeal, velar and labial initials. The fact that, unlike 元, 庚 also appears in Division II, where it can have supradental initials as well, is however a major difference. Moreover the *fan-ch'ieh* spelling of certain words with supradental initials indicates the presence of medial -*j*-, e.g. 生 *ɕjaŋ*, not *ɕaŋ*. This is reflected in the Kan-on reading *sei* (contrast 塞 *sō*). Although other dialects do not show any trace

of this distinction, the Kan-on reading of 生 is confirmed in ancient sources and is not a mere theoretical construct from the *fan-ch'ieh* (Wenck III, p. 370).

The following arguments favour identifying the vowel in *aŋ*, *iaŋ* with the open front vowel of rhymes *a*, *ja*, *an*, *am*, *au*, *auŋ*: (a) The *fan-ch'ieh* of Hui-lin which tend to use initial spellers agreeing in their main vowel with that of the final, show an interchange between these rhymes as initial spellers. (Kōno 1955, see (3) above); (b) in origin 庚 is the Division II rhyme corresponding to *aŋ*, just as *a* corresponds to *a* and *ou* (< **ah*), *an* corresponds to *an*, etc., Cf. double readings such as: 啞 'a', 'ak (=K. 'ok) 怕 *pha*', *phak* (=K. *p'ok*) 齧 *dza*', *dzak* (=K. *dz'ok*); (c) like other front vowels it did not cause dentilabialization. (See (3)).

There is a major difference in the treatment of rhymes *aŋ*, *ak*, *aəŋ*, *aək* in many modern dialects, as compared to *an*, *at*, *aən*, *aət* and *am*, *ap*, *aəm*, *aəp*. Whereas the latter, like rhyme *a* and the rhymes with the mid-front vowel -*e*-, developed a palatal glide which led to the palatalization of velar initials, the former were mostly retracted and fell together with rhymes *əŋ*, *ək*. There are exceptions to this however which show *aŋ* as having a front vowel compared to *əŋ*. (a) Wen-chou maintains a distinction systematically:

坑 M. *khəŋ*, Wen. *k'ä*: 肯 M. *khəŋ*, Wen. *k'ang*

烹 M. *phaŋ*, Wen. *p'ä*: 崩 M. *pəŋ*, Wen. *pang*.

(N.B. In this dialect words in *aəŋ* with labial initials are distinguished from corresponding words in -*aŋ*: 猛 M. *maŋ*, Wen. *mä*, 萌 M. *maəŋ*, Wen. *ming* (falling together with M. *myəŋ*, *məŋ*). In most dialects *aŋ* and *aəŋ* have completely fallen together.)

(b) In Northern dialects, and also in Wu, after laryngeal initials -*aŋ* shows the same palatalization as -*an*, -*a*:

行 M. *həŋ*, Pek. *hsing*, Sh. *hiəŋ*: 恆 M. *həŋ*, Pek. *heng*, Sh. *həŋg*.

It was noted by Chao, 1941, that rhyme 江 *auŋ* behaves in modern dialects as if it came from *aŋ*, i.e. it causes palatalization of velars. If *aŋ* and *aəŋ* really had the same vowel -*a*- in common, how can we account for this difference in their later history? The answer probably lies in the pressure exerted by the diphthong *auŋ* as it tended to become monophthongized. In order to maintain the distinction between *auŋ* and *aŋ*, the latter would have tended to be displaced upwards towards *əŋ*. When *aŋ* and *aəŋ* fell together, therefore, it was in the direction of the latter and in the majority of cases the tendency continued until *aŋ*, *aəŋ* and *əŋ* had all fallen together. Rhymes *an*, *aən* and *am*, *aəm* also fell together but, there being no pressure from an *au* diphthong, they fell together in the direction of *an*, *am*.

⁶ = K. -*jäng*. Karlgrén's vowel *ä*, which occurs only after medial -*j*-,

is to be identified phonemically with e=K. ie (on the suppression of "vocalic i", see p. 70 above). They are associated in the *Ch'ieh-yün* and the rhyme tables as closely as of aŋ, iaŋ and əŋ, iəŋ, etc. and they have largely fallen together in modern dialects, a process initiated by the breaking of -e- to -ye- in the eighth century T'ang dialect.

Almost all words with laryngeal, velar and labial initials in rhymes 清 fall in Division IV in the rhyme tables and must therefore be written with the close medial **yeŋ, yek, not iəŋ, iek**. That this placing is not arbitrary is shown by the treatment of labial initials in Sino-Vietnamese (where labials followed by the close front medial become dentals); e.g. 關 M. **byek**, S.-V. tif, 名 M. **myeŋ**, S.-V. zañ. It is also shown for velar and palatal initials by the fact that Sino-Korean always has -iəŋ and does not show the contrast of 愆 M. **khien** S.-K. kən: 遣 M. **khyen**, S.-K. kiən. There are a very few words with labial initials placed in Division III in the *Yün-ching* of which the principal one is 碧 M. **piek**, S.-V. biť. The placing of this word in various dictionaries is not constant. The T'ang-yün followed by Li Jung, makes it **piek** (Li Jung 1952, p. 61, n. 7). We may in fact regard rhymes iaŋ, iak as taking the place of iəŋ, iek. Conversely, there are no rhymes ian, jat in the *Ch'ieh-yün*, their places being taken by the ien, iet subdivisions of rhymes ien/yen, iet/yet. A plausible interpretation of the situation in Hui-lin, where ien and yen are separated, falling together with M. ian and M. en respectively, is that this represents, not a development from the *Ch'ieh-yün*, but a separate dialect in which there was a rhyme ian, parallel to iaŋ, instead of ien.

⁶ eŋ = K. ieng.

⁷ aəŋ = K. eng. This is the Division II rhyme which corresponds in origin both to eŋ and to əŋ. The vowel in this rhyme has already been identified with that of the corresponding -i-, -m, and -n rhymes by Tung T'ung-ho, Li Jung and Tōdō, who write ä or ε. In writing it as a diphthong aə I wish to symbolize it as consisting of a (=characteristic vowel of Division II) + ə. That it had a diphthongal pronunciation is suggested by the following consideration: (a) Sino-Korean writes rhymes 耕麥 as -äing, -äik. In modern Korean pronunciation this is a monophthong ä but the same spelling is used for rhyme 皆 which we have good reason to suppose was an -i diphthong in Chinese. Rhymes aŋ, ak are also normally spelt -äing, -äik in Korean. This is probably due to the fact that by that time aŋ and aəŋ had fallen together in the direction of the latter (see ⁴) above). A difficulty is that the spelling -äik also occurs to some extent for ək (but not -äing for əŋ). This may be because rhymes aək and ək were already beginning to coalesce. (b) The analogy of the diphthongal rhymes auŋ, auk which are the Division II rhymes corresponding to uŋ, uk and oŋ, ok. This will be discussed further in connection with the theory of the development of Division II rhymes from Old Chinese to Middle Chinese.

The Go-on spellings of rhymes aŋ, ak and aəŋ, aək have the so-called *yōon*, that is they insert a syllable -ya- after the initial, e.g. *kyō* (spelt *ki-ya-u*), *hyaku*. This might seem to suggest a falling diphthong. One is reminded, however, of the way in which Modern Japanese often represents the low front "a" in English loan words, e.g.: *kyabetsu* "cabbage", *gyangu* "gang". The matter is complicated by the fact that the same spellings appear for rhymes eŋ, ek and yeŋ, yek. The medial -y- in the latter pair is insufficient to explain the -ya- in Japanese because (a) we do normally find medial -i-/-y- so represented in Go-on, (b) the yodization of the vowel -e- which made it fall together with -ye- is a later phenomenon (c) the Japanese head vowel -a- is still unexplained. It seems likely that the real explanation is that in the Wu dialect the vowel of eŋ, yeŋ was a very open [e] close to a. The same *yōon* appears sporadically in rhyme a. One must still account in some way for its non-appearance in rhymes an, am, but this applies to any alternative theory. The question is bound up with that of the value of Manyōgana e', which appears in these rhymes, and also in rhyme a. I hope to return to this on a later occasion. (For an interesting example of an ancient reading *kyamu* see ¹³ below.) For a discussion coming to somewhat different conclusions see Wenck III 1957, § 749.

⁸ There is no rhyme to be reconstructed with head vowel i before velar endings to correspond to iin/yin. As far as the *Ch'ieh-yün* is concerned, and certainly in the rhyme tables, it seems clear that rhymes 蒸職 are to be phonemically associated with əŋ, ək, with a retracted central head vowel. For rhyme -iek we find evidence for this in early Buddhist transcriptions, e.g. 著域 M. *jji-hiwək = Jivaka (on the reading of the first character see p. 124 below), where Chinese ə corresponds to the *shwa* of Sanskrit. The same is true of the much earlier transcription (second century B.C.) 安息 M. *an-sjək = *Arsak (Parthia). In the same way we find unyodized ə in 塞 M. sək = Saka, 恆 M. hēŋ = Gaṅgā (Ganges). On the other hand we have, also in an early Buddhist transcription (late second century A.D.) 拘翼 M. kjou-yək = Sanskrit Kausika (with Middle Chinese y having the value ž, representing a Prakrit form with voicing of the medial sibilant, see p. 68 above). This would make it appear that the vowel was markedly closer and more fronted after palatal initials. Go-on readings of rhyme -jək show a similar differentiation according to the initial: 息 M. sjək, Go. *soku*, but 翼 M. yək, Go. *iki*. We find o readings (i.e. o² = ɔ) after velars and laryngals (but 抑 M. jək, Go. *iki*, as well as 臚 M. jək, Go. *oki*) and after ts-, s- (but with some readings *shiki*). After other initials we find -iki, also 緘 M. iwək, Go. *wiki*, 血 M. hiwək, Go. *keki*. This distribution shows a certain degree of resemblance to the kind of distribution between o² and i readings we find in rhyme iin/yin, where the o² is to be attributed to the retracted medial ɨ, rather than to a head vowel ə, but there is no trace in rhyme jək of a splitting of syllables with laryngeal, velar and labial initials

into Divisions III and IV, nor on the other hand do we find any trace in rhyme *jin/yin* of Go-on readings with *o* after dental sibilants and affricates.

The Go-on representation of rhyme *ien* is less complicated. We find $-ō (=o^2+u)$ after laryngals and dental sibilants and affricates, otherwise $-yō$. (Kan-on has $-yō$, $-yoku$ throughout in both rhymes.) The presence of $-y$ (*yōon*) in the Go-on readings is noteworthy since medial *ɿ* is otherwise not generally reflected in Go-on. The supposition of a particularly strong medial *ɿ* before *ən*, *ək*, tending to become strengthened into *iən*, *iək* (cf. *wən/uən*, *iwən/iuən*, etc., see (17) below) would account very well for the Go-on treatment of both finals.

In the development of Modern Chinese both *ien* and *iək* have been treated as front vowels, causing the palatalization of velar initials in Mandarin dialects and falling together with *en*, *yen* and *ek*, *yek*. They did not bring about dentilabialization (in contrast to *iei*). Wenck's interpretation of this in terms of a shift of medial *-j-* to *-y-* will not do however, for Sino-Vietnamese does not change labial initials into dentals, as it regularly does before medial *-y-*. Instead we should probably regard it as a continuation of the strengthening of medial *ɿ* to become the head vowel, with the subsequent loss of the following *ə*. The absence of *i* as head vowel before velar endings left a phonemic gap which would have encouraged the process.

Historically Middle Chinese *ə* probably came from an Old Chinese close front vowel *i* and the yodized *je* from the corresponding long vowel *ī* (see p. 99 below). The vowel *ī* had already become retracted to a central *ɨ* in many contexts by the Han period. When the long vowel became yodized, the possibility was created for the head vowels of *ən* and *ien* to become phonemically separated. The former remained a central vowel but the latter moved back to its original position as a close front vowel.

⁹ *jin/yim* = Karlgren's $-jəm$. Again we have a choice between *i* and *ə* as head vowel. Unlike the situation in rhymes with velar finals however the rhyme tables do not indicate a close link with the historically corresponding Division I rhyme. Moreover we have here, at least after the glottal stop, a contrast between Division III and Division IV, which would lead us to regard the rhyme as analogous to *jin/yin*, rather than *ien*. Karlgren's principal reason for preferring *jəm* was the Go-on readings in *on* that occur after velar and labial initials. As far as the velars are concerned the situation is precisely similar to that in rhyme *jin/yin* where Division III words are read $-on$ and Division IV words are read $-in$, the only difference being that Division IV words only occur here after the glottal stop: 蔭 M. *jim*, Go. *on*, 惜 M. *yim*, Go. *in*. After labial initials the situation is indeed different, for we have: 貧 M. *bin*, Go. *bin*, but 稟 M. *pjim*, Go. *hon*. It may be thought, however, that this represents a difference of nuance resulting from the fronting effect of the dental final rather than a phonemic difference in the head vowel, and that the representation of medial *ɿ* (i.e. *ī*)

by Japanese $o^2 (=ō)$ is more regularly carried through before labial endings than before dentals. Sporadic cases of Go-on readings in $-on$ also occur in rhyme *jin* after supradental sibilants. This can similarly be attributed to medial *ɿ*, representing lost medial *-l-* (see p. 112 below). What we never find in rhyme *jin/yim*, in marked contrast to *ien*, is readings with o^2 after pure dental sibilants, which could only be attributed to the quality of the head vowel.

¹⁰ *əm* = Karlgren's *ām*. On the reinterpretation of Karlgren's length distinctions in terms of vowel quality see Martin 1953, pp. 30 ff., Wenck III 1957, pp. 193 ff. In rhymes *əm* and *ei*, which fell together with *am*, *ai* in the *fan-ch'ieh* of Hui-lin (ninth century), the head vowel was no doubt already closer to *a* in *Ch'ieh-yün* times than that in *ən*, *ən*, etc. The vowel of *əm* especially must have been markedly lower in position since it is usually represented by *a* in Japanese rather than o^2 which is typical of rhymes with *ə*. (Rhyme *ei* on the other hand often has o^2 .) In a narrow transcription this would justify a separate symbol. There are good reasons historically to identify the vowel in *əm* with *ə* in the other rhymes however and no confusion is introduced by retaining it in transcription.

¹¹ *aəm* = K. *ām*. See (7).

¹² The nature of the difference between these two rhymes is a difficult problem. In the *Ch'ieh-yün* they are very nearly but not quite in complementary distribution, 嚴 having only laryngal and velar initials, 凡 having mainly labials with a few somewhat doubtful velars. In excluding dental and palatal initials they together seem to correspond to both rhyme 元 before dental finals and Division III of rhyme 庚 before velar finals. Karlgren, therefore, made the head vowel *ə* in both. Since 凡 is classed as *ho-k'ou*, he introduced medial $-w-$ as the distinguishing feature between the two rhymes and wrote them $-jəm$, $-jwəm$ respectively. This has been followed, not without misgivings, by most other investigators. To write medial $-w-$ in rhyme 凡, however, violates two principles: (a) that this semivowel never occurs distinctively before labial endings, (b) that it never so occurs after labial initials. In any case, since we have departed from Karlgren in considering the vowels of 元 and 庚 as different (*ian* and *jan* as against $-jən$, $-jəng$) we would be faced with the problem of writing *jam* or *jam* even if we agreed to identify the main vowels of the two rhymes. There are analogies with both *ian* and *jan*.

A. Analogies of rhymes 凡 嚴 with *ian*.

(a) Dentilabialization occurs in rhymes 凡 and *ian*, but not in *jan*.

(b) Go-on normally has $-on$ in both rhyme 凡 and rhyme *ian* (but rhyme 嚴 vacillates between $-on$ and $-en$). This contrasts with $-yō$ ($-ya-u$) in *jan*. In *ju-sheng* we find $-echi$ for *iat* in *k'ai-k'ou*, $-wachi$ or $-ochi$ in *ho-k'ou*. Rhymes 業 and 泛 both have $-ō$ (*o-fu*). For *jak* on the other hand we find $-yaku$. One must however not overlook an ancient reading

ki-ya-mu for 翳, one of the few words with velar initials in rhyme 凡 (Wenck III 1957, p. 320).

(c) In the *fan-ch'ieh* of Hui-lin rhyme 嚴 has fallen together with *jem/yem*; rhyme 元 *jan* falls together with M. *jen* (= *jan*, see (*) above) but remains distinct from *-yen*.

B. Analogies with *jan*.

(a) In the *fan-ch'ieh* of Hui-lin rhyme 凡 (in distinction from 嚴) has fallen together with the Division II rhymes *-am/-aəm*, implying a head vowel *a* (but the two words 餐 範 are classed with *aəm*).

(b) The exceptional reading *ki-ya-mu* noted above also points to *a*.

(c) Whereas rhyme *jan* comes exclusively from Old Chinese *a*, *hsieh-sheng* connections show that 嚴 凡, like *jan*, come from both *e* and *a*.

A fuller discussion of the problem must be left until the development of the rhymes from Old Chinese is considered. Provisionally I conclude as follows: the two rhymes probably originally represented a distinction *jam* ~ *jam* but the distinction has been obscured by the shift of all words with labial initials to *jam* due to the combined depressive effect of the labial initial and final (hence dentilabialization) and by the umlaut of both *jam* and *jam* towards *jem* after other initials. The versions of the *Ch'ieh-yün* that we possess represent a stage at which the first process had been completed and the second was under way so that it does not give reliable guidance as to the original distribution. Hui-lin's system seems to represent a slightly different development in which the distinction between *jam* and *jam* was still to some extent retained after labials but both had gone over to *jem* after other initials (see pp. 113-14 below).

¹³ *jem/yem* = Karlgren's *jam*. See (*).

¹⁴ *em* = Karlgren's *iem*.

¹⁵ *in* = Karlgren's *jen*. Chao Yuanren 1941 pointed out that this rhyme, and its corresponding *ju-sheng*, which both occur only in Division II after supradental initials, were in complementary distribution with rhyme 眞 *jin/yin* (= K. *jen*). Most writers since, apart from Karlgren, have made no distinction in transcription. The phonetic difference which led to the setting up of a separate rhyme was no doubt a retraction of the main vowel from *i* towards *ĩ* under the influence of the retroflex initials. In Hui-lin's system rhyme 臻 and also Division III of rhyme 眞, *i.e.* *jin* (= *jin*) had mostly fallen together with *jen*. There are still a few words with retroflex affricates or *ʃ*- which Huang Ts'ui-po classes with *yin*. One of them is a word which appears in rhyme 眞 but the other two appear in rhyme 臻. Though it seems doubtful therefore whether there was any phonemic distinction, it will be convenient to write *in* for rhyme 臻 as opposed to *jin*.

This rhyme, being allophonic to *jin*, properly belongs in Division III,

but since it only occurs with initials *tʃ*, *tʃh*, *dʒ*, *ʃ*, which are placed in Division II in the rhyme tables even when they appear before Division III endings, it wrongly appears to be an exclusively Division II rhyme. It therefore constitutes only an apparent exception to the rule that Division II rhymes all have vowel *a* or an *a* diphthong.

¹⁶ *jin/yin* = K. *jen*. The phonemic correlation between the vowel of this rhyme and that of rhyme 先 *en* (= K. *ien*) which Karlgren's transcription sets up is difficult to justify. Most of the reflexes and transcription values of this rhyme, apart from those with velar initials in Division III, clearly indicate an *i* vocalism. Karlgren's rejection of this was based principally on the evidence of Go-on and Sino-Korean readings of words like 𠄎 M. *kjin*, Go-on *kon* (*o*² = *ö*), S.-K. *kün*, but as we have seen, these are to be explained in terms of medial *-j-*. Rhyme *en* on the other hand is grouped with *an*, *an*, etc., in the rhyme tables and the order of rhymes in the *Ch'ieh-yün* and is kept quite separate from *jin/yin*.

¹⁷ Rhymes 灰, 魂, 文 are the only cases of separate *ho-k'ou* rhymes in the original *Ch'ieh-yün*. Rhymes 諄 *ɰwin/ywin*, 戈 *wa*, 桓 *wan*, which appear in the *Kuang-yün* as independent of the corresponding *k'ai-k'ou* rhymes, were added later (see Wang 1957, p. 134). One can either regard the distinction as *phonemically* inherent in the medial *-w-* (like medial *-j-* in *jan*, etc.) but as having in these cases occasioned a greater than usual effect on the main vowel, so that *ən*, *wən*, etc. did not make satisfactory rhymes, or one can follow Karlgren and write *uəi*, *uən*, *juən*. This does not introduce a new phoneme since *u* exists as an independent head vowel in rhymes *-u*, *-ju*, *-uŋ*, *-juŋ*, but the diphthong *-uə-* would be peculiar to these rhymes. In favour of this alternative is the use of rhymes *wən/uən*, *ɰwən/iuən* to represent foreign *-un*. Against it is the fact that there is only one rhyme for both *ət* and *wət/uət* and only one rhyme for both *iəi* and *iwəi*. Clearly we have here a case where alternative solutions are possible—what Chao Yuanren called the “non-uniqueness of phonemic systems”. The reason for it is no doubt that, while, in the case of velar endings, *uŋ* and *uk* existed independently to exert pressure on *wəŋ*, *wək*, there was no such contrast in *-i*, *-n*, *-t*; so that *wəi*, *wən*, *wət* tended to move over to fill the gap in the phonemic system replacing the missing *ui*, *un*, *ut*.

¹⁸ The case of the separate *ho-k'ou* rhymes 諄, 戈, 桓 added between the *Ch'ieh-yün* and the *Kuang-yün* is not quite the same as that of the *ho-k'ou* rhymes which were in the original *Ch'ieh-yün*. Since they appear later, there is no need for us to take account of the distinction in a transcription of the *Ch'ieh-yün*, and we shall simply write *ɰwin/ywin*, *wan*, *wa*. The reasons for the introduction of the new rhymes were no doubt sound changes which made it no longer possible to identify the head vowels. Rhymes *wa*, *wan* will be discussed below. As far as *ɰwin/ywin* is

concerned we have an indication in the *fan-ch'ieh* of Hui-lin of the sound change which probably led to the setting up of a new category. In Hui-lin we find that *iwit/ywit* had fallen together with *juət (iwət)*. This no doubt indicates a strengthening of the labial medial vowel and a retraction of the main vowel. Rhymes *iwən* and *iwın/ywın* are still kept separate but the latter is no longer the same as either *yın* or *iın*. (*iın* had separated from *yın* and fallen together with *jan, in*, see (15) above). The separation of rhymes 眞 and 諄 was not systematically achieved for in the *Kuang-yün* we still find some *ho-k'ou* words still left in rhyme 眞.

¹⁹ On the mistake of identifying the vowel in this rhyme with that in 庚 *jaŋ*, see (4) above. It is certainly correct historically to identify the vowel in 元 with *a* in 桓 *an*. We find words in this rhyme used to transcribe foreign *a* vowels even as late as Hsüan-tsang (seventh century), e.g. 悉混 健 M. *sjit-myin-gian*=Simingān (Mizutani 1958, p. 62, cf. also pp. 52, 60, 64, etc.). The lack of words with dental, palatal or supradental initials in this rhyme, in contrast to rhyme 陽 *jaŋ*, is the result of an early shift of *jan* to *jen* under the palatalizing effect of central initials. The same umlaut later affected *jan* after laryngeal and velar initials, so that in Hui-lin it falls together with *jen* (= *jan*?, see p. 76 above), and Kan-on has *-en*. Huang Ts'ui-po regards words with labial initials as having also fallen together with similar words in *jen* in Hui-lin, but this is doubtful, since Kan-on reads them as *-an* and they underwent dentilabialization in contrast to *pien*, etc. (Huang 1931, 6.152). Most modern dialects reflect the post-*Ch'ieh-yün* fronting of this rhyme after laryngeals and velars but Fu-chou preserves a back vowel, as does Go-on: 健 M. *kjan*, F. *kiong*, Go. *kon*, 元 M. *njwan*, F. *nguon*, Go. *gan* (= *guan*). Since early Japanese had two *o* phonemes—*o¹* being probably a rounded open back vowel, *o²* a rounded central vowel (= *ö*)—the Go-on readings in *on* are ambiguous. Wenck III, 1957, p. 266, argues on rather slender grounds in favour of *o¹* which would point to a central vowel like Karlgren's *v* in this rhyme, but the use of 袁遠 M. *hıwan*, 怨 M. *'ıwan*, 越 M. *hıwat* for Manyōgana *wo, woni, woto, wochi, wotsu* (Wenck II, 1954, p. 311) clearly points to *o¹*, since *o* (= *o²*) and *wo* (= *o¹*) were complementary to one another (Wenck II, 1954, p. 314). It is quite possible that the back vowel in *jan* (probably originally long *ā*, see below) had some degree of rounding which led to its being represented by Japanese *o¹*. We similarly find 方 M. *pijan* used for Manyōgana *ho* (Wenck II, 1954, p. 264).

The one piece of evidence that definitely favours Karlgren's reconstruction of a low central vowel *v* is the placing of rhyme 元 in the *Ch'ieh-yün*, where it is not associated with 寒 *an*, but with 魂 *uən (wən)* and 痕 *ən*, with which, according to the *Kuang-yün*, it was "i'ung-yung". Moreover the table of rhymes in the *K'an-niu pu-ch'üeh Ch'ieh-yün* notes that certain earlier dictionaries had combined it with 魂. This seems to

represent a transition stage between *jan* and the value *jen* (or *jan*), which is represented by Hui-lin's *fan-ch'ieh* in the ninth century and by Kan-on. Even if this means that it is strictly speaking an archaism in terms of the *Ch'ieh-yün* to write *jan*, no confusion is introduced thereby and it is historically more satisfactory.

²⁰ *jen/yen*=K. *jän*. See (13).

²¹ *en*=K. *ien*.

²² The appearance in the *Kuang-yün*, as opposed to the *Ch'ieh-yün*, of a special *ho-k'ou* rhyme 戈 *wa*, separate from *a*, is probably due to a rounding of *a* to *ɔ* which led to its designation as *ho-k'ou* (see (1) above). The same reason may plausibly be assigned for the separation of rhyme *wan* from *an*. It is interesting to note that words in *ja* are placed under *wa*, not *a*, in the *Kuang-yün*. This seems to prove that there was a recognizable difference in the head vowels and that the separation of the rhymes was not simply a matter of the medial *-w-*.

²³ *je/ye*=K. *-ie*. My transcription agrees with that of Li Jung. Karlgren's transcription violates his own principles since it puts "vocalic" *i* in Division III. The post-*Ch'ieh-yün* falling together of this rhyme with rhymes *ji/yi, jə* and *jəi* into a single rhyme *i* does not require us to postulate a head vowel *i* in the *Ch'ieh-yün*.

²⁴ *ji/yi*=K. *-i*. It is necessary to indicate the medial vowels *i/y* in transcription to take account of the Division III/Division IV contrast in this rhyme.

²⁵ *jəi*=K. *jəi*. This modification was proposed by Chao Yuanren 1940.

²⁶ *jə*=K. *i*. Karlgren does not mark any distinction between this rhyme and rhyme *ji/yi*. I follow Li Jung 1952. The central head vowel *ə* is indicated by the Manyōgana use of this rhyme to represent Japanese *o²* (= *ö*) or *i²* (= *ĩ*?) a practice which is preserved in the customary Sino-Japanese reading of 己 M. *kjə* as *ko* (see Wenck III, pp. 154-6, 159). Li Jung's *-iə* is based on a theoretical parallel with rhyme *ye* (he writes *-ie*). In the latter the velar (or laryngeal) final of Old Chinese has been lost without trace after the yodized (long) vowel. Cf. also rhyme 魚 *jo*.

²⁷ *ae* and *ai'* both=Karlgren's *-ai* (he does not distinguish between these two rhymes); *əi*=K. *äi*. Li Jung writes: 佳 *ä*, 皆 *äi*, 夬 *ai*. The distinction between *əi* and *ai'*, corresponds to that between *aən* and *an*, or *aəŋ* and *aŋ*; i.e. rhymes with *aə* are derived from Old Chinese vowels *ə* < *i* and *e*, rhymes with *a* from Old Chinese *a* (see pp. 75, 76 above). Here we also have a third rhyme 佳, however. It is the Division II rhyme derived from Old Chinese *e* where an original laryngeal final has been lost. Rhyme 皆 *əi*, on the other hand, comes from both Old Chinese *ə* < *i* and Old Chinese *e* where an original dental final has been lost, and also from Old Chinese *ə* < *i* where an original laryngeal has been lost. (In closed syllables Old Chinese *i* and *e* fall together in Division II giving *aəŋ, aən, aəm*.)

The reconstruction of rhyme 皆 as $a\ddot{a}i$ is precisely parallel to that of rhymes $a\ddot{e}ŋ$, $a\ddot{e}n$ discussed above and does not need much separate justification. The kinship of rhymes $\ddot{a}i$ and $a\ddot{a}i$ is proved by the fact that they are both represented by ai in Sino-Korean, in contrast to rhymes ai^{\backslash} and ai^{\wedge} which are normally represented by ai (the difference however is qualitative, not quantitative as Karlgren supposed, see Martin 1953). On the other hand, while $\ddot{a}i$ fell together with ai^{\backslash} in the ninth century *fan-ch'ieh* spellings of Hui-lin, the two Division II rhymes ai^{\backslash} and $a\ddot{a}i$ also fell together separately. This is precisely parallel to the falling together of $\ddot{a}m$ and am on the one hand and $a\ddot{e}m$ and am (also $a\ddot{e}n$ and an) on the other.

As to rhyme 佳, although it ultimately fell together with ai^{\backslash} and $a\ddot{a}i$ in most cases, there are a number of grounds for thinking that it was originally rather close to rhymes je and a and was probably not an $-i$ diphthong. In poetic rhymes 佳 and 支 je/ye form a single group through most of the Nanpei ch'ao period (Wang Li 1936). Double readings such as 駟, 蝸, 媧, all read both M. *kwa* and M. *kwaē*, 畫, 華, *hwa*, *hwae*, show that rhymes 佳 and 麻 were rather close. Rhyme ae often has reflexes in Modern Chinese that properly belong to a , e.g. 佳 M. *kae*, Pek. chia (like 加 M. *ka*) in contrast to 街 M. *kae*, Pek. chieh. Go-on has regularly $-e$ in rhyme 佳 with the value e^1 as seen in the Manyōgana use of 賈 M. *mae* for me^1 . This is also the most frequent Go-on equivalent of rhyme 麻 a . Rhyme 麻 also has Go-on readings in $-a$ and $-ya$ and is used for Manyōgana a , but rhyme 佳 also shows traces of this (Wenck III, 1957, pp. 138-42 and 205-7). In contrast rhyme 皆 is normally read $-ai$ in Go-on, like rhymes $\ddot{a}i$ and ai^{\backslash} . Rhyme ai^{\backslash} , which is comparatively rare, has standard Go-on $-ai$ or $-e$, but early readings mostly indicate $-ai$.

From this we may conclude that a value between a and e , or combining a and e would account well for rhyme 佳. If however we follow Li Jung and postulate an intermediate vowel \ddot{a} , it is difficult to understand the subsequent development, that is, its falling together with the $-i$ diphthongs ai^{\backslash} and $a\ddot{a}i$. If we suppose a diphthong ae , the subsequent development is easily understood. Such a diphthong would have been an exceptional element in the phonemic structure and therefore unstable. It would have tended to develop into the normal type of rising diphthong in $-i$, or else, as sporadically happened, to lose its final element and become a .

The assumed disappearance of final laryngals without vocalizing to $-i$ after (a)e may be compared to what happened in rhyme 支 ye . It was this analogy which led Li Jung to postulate \ddot{a} for rhyme 佳 in contrast to $\ddot{a}i$ for rhyme 皆.

²⁸ jai^{\backslash} = K. $j\ddot{a}i$. See (1⁹).

²⁹ $jei^{\backslash}/yei^{\backslash}$ = K. $j\ddot{a}i$. See (1³).

³⁰ ei = K. iei .

³¹ $j\ddot{o}$ = K. $j\ddot{w}o$; ou = K. uo ; jou = K. ju . On the suppression of medial w/u before o , see (1). Karlgren's transcription is inconsistent with the clear

evidence that 模 and 虞 are corresponding Division I and Division III rhymes, while 魚 stands by itself. Li Jung deduced from the evidence of transcriptions of Sanskrit that up until the beginning of T'ang the principal vowel in rhymes 模 and 虞 was o and accordingly wrote o and io . If however we make these rhymes instead diphthongs ou , jou , we have an exact parallel to $oŋ$, $jōŋ$ assuming the vocalization of lost laryngal finals after back vowels to $-u$ as in ou , au , etc. This allows us to regard 魚 as $j\ddot{o}$, with a pure open o , and it is not necessary to do as Li Jung does and set up a new phoneme \ddot{a} found only in this rhyme. The historical difference between $j\ddot{o}$ and jou is that the one comes from Old Chinese $*\ddot{a}h$ (=K. $*iag$, $*i\ddot{o}$) while the other comes principally from Old Chinese $*\ddot{o}h$ (=K. $*ju$, $*j\ddot{u}g$). We may compare the disappearance of the laryngal final without vocalization after the original long unrounded vowel to the development of rhyme ye < $*\ddot{e}h$ (=K. $*j\ddot{e}g$).

For the Sino-Japanese values of these rhymes see Wenck III, p. 170 ff. The hypothesis of a diphthong ou in rhyme would seem to account better for the variation between $-o$ and $-u$ in Go-on and Manyōgana in this rhyme than the arguments discussed by Wenck. Since Karlgren's splitting off of an $-o$ class from the $*\ddot{a}h$ (=K. $*ag$) class in Old Chinese is baseless, Wenck's arguments based on it are also baseless. I am not convinced by Wenck's rejection of Ōno's explanation for the use of wo in Kan'on to represent 烏 M. \ddot{ou} (=K. $\ddot{u}o$). On Ōno's showing the real opposition between the sounds represented in kana as wo and o was originally between the back o^1 and the back o^2 and the Japanese might well have preferred to write wo (= o^1) for Chinese \ddot{ou} rather than o (= $o^2 = \ddot{o}$). The representation of our jou in Go-on is parallel to that of $jōŋ$.

As far as our $j\ddot{o}$ is concerned, the Japanese value o^2 (= \ddot{o}) is quite satisfactory. During the T'ang period this rhyme became more fronted, so that in Tibetan and Brahmi transcriptions it often appears as $-i$. This is a similar umlaut to that which made $j\ddot{e}$ change to i , but it was less extensive.

³² u = K. \ddot{u} ; $j\ddot{u}$ = K. $j\ddot{u}$; $y\ddot{u}$ = K. $j\ddot{e}u$ (Karlgren 1957). My transcription follows Li Jung except that I write $y\ddot{u}$ instead of his $-ju$ to indicate that there was a difference in head vowel between $j\ddot{u}$ and $y\ddot{u}$ and not merely in the medials.

Li Jung's emendation of $j\ddot{u}$ to iu (=my $j\ddot{u}$) was based on transcriptions of Sanskrit in pre-T'ang and early T'ang from which he concluded that it was only during T'ang that u and $j\ddot{u}$ became diphthongized to \ddot{u} , $j\ddot{u}$. This emendation has the further theoretical advantage that it makes an exact parallel with the corresponding $-ŋ$ and $-k$ rhymes. M. $uŋ$ < $*oŋ$ (=K. $*ung$); M. u < $*u\ddot{h}$ (=K. $*ug$, $*u$). M. $j\ddot{u}ŋ$ < $*\ddot{u}ŋ$ (=K. $jōŋ$) M. $j\ddot{u}$ < $*\ddot{u}h$ (=K. $*jōg$). An explanation of rhyme $y\ddot{u}$ will be given below.

³³ $j\ddot{e}u/y\ddot{e}u$ = K. $j\ddot{a}u$. See (1³).

³⁴ eu = K. ieu .

THE INITIALS OF OLD CHINESE

Initial g and ĥ in Old Chinese

In Middle Chinese *g* occurs only before medial *i/y*. Karlgren noted this, and also that his γ (=M. \hat{h}) never occurred in such a context. He further noted that there were many contacts in phonetic series between his γ and velar stops, including double readings with *k-/γ-* or *k'-/γ-* which appeared to be examples of word derivation through voiceless/voiced contrast in the initial. He therefore postulated the development: $g' > \gamma$, $g'i > g'i$. This left unaccounted for his initial $j\dot{i}$ (=M. $\hat{h}i$) which also shows some contacts with velars. On the basis of a theory of the existence of unaspirated voiced stops in Old Chinese, complementary to the aspirated voiced stops, he reconstructed $g\dot{i} > j\dot{i}$. He was unable to provide for initial *g* occurring otherwise than before medial *i* (and also before medial *l*, see p. 122 below), but he suggested that it might have fallen together with initial η (Karlgren 1954, pp. 275-6).

As we have seen, \hat{h} and $\hat{h}i$ are parts of the same phoneme in early Middle Chinese. The apparent complementarity between \hat{h} and $g\dot{i}$ therefore ceases to exist. Nevertheless the evidence that Middle Chinese \hat{h} is at least sometimes closely related in origin to the velar stops is quite overwhelming. A solution which simply derived all Middle Chinese \hat{h} from Old Chinese \hat{h} would be quite unacceptable. The answer must be as suggested by Li Fang-kuei, that Middle Chinese \hat{h} had two origins, coming partly from Old Chinese \hat{h} and partly from Old Chinese *g* when not followed by *yod* (Bodman 1954, pp. 24-5).

We can find traces of this distinction in Go-on. Thus:

- 和 M. *hwa*, G. *wa*: 禍 M. *hwa'*, G. *ga* (spelt *gu-wa*)
 畫 M. *hwa'e*, G. *we*: 誣 M. *hwa'e*, G. *ge*
 會 M. *hwai*, G. *we*: 檜 M. *hwai*, G. *ge*
 惠 M. *hwei*, G. *we*: 蠅 M. *hwei*, G. *ge*
 鞋 M. *hae*, G. *e* (also *ge*): 解 M. *hae'*, G. *ge*
 獲 M. *hwak*, G. *waku*: 獲 M. *hwak*, G. *gaku* (spelt *gu-wa-ku*)
 獲 M. *hwaek*, G. *waku*: 講 M. *hwaek*, G. *gaku* (spelt *gu-wa-ku*)
 虹 M. *huŋ*, G. *u*: 纒 M. *huŋ*, G. *gu*

Almost all these examples are in *ho-k'ou*. The only exception is M. *hae*, G. *e*, which has a *ho-k'ou* word 圭 M. *kwei* as phonetic and is probably a case of the loss of *w* before *e* (see p. 97 below). The rule would seem to be that Go-on makes a distinction between $\hat{h}w < \hat{h}w$, which it represents by *w*, and $\hat{h}w < gw$, which it represents by *g*, and that it extended this practice to $\hat{h}u-$ as well. Otherwise we find *g* for \hat{h} of whatever origin. Unfortunately the rule is not completely reliable, for standard Go-on seems to have sometimes extended *g* to cases of Old Chinese $\hat{h}w$. Thus the standard Go-on for 桓 M. *hwan* is *gan* (spelt *gu-wan*) though in both

cases there is other evidence which makes it quite clear that the Old Chinese initial must have been $\hat{h}w$. The *hsieh-sheng* connections of both are with laryngals rather than velars (see *Grammata Serica Recensa*, nos. 163, 164). The Manyōgana use of 丸 for *wani* (Wenck, II, 1954, p. 305) and the non-standard Go-on readings *won* for both (Wenck III, 1957, p. 250) indicate $\hat{h}w$, as does the use of 桓 for Sanskrit *-vān-* in 釋提桓因 M. *śjek-dei-hwan-yin* = Śak(ro)devān(am) In(dra) (T.224, ca. A.D. 180).

Li Fang-kuei noted the fact that modern colloquial Min dialects appear to preserve a distinction between two types of reflex of Middle Chinese \hat{h} . Thus in Fu-chou dialect for example we find: 湖 M. *hou*, F. *u*, 丸 M. *hwan*, F. *uŋ*, 畫 M. *hwa'e*, *hwa'ek*, F. *ua*, *uah*, 鞋 M. *hae*, F. *ä*; but 糊 M. *hou*, F. *ku*, 汗 M. *han*, F. *kang*, 猴 M. *hu'*, F. *kau*. Many other examples could be supplied not only from Fu-chou but also from other Min dialects such as Amoy and Swatow. Unfortunately the evidence is not unambiguous for we have two colloquial readings in Fu-chou for 下 M. *ha'*, F. *a* and *kia*; for 行 M. *han* we have the colloquial Fu-chou reading *kiang* but for the same character read M. *han* there is the reading *ong*. The fact that in both these words we have Division II (a) vowels, pointing back to cluster initials (see below) may be of significance. It is clear however that until some explanation can be found for such cases, we must look on the Min evidence for distinguishing between Old Chinese *g* and \hat{h} as rather uncertain.

In spite of the fact that Middle Chinese \hat{h} (=K. γ) shows a large number of contacts with *k* in the *Shih-ming*, Bodman came to the somewhat surprising conclusion that it was already a spirant in the second century A.D. (Bodman 1954, p. 25). The evidence of Tai forms of the twelfth "earthly branch" 亥 M. *hai'* < **gə* < **gi* indicates a stop rather than a fricative at the time of borrowing. The date is unknown but is unlikely to have been much earlier, if at all, than the *Shih-ming*. As we have seen, Go-on still preserved the distinction between *g* and \hat{h} in *ho-k'ou*. In early Buddhist transcriptions we find M. $\hat{h} < g$ used for Sanskrit *g*, thus: 恆 M. *həŋ* = Gangā, 阿含 M. *a-həm* = āgama (contrast the later transcriptions 阿伽 M. *giəŋ-giə*, 阿伽囉 M. *a-giə-ma*). At the same early period we find M. $\hat{h}w < *h̄w$ regularly used for Sanskrit *v*: 和 M. *hwa* for *-va-*, 越 M. *h̄wat* < **hwāt* for *-vat-*, *-vad-*, 會 M. *hwai'* < **hwās* for *-vās-*, etc. We also find \hat{h} used for Sanskrit (voiced) *h*, as in 摩睺勒 M. *ma-hu-lək* = Mahoraga (T.224, ca. A.D. 180, see also Mizutani 1958 for further examples). A most interesting example is the use of 何 M. *ha* to represent the voiced aspiration of Sanskrit letters in a text dating from A.D. 286 (T.222, p. 195, see Li Jung 1952, table opposite p. 164), thus 披何 M. *phje-ha* = *bha*, 迦何 M. *kja-ha* = *gha*. More commonly Sanskrit *h* is represented by Chinese unvoiced *h*, as in 摩訶 M. *ma-ha* = *mahā*

probably because the Indian phoneme, though voiced, was a stronger aspiration than the Chinese.

Hsieh-sheng connections alone sometimes establish a high degree of probability as to whether Middle Chinese *h* comes from Old Chinese *h* or *g* but this is by no means always the case since many series contain both velars and laryngals. The evidence of Min dialects, if it is to be relied upon, would also indicate that the same phonetic could be used for both *h* and *g*. In the absence of external evidence of some kind therefore, uncertainty must remain in individual cases as to the correct Old Chinese reconstruction.

The transcription value of initial glottal stop

The glottal stop in Old Chinese was not a mere feature of vocalic ingress, like that of German, but a consonantal phoneme fully integrated into the series of laryngeal initials. That it was recognized as being akin to the velars is shown by its alternation with velar stops in phonetic series, e.g.: 阿 M. 'a, 可 M. kha', 哥 M. ka, etc.; 謁 M. 'jat, 句 M. kat, kai'. This being so, it is not surprising that in addition to its normal use to represent foreign vocalic initials, we find it representing foreign velars, or rather, in all probability back-velars or uvulars. (Similar evidence for its use in final position will be given in the continuation of this article.)

The name of a city state east of Khotan appears in the *Han-shu* as 扞彌 M. 'jou-mye (or 'ou-mye) < *wāh-mē, but in the *Hou Han-shu* as 拘彌 M. kjiou-mye < *kōh-mē. Though the vowel of the first syllable occasions some difficulty, it is probably the same as the place known as Khema in the Kharoṣṭhī documents from Lou-lan, where it is closely associated with Khotan (Burrow 1937, p. 86), and also as the 坎 M. khəm City of T'ang and the 紺 M. kəm Prefecture of the tenth century, both of which were in the neighbourhood of Khotan (Hamilton 1958, pp. 117-18). If we suppose that the original was something like *qama or *qwama, it could, I think, account for both Han dynasty forms *w- and *k- (with rounding of the vowel instead of -w-) as alternative ways of expressing a foreign uvular. The Kharoṣṭhī *kh-* in Khema may likewise not indicate aspiration but be an attempt to express the throaty quality of an uvular. There is unfortunately a difficulty about the reading since we sometimes find the graphically very similar 扞 M. han' < *ganh instead of 扞. In Sung Yün (early sixth century) we even find 捍慶 M. han'-ma (*Lo-yang ch'ieh-law chi chiao-chu*, p. 265). Nevertheless there is I think, good reason for retaining the reading of the *Han-shu*. Yen Shih-ku glosses the character with 烏 M. 'ou (implying Old Chinese *wāh) which clearly shows that his text had 扞. (The only difference implied by this gloss as compared to the reading 'jou as found in the *Kuang-yün* is in the length of the vowel in Old Chinese.) The same character appears in a number of other transcriptions of Former Han date from the same region, similarly guaranteed by glosses. This is not

absolute proof, since the same possibility of graphic corruption existed in all cases and the commentators could have based their readings on corrupt texts, but it does give some presumption in favour of 扞. Its use in transcriptions was presumably to provide a counterpart with glottal stop initial to 于 M. hjiou which is rather common in Han transcriptions.

Though 扞 M. han' might superficially seem to provide an easier alternation with 拘, since it probably began with a velar stop in the Han period, there are strong reasons against it: (1) the initial is voiced, unlike the later Chinese forms, (2) the final -n ought not to be simply disregarded, (3) it has the departing tone—common transcription words in the Han period are predominantly in the level tone and words in other tones were only used for special purposes.

We find the same character in 扞泥 M. 'jou-nei (or 'ou-) < *wāh-ne(δ), the capital of Shan-shan (*Han-shu* 96A). As K. Enoki has recently pointed out, this must be equivalent to the *kuhani* or *khvani* found in the Kharoṣṭhī documents from Lou-lan (Enoki 1961, Burrow 1937, p. 84). It is unnecessary, however, as Enoki does, to adopt the reading 扞 in order to give a satisfactory phonetic equivalence. The reading M. 'ou is given not only by Yen Shih-ku but also by an anonymous commentator quoted in *T'ai-p'ing yü-lan* 792.5a. Moreover the variant 驪泥 M. hwan-nei (Pekingese *huan*, not *kan*) quoted by Enoki from *Hou Han-chi* 15, seems closer to *wāh- than to *ganh-, as an attempt to render the hypothetical original behind *khvani* or *kuhani*.

The possibility of a relationship between Chinese M. 'juat-kjim "saffron" and Persian *kurkum*, suggested by Hirth but rejected by Laufer (Laufer 1919, p. 322) must be re-examined in the light of the possibility of initial glottal stop having a consonantal value in transcription, but the question is too complex to be gone into here.

Finally we have the title given to the consort of the Hsiung-nu rulers: 闕氏 M. 'at-cje (or 'jat-) < *āt-tēh (on the value of the second character, see p. 106 below). As I shall show, there is good reason to think that a number of Hsiung-nu titles later passed to the other nomadic empires of the steppe including the Turks and this word may well be the ancestral form of Turkish *qatun/xatun*. This will be discussed further in the Appendix.

In at least one instance we apparently have the reverse situation to that which has just been discussed, namely Chinese *k-* appearing, instead of a glottal stop, for a foreign vocalic opening. This is in the standard Han dynasty name for the River Oxus: 焉 M. kjiwe. This is first found in *Shih-chi* 123 in the account of Chang Ch'ien's journey to the west. M. kjiwe should go back to Old Chinese *kwāδ. The final dental was already disappearing after long *ā* by the end of the second century B.C. and we may conjecture

a form *kwā for the value of this character at that period. If instead of 嬌 we had simply 爲 M. *hīwe* < *hwā this would provide a good equivalent for the first syllable of Iranian Wahu, Greek Ὠχος (see Marquart 1938, p. 3 ff.). We may conjecturally suppose that the intended value of the transcription was *wā. It should be noted that the initial velar stop in 嬌 is exceptional in its phonetic series which otherwise consists mainly of labio-laryngals and gw- (see also p. 97 below). As a Chinese word it occurs only as a proper name, the name of a river in Ho-pei, and it is conceivable therefore that its Middle Chinese pronunciation represents a non-standard dialect form in which the glottal stop had become a velar. Another word in the series 嬌 has two readings, M. *kīwe*' and M. *'iwe*, again possibly the result of dialectal variants of the same word. Other double readings of this kind with *·* and *k* may be found.

Marquart's conjecture that 嬌 M. *kīwe* could represent the second syllable of Wahu must in any case be rejected. It is possible that the following word 水 M. *šīwi*' performed a phonetic function as well as meaning "river". Middle Chinese *šīwi*' should go back to *θwšδ < *θūδ and the initial would have been pronounced *h in the standard dialect of Western Han (see below for a discussion of the transcriptions 身毒 M. *šjin-dok*, 天竺 M. *then-cjuk* = Hinduka, India).

We occasionally find the Chinese initial glottal stop in the middle of a word. In a case like 比伊潘羅 M. *byi'-yi-phan-la* = Skt. *bṛhatphala* (T.224, ca. 180 A.D.) it may simply indicate the hiatus created by the loss of medial *h* in the underlying Prakrit form. We find it however in two transcriptions of the end of the second century B.C.: (1) 大益 M. *dai'-yek* (or *thai'*, or *da'*), the name of a western country which sent an embassy along with that of An-hsi (Parthia) in ca. 110 B.C. (*Shih-chi* 123, 0268.2) which must represent an adjectival form in *-k* based on the name Daha-, Δάα, Δάσα, etc., an Iranian people living in what was later known as Dihistan on the south-east coast of the Caspian (Bailey 1959, p. 109, Minorsky 1937, p. 193—the identification has previously been proposed by Shiratori 1928, p. 145); (2) 大宛 M. *dai'-iwan* (or *thai'*, or *da'*) the first western country which Chang Ch'ien visited (*Shih-chi* 123) = Greek Τόχαροι, Τόχοροι, Latin Tochari, Sanskrit Tukhara, Tuṣara, etc., based on an original which Henning reconstructed as *Taxwār (1938)—full historical justification for this new identification will be given elsewhere (see also the second part of this article).

In both these examples the medial glottal stop appears to represent a sound which, to western ears, was an aspiration or velar fricative. The analogy with the use of initial glottal stop which we have found in the Lou-lan region can hardly be an accident. It is probable that in both cases we

have to do with a Tokharian phoneme—the name of Dihistan is, of course, Iranian, but it probably came to the Chinese through a Tokharian intermediary at this period.

The transcription value of h in Western Han

The use of Chinese *h/hw* to represent Sanskrit *h* and *v* has already been touched upon. In a number of transcriptions of the Western Han it appears to be used to represent a foreign voiced back-velar, or perhaps uvular, consonant, that is as a voiced counterpart to initial glottal stop. An interesting example of this is in the name of Khotan 于闐 M. *hjou-den*. This transcription, which first occurs in *Shih-chi* in the account of Chang Ch'ien's journey, remained the standard Chinese name from that time onward. The earliest non-Chinese form of the word is Khotana, found in the Kharoṣṭhi documents at Lou-lan (ca. A.D. 300). Later we have the Brahmi spellings Hvatāna, Hvaṃna, representing the native Khotanese pronunciation. Though these spellings use the Indian *h* (originally a voiced consonant), they ought, Professor Bailey tells me, to represent a voiceless aspiration in Khotanese. This is also implied in Hsüan-tsang's spelling 渾那 M. *hwan-na* said to represent the local pronunciation in the seventh century A.D. Nevertheless there are indications pointing to an original voiced initial. The sanscritized form *Gostana, known through Hsüan-tsang's 瞿薩旦那 M. *giou-sat-tan-na* and from Gaustamā in a Khotanese document, is no doubt etymologizing (meaning "earth-teat") but it must have had some basis in a native original. (Besides these forms cited by Pelliot, we have Gaustana-deśa in a Sanskrit text from Khotan—see Bailey 1938 p. 541). The Tibetan forms with voiced initial Hu-ten, Hu-then or Hu-den, might be based on Middle Chinese M. *hjou-den* as Pelliot suggests, in which case they do not give independent evidence about the original form of the word. I fear the same may be true of the Altaic forms which Pelliot discusses at length and in any case I cannot agree that the Chinese are likely to have first heard the name through an Altaic intermediary. I agree however in general terms with his conclusion that the native original must have been something like *Godan. The initial was probably not a stop but a spirant. (See Pelliot 1958, "Cotan".)

The same character appears in a number of Hsiung-nu words. Two of these will be discussed in the Appendix, 單于 M. *jiēn-hjou* < *dān-hwāh and 護于 M. *hou'-hjou* < *hwax-hwāh, in which it is proposed to see the ancestral forms of Turkish *tarqan/tarxan* and *qayan/xayan*. Though we have no direct knowledge of Hsiung-nu phonology it may be conjectured that the underlying forms were something like *dārṣā or dārṣā and *ṣayā or *ṣayā.

It has been suggested on the basis of Tai loan words that Chinese, like Tai, may have originally had a separate series of uvular consonants:

q, qh, G, in addition to the velars (Haudricourt 1954). There seems to be no basis for distinguishing such a series within Chinese and if I am right in thinking that the glottal stop was sometimes used as a substitute for foreign uvulars in the Han period, this would seem to be positive evidence against there having been uvulars in Chinese.

The velar nasals ŋ, ŋh

The initial ŋ of Middle Chinese may be projected back unchanged into the OC. period. In addition we need to reconstruct for Old Chinese a contrasting aspirated phoneme ŋh. This is an extension of the proposal made by Tung T'ung-ho to reconstruct voiceless *m̥* to account for alternation between *m* and *h* (K. *x-*) in *hsieh-sheng* series which Karlgren explained in terms of the cluster *xm-*. Aspirated nasals and liquids are typical of Tai languages—also Miao-Yao (Downer 1961). Even if we accept the prevailing opinion that Tai should no longer be regarded as cognate to Chinese, it is clear that there is much in common between the phonological systems of the two groups (including the tonal systems). This is not in itself evidence for the existence of aspirated nasal in Chinese but it will encourage us to adopt a solution on these lines if it suggests itself on other grounds.

The postulate of ŋh will account for the frequent cases where ŋ and h alternate in phonetic series:

義 MC. ŋje\ : 羲 MC. hje

訛 MC. ŋwa : 化 MC. hwa\

譌 ŋwa, 僞 MC. ŋiwe : 搆 MC. hiwe (but note also 爲 hiwe, giving the possibility of original h-)

午 MC. ŋou\ : 許 MC. hou\, hjo\

肅 MC. ŋjan\ : 獻 MC. hjan\

疑 M. ŋjə : 儼 M. həi\ (also read ŋjə\)

堯 M. ŋeu : 曉 M. heu

虐 M. ŋjak : 譴 M. hjak

頊 M. ŋjok : M. hjok

覓 M. ŋek : 闕 M. hek

艾 M. ŋai\, ŋjai\ : 餒 M. hai\

佗 M. ŋjət : hjət

喙 M. ŋjim : 厥 hjim

S. Yakhontov has recently proposed a different solution for this phenomenon (Yakhontov 1960). He regards a prefixed *s-* as responsible for the development of *h-* both from original *m-* and from *ŋ-*: *ŋj-* > *h-*, *sm-* > *h-*. The existence of clusters of the type *ŋj-* is proved by the Tai borrowings of the seventh of the twelve branches 午 MC. ŋou (Li Fang-kuei 1945). As Li Fang-kuei points out the Thai tones imply a voiced initial cluster *zŋ-* rather than *ŋj-*. One might therefore suppose a development: *zŋ-* > *ŋ-*, *ŋj-* > *h-*—with a contrast between *s-* and *z-* rather than between *ŋ-* and

ŋh-. There is however considerable doubt as to the existence in Old Chinese of *z* as an independent phoneme (see p. 126 below) and it is better to make the contrast depend phonemically on the second part of the cluster: *ŋj* (pronounced *zŋ*): *ŋjh*.

Initial ŋ in transcriptions

In transcriptions of the Middle T'ang onwards we find ŋ- used for foreign *g-*. This is to be explained by the fact that in the standard dialect of that time it had, in common with the other nasals, developed a homorganic closure, becoming *ŋg-*. In earlier periods it appears rather rarely. Examples where the foreign original can be identified are even less common. There is however some evidence that it was used in the Han period to represent foreign initial *y-*. At that time the Middle Chinese initial *y-* had not yet developed out of the palatalization of *ɬ-* (see p. 114 ff. below). Moreover the medial semivowel *i/y*, so ubiquitous in MC., was only beginning to appear through the breaking of the original long vowels, otherwise one might have expected **i-* or **hi-* to be used for foreign *y-*. In the circumstances the velar nasal continuant ŋ seems to have been the closest that could be got to a foreign palatal continuant.

Among the few available examples, one has already been noted by Pelliot: 業波羅 MC. ŋjap-pa-la = *Yapala, for Yavana. (Pelliot 1933, p. 95, 1934, p. 26.) This occurs in Sung Yün's account of his western journey in the early sixth century as the old name for Gandhāra and is repeated in the *Pei-shih* without its final syllable. Pelliot cites a number of references in Buddhist scriptures to the country of Yeh-po or Yeh-p'o, spelt 葉波 (婆) M. *yep-pa, -ba*. One of them is the *San-mi-ti pu lun* (T.1649, vol. XXXII, p. 470a). In it a variant (not noted by Pelliot) is recorded: 業彼 ŋjap-pje'. This must be an ancient transcription which has been replaced in other texts by the more modern and usual one. It shows that Sung Yün was not making up a new transcription but quoting a name that was known to him from sacred texts. The antiquity of the variant transcription in the *San-mi-ti pu lun* is shown not only by the first character but also by the second, M. *pje'* < *pāḍ, since it indicates a stage at which this character was still appropriate to transcribe an *a* vowel. This work is attributed to an anonymous translator of the Eastern Chin but, even if this is correct, the transcription itself may be older.

Pelliot cited this example apropos of the famous and controversial name Yüeh-chih 月氏 M. *ŋjwat-cje*, pointing out that the initial ŋ- was unlikely to have represented a foreign *g-*, as has generally been assumed, before the mid-T'ang period. Pelliot did not himself make any proposal as to the true equivalent of the name but his argument greatly strengthens the case for one of the many proposals that have been made, namely that of the Ἰάριοι found on the north side of the upper Yaxartes in Ptolemy. The initial

of the second syllable would have been still unpalatalized *t- at the beginning of the Han dynasty when the Yüeh-chih first appear. The labial element in the Chinese transcription remains unexplained. The true initial may have been the *yw-* found in some Tokharian words (= I.P. 4?) which could not have been exactly represented in any other way in Greek. The question as to whether the Ἰάτιοι are the same as the Ἀσιοί or Asiani, as has often been stated, must be left aside for the moment. The equation seems highly probable on historical grounds.

Another place where we may have Chinese *ŋ-* for foreign *y-* is in two early transcriptions that seem to represent some form of the name Yaxartes. The first is the 樂越匿 (or 懸) M. *ŋauk-* (or *lak-*) *h̄iwat-ŋjək* (or *-thək*) land (地) said in *Han-shu* 96A to be the summer territory of the rulers of K'ang-chü, where they had their capital 卑闐 M. *pye-den* (= Bin-kāth, the old name for Tashkend, with Bin < *Bidn through loss of medial *d*?). The first two syllables would point back to Old Chinese **ŋlauk-* (or *h̄lauk-*)*h̄wat*. The final syllable should give either **nišk* < **nlik* or **nhik* (see pp. 120, 121 below), depending on the variant adopted. The second seems the more probable. The aspirated nasal may well have already changed to *th-* at this period and we could then regard the syllable as simply indicating an Iranian adjectival form in *-k*. There is much uncertainty as to the true Iranian original of Yaxartes but spellings such as Ὀρεξάρτης and Araxartes (Herrmann, article "Iaxartes" in Pauly-Wissowa) point to the existence of forms with *-r-* in the first syllable. Marquart wished to reconstruct an original **Rxša-arta* > *Yaxšart* or **Rxarta* (Marquart 1928, p. 16, 1931, p. 35, Minorsky 1937, pp. 210-11). The Chinese **ŋlauk-h̄wāt* shows no sign of a sibilant. In the *Shih-ming* the character 越 M. *h̄iwat* is glossed with 歲 M. *s̄jwei* < **shwāts* (?) (Bodman 1954, p. 103, no. 856) (see p. 131 below), which suggests the possibility of a sibilant: **sh̄wat*. Such a cluster must have been lost by the end of the second century A.D., when we find the character regularly used for Sanskrit *-vat-*, *-vad-*, but it could nevertheless have existed two centuries earlier. On the other hand the *hsieh-sheng* series of 戎 shows only *h̄w* and *hw*. If the Chinese form never had a sibilant, it might point to a form like **Yrxa(r)ta*.

The second transcription is 蜺羅跋禰 M. *ŋei-la-gye-* (also read *khye'*, *khye'*) *tei* appears in the *Shui-ching chu*, ch. 2. The first reference to it, which seems to be taken from the anonymous *Hsi-ho chiu-shih* 西河舊事 says, "The [Yellow] River 河水 and the M. *ŋei-la-gye-tei* River both flow into the Lei-chu 雷蓋 M. *luai-cjo'* Sea (=the Aral Sea)". The [Yellow] River, the course of which has been described in the immediately preceding passage, seems clearly to mean the Oxus. It is called Ho-shui, [Yellow] River, because of the idea that the Yellow River had its source in the Pamirs and flowed in both directions (the eastward branch being first the Tarim, which was thought to go underground from Lop Nor

until it emerged as the Yellow River proper). On the basis of this passage we can very plausibly identify the M. *ŋei-la-gye-tei* with the Yaxartes. The issue is confused by further passages in the *Shui-ching chu* partly quoted from the *Shih-chih hsi-yü chi* which make this river flow from the Central Himalaya to Khotan, north of Gandhara and finally into the Aral Sea. This is obviously fantastic geography however. As Petech remarks, it seems to combine the Khotan-darya and the Amu-darya (Oxus), linking them also somehow with the Ghorband-Panjshir-Kabul system. Petech could make nothing of the name. (Petech 1950, p. 57.) It seems to me highly probable that it represents some form of the name Yaxartes.

The transcription shows a good resemblance, at least as far as its consonantism is concerned, to the earlier **ŋlauk-h̄wāt*. (It should be further noted that the readings of 跋, in which the close medial *-y-* (Division IV) follows a velar stop without causing palatalization, may imply Old Chinese **gdēh* > **gdye* > **gdye* > *gye* (or **khδ-* > **khz-* > **kh-y-*)—see p. 119 below. In this case we should have a representation in the transcription of the Iranian *š*.)

A possible case of initial *ŋh* may be found in 歙侯 M. *h̄jip-* (or *šjēp-*) *h̄u*, a title of nobility among the Wu-sun, Yüeh-chih and K'ang-chü peoples (*Han-shu* 60.0510.1, 94B.0600.1, 96A.0607.2, 96B.06083.4, 70.0536.2). This is no doubt the title *yabgu* later used by the Turks but, like many of their titles, not of Turkish origin. It is found in the form *yavuga-* on coins of Kūjula kadphises, later as *IAPIV* on a coin of an unknown ruler in Afghanistan (Marquart 1901, pp. 204 and 208; H. W. Bailey 1958, p. 136, who, however, proposes an Iranian etymology; Ghirshman 1948, p. 50). Pelliot, who accepted this identification, noted that the initial *h* in Chinese was troublesome (Pelliot 1944, p. 167). If we restore a Han dynasty value **ŋhēāp-gōh*, we can associate it with examples of *ŋ* for foreign *y*. Initial *ŋ* occurs in the same phonetic series in the word 哈 M. *ŋəp*. The reading in *š-* can be explained as a palatalization: **ŋhē-* > **ŋhy-* > **hy-* > *šj-* (see p. 100 below). The vocalism requires to be further discussed but must be left for the present.

The use of an aspirated nasal rather than the ordinary voiced nasal may indicate an initial devoicing in the original language, a phenomenon which might well be expected in the Tokharian speech area. (This will be discussed further apropos of the Wu-sun language in the Appendix to this article.)

Labio-laryngals and labio-velars

Although in Middle Chinese the phoneme *w* must be regarded as part of the system of medial semivowels, its distribution is far from complete. There is no contrast between syllables with and without *-w-* after labial initials and after palatal and dental initials such a contrast exists only in a

restricted number of rhymes. Where one finds *-wa-*, *-wə-* (*-uə*), etc., after dental (including sibilant and affricate) and palatal initials of dental origin in Middle Chinese, it is to be attributed partly to the breaking of back vowels before dental finals: *-un* > *-uən* (*-wən*), *-on* > *-wən*, etc., partly to the loss of labial elements in the initial. It is only after velar and laryngal initials that one finds a systematic contrast between syllables with and without *-w-*. As far as Old Chinese is concerned it is best to regard *-w-* not as a medial semivowel but as a function of the initial, so that we can set up contrasting series of labialized and unlabialized velars and laryngals.

Even after velars and laryngals we do not find *-w-* in front of rounded vowels or with labial finals (including *-u* diphthongs) in Middle Chinese. This accords with the general tendency to make labialization a feature of the syllable as a whole, so that two discrete labial elements are seldom found co-existing in the same syllable. The incompatibility of *w* in the initial and rounded vowels seems to have prevailed already in Old Chinese but there is some reason to think that syllables such as **h̥wam* may have existed and been eliminated by the same dissimilatory process that affected words like 風 M. *pjuŋ* which once had final *-m* (see p. 105 below).

The distribution of *h̥* and *h̥w*

The distribution of initial *h̥* is restricted in one noteworthy respect. Whereas *h̥w* occurs in Middle Chinese before both yodized and unyodized endings, *h̥* occurs only before unyodized endings, except when a labial final or a rounded vowel makes *h̥w* impossible. There are only two exceptions to this rule, in the grammatical particles 矣 M. *h̥jə'* and 焉 M. *h̥jen*. According to the theory outlined below the yodized vowels of Middle Chinese developed out of original long vowels. We can account for the distribution of *h̥/h̥w* if we suppose that before long unrounded vowels *h̥* became spontaneously labialized to *h̥w* in Old Chinese. This is a process which would be easily understandable phonetically, especially if we suppose that the laryngals had uvular allophones. As evidence that this process actually took place we may note the forms of the directional particle: 于 M. *h̥jou* < **h̥wāh̥*, but 於 M. *jo* < **āh̥*, also 乎 M. *hou* < **hah̥* (not **h̥wah̥* because of *hsieh-sheng* relationships with 杼 M. *lou*, 罽 M. *ŋa'*). These words are probably related to 往 M. *h̥jwaŋ'* < **h̥wāŋ* "to go", which in turn seems to be connected with 行 M. *haŋ* "to walk, to act", M. *haŋ* "row".

The persistence of the exceptional forms M. *h̥jə'* and M. *h̥jen* may perhaps be explained by their being grammatical particles. Demiéville has shown that exceptional phonetic development found in grammatical particles in Modern Mandarin can in many cases be accounted for by the persistence of pronunciations closer to older forms than would be allowed for by normal phonetic change, e.g.: 他 M. *thə*, strictly speaking read *t'o* in

Modern Pekingese in its classical meaning of "other" but read *t'a* as the colloquial pronoun "he, she, it"; 你 P. *ni* "you", no doubt a bye-form of the classical 爾 M. *rije* < **nē*, which regularly gives P. *erh*. (See Demiéville 1950). A similar tendency may have inhibited the change *h̥* > *h̥w* in the two cases under discussion. In the case of M. *h̥jen* the existence of the related word written with the same character M. *jan* or *jen* "where" may have been an additional analogical factor preventing the normal phonetic development. The archaic particle 爰 M. *h̥jwan* < **h̥wān* is probably a doublet of M. *h̥jen*, showing the normal development.

The current editions of the *Shuo-wen* do not say that 伊 M. *yi* has 尹 M. *ywin'* as phonetic but Hsü Ch'ieh (tenth century) quoted a "vulgar text" which did (*Shuo-wen chieh-tzu hsi-chuan t'ung-shih* 15). Moreover 伊 M. *yi* appears in the *Shuo-wen* as 伊, being said to have 伊 abbreviated as phonetic. This suggests, even if it does not prove, that 尹 and 伊 were phonetically related. M. *yi* points back to **ēδ*. It will be shown below that M. *ywin'* goes back to **h̥wēn*. We may now further suppose that **h̥wēn* goes back to an earlier **h̥ēn*. Alternation between final *-δ* and *-n* is very common and we see that the two words can very easily belong to the same phonetic series. 卬 M. *šji* is so written, with 尸 as phonetic, in current editions of the *Shuo-wen* but a number of early quotations have 𠂔 instead (*Shuo-wen chieh-tzu ku-lin*, p. 628). It is likely that this is correct, M. *šji* being derived from an earlier **h̥ēδ*—see p. 100 below.

The labialization of *h̥* before long unrounded vowels must have occurred quite early in the Old Chinese period, or even before it. At a much later date there was a tendency, pointed out by Tung T'ung-ho (1948, p. 64) for the loss of *-w-* after velars and laryngals (and also *y* < *hy*) before the close front vowel *e*. This accounts for such double readings as 縣 M. *h̥wen* or *h̥en* (the latter reading, not found in the *Kuang-yün*, is the basis of the current Peking pronunciation *hsien*), 眩 M. *h̥wen*, or *h̥en*, 役 M. *ywek*, P. *i*, 營 M. *yweŋ*, P. *ying*. In other cases a medial *-w-* already lost in Middle Chinese is indicated by *hsieh-sheng* connections: 營 M. *heŋ*, 營 M. *en*, but 莢 M. *h̥weŋ*, 營 M. *yweŋ*, etc.

Labio-laryngals and labio-velars with labials in *hsieh-sheng* series

The postulate of labio-velars and labio-laryngals in Old Chinese with *-w-* as a function of the initial will allow us to take into account certain *hsieh-sheng* connections indicated by the *Shuo-wen* which are normally regarded as too remote. Thus:

爲 M. *h̥jwe* < **h̥wāδ*, said to be phonetic in 皮 M. *bje* < **bāδ*.

冂, 冂 M. *kwəŋ*, *h̥wəŋ'*, said to be phonetic in 冥 M. *meŋ*.

冂 M. *kjwaŋ'*, phonetic in the small seal form of 明 M. *mjaŋ*.

采 M. *baən'*, phonetic in 葬 M. *kjwen'*, which is phonetic in 卷 M. *kjwen'*, etc.

八 M. *paət*, phonetic in 穴 M. *hwet*.

In the following cases a connection is suggested by the graphs, even though it is not indicated by the *Shuo-wen*:

永 M. *hiwaj'*: 脈 M. *maək*, 派 M. *phae'*.

兔 M. *mjen'*: 冤 M. *'jwan* "injustice". (The explanation given in the *Shuo-wen*: "a rabbit under a cover", hence "bent" seems fanciful.)

According to the *Shuo-wen* 函 M. *həm* has the same phonetic as 汎 M. *bjəm*. This could be accounted for if we suppose that M. *həm* originally had an initial *hw* and lost its *-w-* by dissimilation from the final *-m*. Compare also 位 M. *hiwi'* < **hwlips(?)*; 立 M. *liip* < **hliip* < **hwliip(?)*; 泣 M. *khjip* < **khliip* < **khwliip(?)*. (See also p. 105 below for transcription evidence for the change *hw* > *h* before labial finals.)

Palatalization of velars and laryngals—the origin of medial i/y

Most of the palatals of Middle Chinese show close connections with dentals but there is also clear *hsieh-sheng* evidence of connections with velars in not a few cases. Tung T'ung-ho took account of this and included a separate series of palato-velars: *k̄, k̄', ḡ', ḡ', gn, x*—beside Karlgren's *ṭ, ṭ', ḍ', ḍ, ṇ, ś*. This phonetically rather improbable hypothesis of four distinct stop series: *k, k̄, ṭ, t* (besides *·* and *p*)—is unnecessary, for it will be shown below that dental stops were palatalized before medial *-i-* which eliminates the need for Karlgren's Archaic palatal stops. There is good reason to think that velar stops were similarly palatalized under more restricted circumstances.

The key to the explanation of this phenomenon is closely related to the theory of two varieties of medial *i/y* in Middle Chinese. We find that cases of palatalization of velars are abundant in just those rhymes where there is the distinction between Division III and Division IV, *i.e.* where the head vowel is *e* or *i*. For example:

支 M. *cje*: 技 M. *gie'*

只 M. *cje*: 枳 M. *kje, cje*

兒 M. *ije'*: 倪 M. *jei*

旨 M. *cji'*: 耆 M. *gi*

視 M. *jii'*: 狶 M. *nji*

寤 M. *jji'*: 堅 M. *ken*

聲 M. *šjeŋ*: 馨 M. *heŋ*

釗 M. *cjeu, keu*

饒 M. *njeu*: 堯 M. *jeu*

鹹 M. *cjim*: 咸 M. *həm*

薏 M. *chjei'*, *hei'*: 繫 M. *ket, het*

收 M. *šju*: 斗 M. *kyiu*, 叫 M. *keu'*

十 M. *jiiip*, 汁 M. *cjip*: 叶 M. *hep* (note also 針 M. *cjim*, equivalent to 鍼 above)

There are a number of reasons for thinking that the palatal semivowel in its two varieties *i/y* did not exist as a part of the original phonemic structure of the language but was a development between Old Chinese and Middle Chinese. We have noted above the use of *ŋ-* to represent foreign *y-*, showing that Chinese had no better equivalent: contrast the use of *hw-* to represent foreign *w-* or *v-*. Conversely Chinese syllables with M. *'i-* are found representing foreign words with vocalic initials where there is no reason to expect a *y-*, *e.g.*: 焉耆 M. *'jan* (or *'jen*)-*gi*=**Ārgi*, the native name of Karashahr; 奄察 M. *'jem'*-*tshai'* (or *-šai'*)=*Ἀρσοι(?)* (compare the form *Abzoae* found in Pliny and note the alternative transcription 闐蘇 M. *həp-sou* in *Han shu* 70.0534.3); 央匱 M. *'jan-giwi'* (besides 阿魏 M. *'a-njwəi'*)=*Tokharian B. ankwaš* "asafoetida" (Bailey 1946, p. 786); 憂, 優 M. *'ju* used for Sanskrit *u-* both as the name of the letter and as the first syllable in many transcriptions (Li Jung 1952, p. 142). Similarly we find Middle Chinese medial *-i-* disregarded in many transcriptions when it occurs in other positions (see pp. 88-90, 123-5 etc., for examples).

If we wish to regard medial *-i-/y-* as an innovation, we must of course postulate some pre-existing feature of the language that gave rise to it. It has been suggested that in some cases it arose from the loss of medial *-l-* but, as we shall see, medial *-l-* had quite other reflexes. The hypothesis which I now put forward is that Old Chinese originally had a system of long and short vowels which was transformed by the yodizing of the long vowels. This process no doubt did not happen all at once. Indeed the same tendency continued to work in Northern Chinese after the *Ch'ieh-yün* period. Yodization must have begun to occur in the case of words with dental initials before, or concurrently with, their palatalization, which seems to have been going on through the Han period (see pp. 108-9 below). By the end of the second century A.D. we find velars also palatalizing in certain circumstances (see p. 106). By the time of the *Ch'ieh-yün* all the Old Chinese long vowels had been affected (at least in the standard language—some dialects may have been more conservative). In the T'ang period there was a further spontaneous yodization before the vowel *e*, so that rhymes *ei, en, eŋ*, etc., fell together with *yei, yen, yem* (see p. 76). Still later the same thing occurred in Northern Chinese before vowel *a* so that M. *ka* becomes Peking *chia*.

Direct evidence for a length distinction in Old Chinese is not very easy to find. If it still existed in the period of the early Buddhist transcriptions, we might expect it to be reflected in the transcription of Indian long and short vowels. I have not so far been able to find any significant correlation here. The question is complicated and obscured however by the qualitative difference between Indian long and short *a*—the more fronted long *ā* is usually represented by Chinese *ja* or *a*, the short schwa *a* is often represented by Chinese *ə* in the early period—and by the probability that allophonic differences existed in the Chinese vowels, apart from yodization or

length, which would have influenced the choice of transcription equivalents. Moreover palatalization was already well under way by this time, and for this and other reasons certain initials did not exist before certain endings. Transcriptions of earlier periods can hardly provide systematic evidence for the representation of foreign long and short vowels but the distinction which I propose seems consistent with what evidence there is. Thus in the name of Khotan M. *hjou-den* we should expect that the vowel of the first syllable was longer than the second. Though the Brahmi does not write long *ā* in Hvatāna, we should expect this vowel to have been longer than the shwa of the second syllable which ultimately disappeared in the later form Hvaṃna.

Whether or not medial yod developed out of an earlier length distinction, it evidently developed a closer variety before the front vowels *i* and *e* than before other vowels. Velar initials were palatalized by this close *y* but were unaffected by more open *i*. Dental stops, on the other hand, were palatalized by both *i* and *y*.

This will account immediately for cases like: 支 M. *cje* < **kye* < **kēh*; 指 M. *cji*' < **kyi*' < **kēδ*; 兒 M. *ñje* < **ṅēh*; 十 M. *jiip* < **gēp* or **gip* "10" (note Tibeto-Burman cognates such as Mikir *kep*, Chēpāng *gyib-zho*; the alternative spelling 拾 with phonetic 合 M. *həp* also indicates a velar initial (cf. Wang Ching-ju 1931)). It is less immediately obvious how to account for cases where the Old Chinese rhyme group indicates a back vowel. It should however be noted that the rhyme 宵, the yodized reflex of the Old Chinese *auh* (=K. **og*) group is a "divided" rhyme, *jeu/yeu* and that from the *uh* (=K. **og*) group we have, besides rhyme 尤 *ju* (=K. *jəu*) in Division III, rhyme 幽 *yiū* (=K. *jəu*) in Division IV. There are also two unyodized rhymes (besides the Division II rhyme *au* common to both groups) derived partly from each group, namely *eu* and *eu* (=K. *äu*, *ieu*). *Hsieh-sheng* connections show clearly that the palatalized velars belong predominantly with rhymes *eu*, *yeu*, *yiū* rather than with *au*, *jeu*, *ju*. Thus:

釗 M. *cjeu*, *keu*

麤 M. *ñjeu*: 驍 M. *keu*, 翹 M. *gyeu* (contrast 高 M. *kau*, 猷 M. *hjeu*)

收 M. *šju*: 斗 M. *kyiu* (also given a reading M. *kju*), 叫 M. *keu*

臭 M. *chju*: 嗅 M. *khyiu* (but note also 臬 M. *kau*, 糗 M. *khju*)

Karlgren accounted for rhyme *ieu* by means of "vocalic *i*" projected back into the Archaic period. Thus, in his transcription: **og*, **og* > *äu*; **iog*, **iog* > *ieu*. He ignored the distinction between *jeu* and *yeu* and in the first edition of *Grammata Serica* also ignored the distinction between rhymes *ju* and *yiū*. In the revised edition he derives *yiū*, which he writes *jeū*, from **iog*, as opposed to **iog*.

Having eliminated "vocalic *i*" from the Middle Chinese system, we must either reintroduce it into Old Chinese or find some alternative explanation for the radical fronting of *au* and *u* in these rhymes. My proposal is to posit *eau*, *eu*, with corresponding long forms *ēau*, *ēu*.

There is also transcription evidence in favour of reconstructing at least the short forms. We may note the use of 調 M. *deu* in the name of the Yüeh-chih ruler who sent an embassy to China in A.D. 230, who must be the same as the ΒΑΖΟΔΕΟ, ΒΑΖΔΕΟ, Vasudeva, known from coins. The same character is used to represent the Prakrit form of Sanskrit *deva* or *dvipa* in certain Buddhist transcriptions (Lévi 1936, p. 79, Petech 1950, p. 7, Pelliot 1932, pp. 181-4). Alternatively we find 條 M. *deu* in the same sense (Petech 1950, p. 32). This same character occurs much earlier in the name of a far western country mentioned in the *Han-shu*, 條支 M. *deu-cje*. This would go back to **deuh-kēh* and there is good reason to think the *k*-would still not have been palatalized in the Former Han period. Herrmann and Fujita have independently identified the name with the city near present Bushire known to the Greeks as Ταοκή, later Tawwağ. (Herrmann 1938 (1922), Fujita 1923.) Though the voicing of the initial (and probably also its spirant quality at this period) still requires explanation, there are good grounds for thinking this identification is correct. If so, the Chinese *-eu-* is equivalent to the Greek *αο*.

Also in *Han-shu* 96A is mentioned a country 撲撓 M. *phuk-deu* < **phok-ḍeauh* lying north of Wu-i-shan-li (=Alexandria, Arachosia) and east of Chi-pin (=Kashmir). It must be the same as 僕達 M. *puk-dat* < **pok-ḍat* of *Hou Han-shu* 118, a country lying between Kao-fu (Kabul) and Chi-pin which Kujula kadphises conquered after achieving the hegemony of the Yüeh-chih. Both names must represent a Prakrit form of Puśkalāvati, Greek Πουκελαώτις, the present Charsada. The use of M. *d-* (< **ḍ-*) for foreign *-l-* will be discussed and further illustrated below. Here we are concerned rather with the vocalism. We have evidently two alternative attempts to render the Indian *-lavat* (in a Prakrit *-laot-*?). The first renders the diphthong but leaves the final *-t* unrecorded. The second represents the final *-t* at the expense of the diphthong.

The hypothesis of short *eau* and *eu* does not differ very much from Karlgren's *io* and *iō* (apart from the differences in the second elements which are not here under discussion)—except that to suppose a more open initial element in the diphthong, *e* instead of *i*, seems to fit better the transcription values and avoids the difficulty of distinguishing between the effect of *i* and *i*. To propose long diphthongs as well is a new departure. Unfortunately I am not able to quote any evidence from transcriptions in support of it but from a theoretical point of view it seems quite satisfactory, enabling us to account for the divergent development of words which originally rhymed: **auh* > M. *au*, **auh* > M. *jeu* (from an earlier **iau*?), **eauh* > M. *eu*,

*ēāuh > M. *yeu*; *-uh > M. *au*, *ūh > M. *iu*, *euh > M. *eu*, *ēuh > M. *yi*. We also find the *eau*, *ēāu* before -k, thus: 狄 *teuk > M. *tek*, 激 *keuk > M. *kek*, 織 *kēuk > M. *ciak*, also read *keau > M. *keu*. Clear evidence of *euk, after velar initials is lacking but is to be found after dental initials: 滌 M. *dek*, cf. 條 M. *deu* < *deuh. No separate reflex of *ēuk can be distinguished, it probably fell together with ūk giving M. *iuk*, cf. 筮 M. *šjuk* (< *θēuk).

Besides *io*, *iō*, Karlgren reconstructed *ia* before dental finals: *ian*, *iat*, *iad*—to account for cases in which words in M. *en*, *et*, *ei* (=K. *ien*, *iet*, *iei*) developed out of the *a* rhyme classes of the *Shih-ching*. Tung T'ung-ho has shown that by taking into account also Division II rhymes and the distinction between Division III and Division IV in rhymes *jen/yeu*, *jet/yet*, *jei/yei*, one can in fact distinguish between two types of *hsieh-sheng* series: (a) those which have rhymes *en*, *aen*, *yen* (*jen* after dental and palatal initials, which do not distinguish *jen/yeu*), (b) those which have rhymes *an*, *an*, *ian*, *jen*. There is only a very limited interchange between the two types. Similar distinctions can be made in the corresponding -t and -i rhyme classes. A possible solution to this, analogous to that proposed for the back vowels, is to reconstruct diphthongs *ea*, *ēā*; thus: *an* > *an* but *ean* > *en*; *ān* > *ian* (after laryngal, velar and labial initials) or *jen* but *eān* > *yen*.

There are difficulties with this solution. One is that there are several cases of words in *en* or *et* (and the corresponding yodized rhymes) which fall in group (a) which have variants in *en* or *ek*, or where the same phonetic is used for both words in *en* and *ek* and *et* (or the corresponding yodized rhymes). For example: 蔑 M. *met* (K. *miet* < *miat), 幪 M. *mek* "cover", 𠄎 M. *men* "hidden": 冥 M. *mej*, *mej* "dark, hidden", M. *mek* "cover", cf. 瞑 M. *mej*, *men* "shut the eyes"; 𦉳 M. *giweŋ*, *hwan*, cf. 緝 M. *hwen*, 𦉳 M. *hywen*; 干 M. *ken*, 刑 M. *heŋ*, 并 M. *pyeŋ*. 駢 M. *beŋ*, *ben* (the *hsieh-sheng* connections are indicated by the *Shuo-wen*, though not admitted by Karlgren); 令 M. *ljeŋ*, *ljeŋ*; 情 M. *tshen*, 青 M. *tshen*. This type of phenomenon is probably to be explained by the forward assimilation of back finals after front vowels in some dialects. (See Pulleyblank 1960, pp. 61-5 where examples of the fronting of -k to -t are discussed—cases of -ŋ > -n are perhaps even more numerous.) We might suppose that the vowel would remain unchanged, so that *en* > *en* but there is reason to think that *e* was in any case more open before velar finals than before dentals and if this were so we might instead have *en* > *ean*. An alternative solution would be to reconstruct a more open *ɛ* as well as a close *e*, but in view of the occasional *hsieh-sheng* contacts between group (a) and group (b) and the fact that they appear to form a single rhyme class in the *Shih-ching*, the solution in terms of *ea*, *ēā* seems preferable.

If we reconstruct *ean*, *ēān*, we can account thereby for cases of palatalization of velars which we find associated with this group as showing the effect of the closer variety of yod developing before *e*, thus: 制 M. *cjei* < *kēāts: 獠 M. *kjei*; 齧 M. *chjei*, *hei* < *khēāts, *geāts: 擊 *ket*.

If we reconstruct *ea*, *ēā* before dental finals, we may expect to find them also before laryngals and velars. This would provide a means of accounting for apparent cases of palatalization of velars or laryngals such as: 車 M. *chia* < *khēāh, cf. the old alternative reading M. *kjo* which implies *kāh, also 庫 M. *khou* < *khah; 向 M. *šjan*, *hjan*; 赤 M. *chjek*, 螫 M. *šjek*, 郝 M. *hak*, *chjek*, *šjek*, 教 M. *šja*. On the analogy of 車 M. *chia* and 教 M. *šja*, we can use the hypothesis of a long diphthong to account for rhyme -ja in other cases. Thus: 者 M. *cja* < *tēā, but 諸 M. *cjo* < *tāh, cf. 都 M. *tou* < *taŋ; 且 M. *tshja* < *tshēā, M. *tsjo* < *tsāh*.

It is possible that we should see the reflex of short *eah* after central initials in 婿 M. *sei*, cf. 胥 *sjō*; but there seems to be no parallel example. On the other hand a case might be made out for regarding *a* as sometimes coming from *eah* after velars and laryngals. According to the theory developed below, the principal origin of the low front vowel *a* in Middle Chinese was through the loss of medial -l- but there are some words in rhyme *a*, with velar and laryngal initials, which seem unlikely to have had a cluster initial. Thus 牙 M. *ŋa* is phonetic in 鴉 *a* "crow", which is probably simply a variant of 烏 M. *ou* "crow". This does not absolutely exclude the possibility of medial -l-, since -l- could function as a derivational infix (see p. 125 below) but it makes it less likely. 牙 is also phonetic in 邪 M. *ya*, *zja* which, having rhyme -ja, might point back to an original in *-ēāh. We should however expect *ŋēāh to give *āja, not M. *ya* or *zja*; we must postulate something like *ŋδēāh or *ŋjδēāh* (see p. 130 below). Since *δ* and *l* are closely related, this might strengthen the possibility of *ŋlah for 牙, but it would also be possible to suppose *ŋeah.

That 牙 did not have a cluster is suggested by the fact that it occurs rather frequently in Hsiung-nu words—syllables of frequent occurrence are more likely to have been simple than complex. Furthermore, in one word that occurs several times as the last element in the names of Hsiung-nu princes (牙師, 牙斯, 吾斯), it alternates with 吾 M. *ŋou* which, being no doubt cognate to Tibetan *ŋa* "I", is very likely to have had a simple initial.

The hypothesis of long and short *ea*, *ēā* seems therefore a possible way of accounting for the divergent development of *a*, *ja* and *ou*, *jo* from the same Old Chinese rhyme class but it must be treated with some reserve until external evidence of some kind is forthcoming to test it.

The theory here advanced to explain the palatalization of velars does

not account for the existence of words in -jo with palatal initials that have velar or laryngeal connections, e.g.: 杵 M. *chjo'*: 午 M. *jou' < *sŋa'* (see p. 92 above); 鹿 M. *chjo'*: 虎 M. *hou'*. In both cases, however, the series have complex initials and the explanation for the appearance of palatals may lie elsewhere than simply in the palatalization of velars. The same is probably true of 樞 M. *chjou*: 區 M. *khjou*, 烏, 緇 M. *thjou*. It seems worth remarking that all the cases of palatalization of velars or laryngals noted in rhymes *jaŋ*, *jek* (< **ak*), *ja*, *jo*, *jou* yield only M. *ch-* or *ś*, never *c-*, *j-* or *ń-*. This can hardly be accidental and may indicate that the palatalization is here also of a different origin from that found in rhymes with *e* or *i* as head vowel.

It remains to consider one further case that appears to indicate palatalization of velars, namely in rhyme *jaŋ*: 蒸 M. *cjaŋ*, 承 M. *jjəŋ*; 查 查 M. *kjən'*. The head vowel in Middle Chinese *jaŋ* and *jən* is reconstructed as *ə* in Old Chinese by Karlgren. There is good reason to think, however, that both before velar and before dental endings it goes back originally to a close front vowel *i*. It is this that accounts for the forward assimilation of -ŋ to -n that we find in this example. (Examples of assimilation of -k to -t after close front vowels were discussed in *Asia Major* 1960, pp. 63-4; cases of -ŋ > -n in similar circumstances are perhaps even more numerous, see p. 102 above.) No palatals occur before rhymes *jaŋ*, *jet* and we may, therefore, suppose that after back initials *in*, *it* had already become retracted to *ən*, *ət* before the breaking of the long vowels that gave rise to medial yod. In rhyme *in* however this would appear not to have been the case, so that when the yod appeared it was close -y- which palatalized *k-* and *g-* to *c-* and *j-*.

There does not seem to be any evidence of similar palatalization of velars or laryngals in rhymes *jaek*, *jaə*. In the latter we find: 查 M. *cjaə*, 姬 M. *kjaə*, *yəə*. This *hsieh-sheng* series also contains initials *z-* and *s-*, however, which suggests that a more complex explanation is necessary than the palatalization of velars by medial -y-.

In order to make complete the theory of the palatalization of velar initials and *h* in front of medial -y- (*h* was not affected, *h̄* did not occur before long vowels) we must explain (a) the appearance of the retracted medial -j̄ (= -j̄-) as well as -y- before *e* and *i* rhymes, (b) the occasional occurrence of unpalatalized velars before -y-, giving rise to the split in the rhyme tables between Division III and Division IV. The first point is partly to be accounted for by the merging of originally separate rhymes: *je* < **āš* and *ye* < **ēh̄*; *jeu* < (**jaū* <)**āuh̄* and *yeu* < **ēāuh̄*—partly by the loss of medial -l- before originally long vowels. An explanation of (b) will be offered below.

hw- > *yw-*

Labio-velars were not palatalized. Hence we do not find them normally alternating freely with palatals. We do however find series in which labio-velars and laryngals occur before head vowels *e* and *i* and contain also words with initial *y-*. For example:

蟻 M. *ywe*: 蟻 M. *hwei*, 蟻 M. *hywe'*
 役 M. *ywek*: 椴 M. *hwek*, *ywek*
 營 M. *yweŋ*: 葵 M. *hweŋ*, 榮 M. *hīwaŋ*, 榮 M. *yweŋ*
 穎 M. *yweŋ'*: 頃 M. *khyweŋ'*, 穎 M. *kweŋ'*
 捐 M. *ywen*: 娟 M. *ywen*, *gywen'*, 絹 M. *kywen'*, 涓 M. *kwen*
 尹 M. *ywin'*: 伊 M. *yi*
 喬 M. *ywit*, 嶠 M. *ywit*, *zjwit*: 橘 M. *kywit*, 誦 M. *kwet*
 駝 M. *ywit*: 穴 M. *hwet*, 次 M. *hwet*
 勻 M. *ywin*: 均 M. *kywin*, 胸 M. *hwen*, 莠 M. *hīwin*

It will be remembered that *h̄j-* and *y-* occupy the Third and Fourth Divisions respectively of the same column in the rhyme tables. In order for this to be possible it is obviously necessary that there should be no cases of *h̄y-*. The above *hsieh-sheng* correspondences point clearly to the fact that this is because in situations in which *h̄y-* would have occurred it was replaced by *y-*. This can be regarded as the loss of *h̄* before -y- rather than its palatalization.

We have noted above the possibility that labio-laryngals could at one stage exist before labial finals to account for *hsieh-sheng* connections like 函 M. *həm*: 汜 M. *bjəm*. This might provide an explanation for 閻 M. *yem* < **hwēm*, 熾 M. *yem'*, *zjem*, *zjəm*: 各 M. *həm* < **hwlehm*, 洽 M. *həm* < **hwem*. The issue is complicated by the existence in the same series of words with dental initials, 蘭 M. *dəm*, 諂 M. *thjem* which could point to a dental origin for M. *yem* < **šēm*. However it may be possible to account for M. *dəm* < **šēm* as arising from an earlier **vem* by dissimilation and for M. *th-* from **θ-* (see p. 137 ff. below). A value **hwēm* for 閻 would be very satisfactory to account for its use as the first syllable of the transcription of the name of Vima kadphises, in which both the Kharoṣṭhī *é* and the spelling OOHMO in Greek letters on coins point to an initial *w-*, rather than a bilabial or dentilabial fricative.

Other cases where *y-* is found in the same series as velars are probably to be explained in terms of -*š-* clusters (see p. 118 f. below).

The date of the palatalization of velars

The palatalization of velars was sufficiently late that there are many traces of unpalatalized forms even in post-Han transcriptions. The character 支 M. *cje* < **kēh* occurs with the value *ki* in a number of transcriptions in the account of Japan in the *San-kuo chih*, in particular in *—支 M. *yit-cje*=Iki, the island off the coast of Kyushu. (The *San-kuo chih* text

reads 一大 but *Liang-shu* 54 has the correct form—Tsunoda and Goodrich 1951, p. 17, Naka 1915, p. 304.) The use of 支 for *ki*¹ in Manyōgana is probably the survival of an early tradition rather than an abbreviation for 伎 M. *gye*, *giē*¹, as supposed by Wenck (Wenck II 1954, p. 57). The probable value of 支 in M. *deu-cje* Ταοκή (?) has been noted above. From the same phonetic series we also find 枝 M. *cje* with the value of a velar in 阿枝達兜 M. *·a-cje-hiwai* (for 達 M. *dat* (?) -tu in the *Ch'i fo fu mu hsing-tzu ching* (T. 4), given as the name of the father of the former Buddha Krakucchanda where the corresponding Pali has Aggidatta=Skt. Agnidatta. A very similar transcription occurs in the same text for the name of the father of Kāśyapa Buddha, 阿枝達邪 M. *·a-cje-dat-ya*. Here the Pali has Brahmadata but the Chinese form is evidently based on a text which repeated Agnidatta or had some very similar name (cf. Akanuma, pp. 257-92).

The use of 甄 M. *cjin* and 枳 M. *cje* in a number of Buddhist transcriptions with a value *k-* may be a similar survival of unpalatalized **k-* but we cannot be quite sure since alternative readings M. *kyen* and *kye*¹ are also found in the *Ch'ieh-yün*; but these may be no more than ghosts preserved in learned tradition to account for the transcription values. The current readings in Pekingese, *chen* and *chih*,³ derive from Middle Chinese palatals and this seems to be true in other dialects as well. According to a story told to account for the alternative readings of 甄, this character originally was pronounced like 堅 M. *ken*. When Sun Ch'ian 孫權 became emperor of the state of Wu in the Three Kingdoms period (third century A.D.) the sound became taboo, since his father's name was 堅, and was changed to 眞 *cjin* (*Chi lei pien* B, p. 62). How reliable this story is or just what it means in terms of the third century pronunciation of the word is difficult to say. It seems unlikely that a temporary taboo in one part of China could have led to a permanent change in the pronunciation of a word throughout the whole of China. A possible explanation would be that in the current southern dialect **k-* had not yet been palatalized but that elsewhere *c-* had already developed so that a more northern pronunciation **cjin* for the character could be substituted for **kyen*, regarded as too close to **ken*.

The substitution of 支 for 氏 in the name Yüeh-chih in the Later Han period must be given consideration. The character 氏 is normally read M. *jje*¹ and, apart from this transcription, it is read M. *cje* only in 關氏 M. *·at-cje*, the title of the consort of the Hsiung-nu rulers, and 烏氏 M. *·ou-cje*, the name of a place in Kansu which is no doubt also a transcription. (In Later Han it was called 烏枝.) Since we have 祇, 蜺 M. *gye*, it might be thought that this series also was velar in origin and that we should reconstruct 氏 as M. *jje*¹ < **gē*¹, *cje* < **kēh*. This would certainly be wrong however since in Han dynasty quotations from the *Shu-ching* and

other texts in archaic style 氏 occurs as a variant of 是 *jje*¹, which is certainly a dental series (*Han-shu* 28B, p. 0247.3, *Hou Han-shu* 87, p. 0823.4). M. *gye* is in fact equivalent to 示 M. *gye*, *zji*¹, a word with a very diverse phonetic series according to the *Shuo-wen*: 那 M. *gji*, 猶 M. *nji*, 視 M. *jji*¹ and also 柰 M. *nai*¹, 隸 M. *lei*¹. It will be suggested below that words like M. *gye* with unpalatalized velar initial followed by close -y-, reflect old clusters with -δ-, so this dental medial element is probably what accounts for the connection of 祇 to 氏. Whether read voiced or unvoiced therefore, 氏 no doubt had a dental stop initial in its various transcription values in Former Han. The most probable explanation for its replacement by 支 or 枝 in Later Han is that the palatalization of the dental stops had made it no longer suitable to express the foreign sound. If the foreign phoneme had been a simple dental stop, we should expect to find a syllable like M. *tei* used. The fact that we find M. *cje* < **kye* suggests that it may have been, rather, a palatal stop that was intended. This can however be no more than conjecture. In any case the substitutions seem to confirm the later palatalization of velars than of dentals.

Dental stops

To explain the intimate relationship which *hsieh-sheng* series show between the three series of Middle Chinese initials which he reconstructed as t, t', d'; ê, ê', ã'; ts, ts', dz' Karlgren supposed that the second had developed out of the first, mainly under the palatalizing influence of the following -j- but also in front of various Middle Chinese vowels—a, ǎ, a, e, ǎ (which were however considered to have caused retroflexion of the sibilant series!). The palatal affricates he derived from a series of palatal stops in Old Chinese, occurring only before -j-. According to our reinterpretation Karlgren's palatal stops in "Ancient Chinese" were supradentals. It is natural therefore to suppose that it is the palatal affricates that are the counterpart of the pure dental stops when followed by -j- and to look for a different origin for the supradentals.

The idea that the supradental series is in complementary distribution to the dental series and, in the same way, that the palatal affricates are complementary to the dental affricates was encouraged by the arrangement of the rhyme tables, where we have in corresponding columns:

Division I	t	ts
Division II	ʈ	tʂ
Division III	ʈ	c
Division IV	t	ts

This arrangement is however highly misleading in regard to the origins of the various series. If we rearrange the initials strictly in accordance vertically with their original relationships as revealed in *hsieh-sheng* series and

horizontally with the types ending to which they can be attached, we get the following:

Division I	t	ts
Division II	t̥	tʃ
Division III/IV	t̥, c	tʃ, ts
Pure Division IV	t	ts

We now see that the two supradental series correspond, in that they can occur before both Division II and Division III rhymes, while the palatal affricates correspond to the dental affricates before *-i-*.

From this we may infer that dental stops, but not the sibilant series, have been palatalized by the following *-i-* and that under some other influence both stops and affricates have been made into supradentals.

Palatalization of dental stops

The theory of the development of the yodized finals of Middle Chinese out of an earlier opposition between long and short vowels has been developed already in connection with the palatalization of velars. The effect on the dental series was much more extensive because palatalization occurred before *-i-* as well as *-y-*, that is before all Old Chinese long vowels, not only *i* and *ē*. Out of the three Old Chinese stops, *t*, *th*, *d*, this produced Middle Chinese *c*, *ch*, *j*.

To align the palatal affricates in this way directly to the dental stops is a more satisfactory solution to the *hsieh-sheng* relationships than Karlgren's of two freely alternating but distinct series of stops separated by place of articulation. It is true that we have a certain degree of alternation between laryngals and velars but to nothing like the extent that we find between Karlgren's dental and palatal stops.

Palatalization of dental stops was not only more extensive than that of velars. It was also earlier. We find Middle Chinese palatals used for Indian palatals from at least the end of the second century A.D. onwards. Nevertheless there are clear indications that it had not yet occurred at the beginning of Han.

Pelliot long ago quoted 天竺 M. *then-cjuk* = Hinduka, India, and 竺刹尸羅 M. *cjuk-tʃhaət-ʃji-la* = Takṣaśilā (1914, p. 412). This is unfortunately less satisfactory evidence than one could wish because 竺 has another reading M. *tok* which Pelliot did not take into account. It is however normally read M. *cjuk* in the sense of "India" (see *Kuang-yün*) and the old tradition may well be correct. The fact that it appears in the *Hou Han shu* puts it not later than ca. A.D. 120, when P'an Yung wrote his account of the Western Regions (Chavannes 1907). The transcription of the name of Takṣaśilā is not found before it appears in Buddhist texts.

Karlgren quotes 禪 M. *jiēn* < **dān* (= K. *zjan* < **djan*) for Sanskrit

dhyāna as evidence that the initial was still a stop in early Buddhist transcriptions (1954, p. 279). Unfortunately this is an unsound argument, for the underlying Prakrit probably had a palatal, like Pali *jhāna*. The same would apply to other cases like 阿踰闍 M. **a-you-jja* = Ayodhyā or 迦旃延 M. *kja-cjen-yen* = Kātyāyana.

Earlier examples of unpalatalized *d* and *t* for Middle Chinese *j* and *c* occur, if I am right, in the Hsiung-nu titles 禪子 M. *jiēn-hjōu* < **dān-hwāh* and 閼氏 M. **at-cje* < **at-tēh* (giving the later Turkish *tarqan/tarxan* and *qatun/qatın*, etc.—see Appendix) and in 月氏 M. *ɲiwat-cje* < **ɲwāt-tēh* = 𑀘𑀓𑀭𑀫 (?).

Indirect evidence of the absence of the later palatals in the Chinese of the Han period is provided by the use of the dental affricates for foreign palatals. Unfortunately Chinese dental affricates where spellings in Indian alphabets have palatals in names from the Northern and Eastern Tarim basin are equivocal, e.g.: 龜茲 M. *kju-tsje* = Kuca, 且末 M. *tshja-* (or *tsjo-*) *mat* = Calmadana. Pelliot regarded the Chinese spellings as evidence of the presence of dental affricates in the native names and this gains support from the continued use of dental affricates even after Chinese palatals were being used for Indian palatals (Pelliot 1923, p. 126). Thus we have later transcriptions such as: 丘慈 M. *khju-dzje*, 屈茨 M. *kjuət-dzji* for Kuca (showing voicing of the medial consonant) and 左末 M. *tʃa'-mat* = Calmadana (in Sung Yün, early sixth century, see Chavannes 1903, p. 391). A similar doubt applies to a word like 師子 M. *ʃji-tsje* "lion", which must be derived from Tokh. A. *śisāk*, B. *šecake* (final to be discussed later), and to the name 丘就却 M. *khju-dzju-kjak* (for 劫 M. *kjap*?—see Pelliot 1914, p. 401) = Kujula kadphises. At least one clear case seems to be provided however by the name 子合 M. *tsje'-həp* < **tsā-gəp* (*Han-shu* 96A) a country in the Pamirs which must undoubtedly be the same as that called 朱駒波 M. *cjou-kjou-pa* by Sung Yün (Chavannes 1903, p. 397), and 斡旬迦 M. *cjak-ku-kja* by Hsüan-tsang (possibly from a sanscritized form).

As against this we have the name Shan-shan 善善 M. *jiēn* (or 禪 *jiēn*, *jiēn*)-*jiēn'* which has been plausibly identified by Hamilton with modern Charchan < **Jarjan* (Hamilton 1958, p. 121). The name Shan-shan appears as a substitute for the earlier Lou-lan in the first century B.C. If the foreign original had indeed palatals at this period, we must suppose that the Chinese palatals were already beginning to develop, perhaps in an intermediate stage **dj*. There are too many uncertainties, however, for this to provide a firm argument.

So far as it goes the evidence seems to be against supposing that the dental stops had yet been palatalized in the Former Han period. Further evidence will be given below to show that the dental fricatives and nasals were also not palatalized until even later.

Retroflexion and loss of medial -l-

Evidence from *hsieh-sheng* connections for clusters containing *-l-* has been noted for a very long time and Karlgren reconstructs many such in his Archaic Chinese. In his system there is however no recognition of any connection between the reconstruction of a lost medial *-l-* and the vocalism of Middle Chinese. This seems inherently improbable—one would expect a medial *-l-* not to simply disappear but to become vocalized in some way, as has happened for example in Italian *fiore* < Latin *florem*. There have indeed been attempts to associate some of the medial *-j-* of Middle Chinese with the loss of *-l-* but no good correlation can be made with the other evidence for clusters.

Recently S. Yakhontov (1960) has put forward another idea which must certainly be correct, that is, that the peculiar set of vowels classed together in Division II of the rhyme tables—which, in my *Ch'ieh-yün* transcription, I characterize by the vowel *a* and the diphthongs *aə*, *ae*, *au*—are the reflex of lost *-l-*. I had independently come to the same conclusion before I learned of Yakhontov's paper. The evidence in favour of it may be summarized as follows:

(a) Initial *l-* is very rare before Division II vowels—only three cases can be found among words included in the *Shuo-wen*, namely 洽 M. *laŋ'*, 牽 M. *lauk*, 驗 M. *laəm'*.

(b) On the other hand words with Division II vocalism are common after other initials in *hsieh-sheng* series where there is evidence of clusters, for example:

琴 M. *liu'* : 膠 M. *kau*, 嚶 M. *hau*
 象 M. *luk* : 剝 M. *pauk*
 辯 M. *liwen* : 變 M. *man*, 攀 M. *ɕwan'*, 灣 *wan*
 闌 M. *lan* : 東 M. *kaən'*
 濫 M. *lam* : 監 M. *kam*
 隆 M. *liuŋ* : 降 M. *kaunŋ'*, *haunŋ*
 高 M. *lek*, *kaək*
 樂 M. *lak*, *ŋauk*
 龍 M. *liŋŋ*, *mauŋ*
 洛 M. *lak* : 格 M. *kak*

(c) The Middle Chinese supradental initials are characteristic of Division II but never found in Division I. Karlgren has already proposed a development *sl* > *ɕ* in a few cases on the basis of *hsieh-sheng* connections, e.g.: 史 M. *ɕiə'* : 吏 M. *liə'*; 率 M. *ɕiwit*, *liwit*. This is phonetically a very probable development and should be generalized to include the supradental affricates and stops, and also the nasal *ŋ*. *Hsieh-sheng* evidence is less clearly forthcoming but the following may be noted: 勞 M. *lau*; 嘯 M. *tau*; 撥 M. *lau*, *tau*; 駢 M. *liin*; 珍 M. *tiin*; 診 M. *tiin*. (Cases of *th-* ~ *l-* contacts are not included since they may be evidence of **lh-* rather than **thl-*.)

(d) Yakhontov cites the following comparisons with Tibeto-Burman showing *-r-* or *-l-* cluster in cognates of Chinese words with Division II vocalism:

八 M. *paət* "eight" : Tibetan *brgyad*
 百 M. *pak* "hundred" : Tibetan *brgya*
 馬 M. *ma'* "horse" : Burmese *mraŋ*
 甲 M. *kap* "shell, armour" : Tibetan *k'rab* "fish scale, armour"
 江 M. *kaunŋ* "river" : Tai *khlong* "canal"

With the exception of the last, which is less satisfactory than the other semantically and departs from the pattern of correspondence, which otherwise shows Chinese *-l-* as equivalent to Tibeto-Burman *-r-*, these comparisons seem very convincing.

We must make some exceptions to the general rule that Division II vocalism necessarily implies the loss of medial *-l-*. We have already suggested that rhyme *-a* may be derived, in part, from Old Chinese *-eah*. Apart from this it will be shown below that there is reason to think that Middle Chinese *ɕ* and *tɕh*, with appropriate Division II vocalism, developed also out of Old Chinese *sh* and *sŋh* (and *skh* ?).

Apart from these exceptions however the relation of Middle Chinese *-a*-vocalism to Old Chinese medial *-l-* may be confidently adopted as a highly probable hypothesis.

Yakhontov also considers the evidence for lost *-l-* where Middle Chinese has medial *-j-* and concludes that "between the consonant and medial *-j-*, *l* disappeared completely without any after effects and the head vowel in most cases did not undergo any changes". On the contrary the loss of medial *-l-* had effects on the yodized endings almost as far-reaching as its effects elsewhere. It was a major factor in leading to the differentiation between two varieties of medial *-j-* before head vowels *i* and *e*, causing the retraction of *-y-* to *-j-* after velar and labial initials. In some cases, of course, the opposition *-j-*/*-y-* arose from the falling together of originally separate rhymes: 皮 M. *bie* < **bāð* but 卑 M. *pye* < **pēh*.

As examples of medial *-j-* before *e* or *i* in *hsieh-sheng* series which indicate clusters the following may be cited:

辯 M. *iwan*, *liwen* : 變 M. *pjen'*
 律 M. *liwit* : 筆 M. *pjit*
 繫 M. *liin* : 鞅 M. *ŋjin'*
 立 M. *liip* : 泣 M. *khjip*
 臨 M. *liim* : 品 M. *phjim'*
 稟 M. *liim'*, M. *pjim'*

Further evidence in favour of a connection between lost medial *-l-* and the retracted medial *-j-* comes from the fact that words with supradental initials in the "split" rhymes tend to have Division III words as final spellers (if not other words with supradental initials or words with initial *l-*

which are common to all classes of initials). Conversely words with supradental initials occur as spellers for Division III words having velar and laryngeal initials. This is not carried through with complete consistency but is a marked tendency. (It should be noted that Arisaka 1944 (1937-9) p. 350 ff. attempted to extend the *-j-/-y-* contrast beyond the laryngeal, velar and labial initials.) Thus we find:

(See Li Jung 1952, M. readings in all cases)

Rhyme 支: 差 tshje, 醜 sie spelt with 宜 nje

衰 tshjwe spelt with 危 njwe

Rhyme 紙: 纒 sie' spelt with 綺 khje'

揣 tshjwe' spelt with 委 jwe'

Rhyme 真: 屍 sie' spelt with 寄 kje'

(but 媿 tjwe', 諉 njwe' spelt with 恚 ywe'!)

Rhyme 脂: 追 tjwi used to spell 龜 kjwi, 巖 khjwi, 達 gjwi

Rhyme 旨: 雉 dij' spelt with 几 kij'

Rhyme 質: 黜 dzjit spelt with 乙 jit

Rhyme 黠: 撰 dzjwen' spelt with 免 mjen'

篆 djwen' used to spell 圈 gjwen'

轉 tjwen' used to spell 卷 kjwen'

Rhyme 線: 駮 tien' spelt with 彥 njen'

纂 sjwen' spelt with 眷 kjwen'

Rhyme 薛: 舅 tshiet spelt with 別 bjet

Rhyme 侵: 蓼 tshjim, 森 sjim spelt with 今 kjim

岑 dzjim spelt with 金 kjim

Rhyme 寢: 痒 sjim' spelt with 錦 kjim'; used to spell 矜 khjim'

Rhyme 禁: 賃 njim', 闢 thjim', 譖 tsjim', 濛 sjim' spelt with 禁 kjim'

(but rhyme 笑: 召 djieu' used to spell 趨 khyeu', 驛 byeu as well as 廟 mjieu')

The only cases at all in which we find Division IV spellers used with supradentals or *vice-versa* are in those rhymes where the split is partly the result of the coalescence of distinct head vowels, i.e. je < *āδ and *lēh, jēu < *āuh and *lēāuh.

We may note further that in the *fan-ch'ieh* system of Hui-lin where we find jen and yen of the *Ch'ieh-yün* separated as distinct final groups, the one falling together with jan, the other with en, words with supradental initials have followed Division III while words with palatal and dental sibilant initials have followed Division IV. Here again we see a correlation between supradental initials (which point to lost medial -l-) and the retracted medial -j- (= -j-).

On the whole Yakhontov seems to be right in saying that lost medial -l- did not affect the head vowel when medial -j- intervened. There is one important exception to this however, namely in rhyme -aŋ, -jaŋ (including

-ak, -jak). Here not only the Division II words but also the Division III words show evidence of -l- clusters in their *hsieh-sheng* relationships:

京 M. kjaŋ : 涼 M. ljaŋ

隙 M. khjak : 蠟 M. ljak

命 M. mjaŋ : 令 M. ljeŋ

Further examples can be added if one takes Division II vocalism as itself a sign of lost -l-:

丙 M. pjaŋ' : 更 M. kaŋ

罔 M. kjwaŋ' 明 M. miaŋ : 萌 M. maŋ (see p. 97 above)

永 M. hjwaŋ' : 派 M. phaē', 脈 M. maæk (see p. 98 above)

榮 M. hjwaŋ : 鶯 M. 'aŋ, 營 M. 'waŋ

Evidently rhyme jaŋ is the yodized rhyme corresponding to both aŋ and aŋ. We have already noted that it is complementary to yeŋ, taking the place of a Division III rhyme jeŋ.

It would not be enough to say however that when preceded by lost medial -l-, jaŋ and yeŋ became jaŋ, for supradental initials, both stops and sibilants, occur before jaŋ, and supradental stops (but not sibilants) appear before jeŋ; e.g. 長 tjaŋ, 創 tshjaŋ, 貞 tjeŋ. We must evidently postulate a difference in treatment as between different classes of initial. In the case of velar, laryngeal and labial initials we may suppose that the vocalization of -l- to -a- occurred before the yodizing of the long vowels, or that the yod was at any rate not sufficiently developed to prevent the -a- colouring from affecting the head vowel, so that: klāŋ > kaāŋ > kāŋ > kjaŋ; plēŋ > paēŋ > pāŋ > pjaŋ > pjaŋ. After dental initials on the other hand the -a- colouring did not extend itself (except after the sibilants before -ēŋ, cf. 生 M. sjiaŋ < *slēŋ, pp. 74 above and 128 below), perhaps because the -l-, instead of simply becoming vocalized, was absorbed into the preceding initials in the form of retroflexion and this process was not complete before the yodization of the long vowels.

If this interpretation of the development of rhyme jaŋ is correct, we should expect to find some parallel in the case of -m and -n rhymes. In the case of -n, the yodized rhyme corresponding to an and aŋ must be taken to be jen, that is the Division III of rhyme 仙, and there is no rhyme jan as far as the *Ch'ieh-yün* is concerned. The interpretation of this which will be advanced is that in the line of development which lies behind the *Ch'ieh-yün* there was an umlaut of ān to ēn after all dental initials, including l, whether medial or initial. It is possible however that the separation of *Ch'ieh-yün* -jen and -yen which we find in Hui-lin does not represent a development from the *Ch'ieh-yün* but an independent line of development in which there had been a separate rhyme jan which had coalesced in Hui-lin's time with jan.

We have already discussed the possibility that the *Ch'ieh-yün* rhymes 凡 and 嚴 were originally differentiated as jam and jam. This would

imply a similar development to that of rhymes *jan* and *jan*. As far as words with labial initials are concerned we have rather good evidence for an initial cluster in 凡. Haudricourt quotes Common Tai 'brəm "all" as a loan from this Chinese word (Haudricourt 1954, p. 359). It is also phonetic in 風 M. pjuŋ "wind" which may be related to Tai lom "wind". Note also 蕙 M. ləm, and 梵 M. bjam < bjam used for Sanskrit brahm- (Pelliot, *T'oung-pao* 25, 1928, p. 455). On the other hand there is also good evidence that 汜 M. bjam had no cluster, since it is used in the *Wei-lüeh* in transcribing the first syllable of a place name in the Middle East which Pelliot has convincingly identified with Bambyke (Pelliot 1921). Again 鏡 M. mjam is used for Sanskrit *vam* (*Hōbōgirin* I, p. 50), so probably did not have a cluster. In the *Ch'ieh-yün* all these words are lumped together but as we have noted above Hui-lin shows traces of a discrimination among them. 鏡 M. mjam, which is another writing for 鏡, and 范 bjam are placed by Huang Ts'ui-po 1931 in the -am group, while 汎帆範汜范乏泛 are placed in the -am group. We should expect 汎 to be placed in -am rather than -am but 鏡 is correctly placed as is 范 with 汜 as phonetic. Since already in the *Ch'ieh-yün* the two rhymes had fallen together it is not surprising to find that the distinction in Hui-lin should not be fully carried through.

As far as the words with velar initials are concerned, it may be noted that one of the few words placed in rhyme group 凡 in the *Ch'ieh-yün* is 劍 M. kjam/kjam. Here the *hsieh-sheng* connection with 斂 ljem would support the reconstruction of a cluster (Karlgren writes *kljəm) and we have noted the ancient Japanese spelling *ki-ya-mu* which points to -a-vocalism. The fact that the *Kuang-yün* adds a few words in rhyme group 凡 with supradental stop or nasal initials and that conversely we find a few palatal initials in rhyme 嚴 added either in the *Kuang-yün* or the *Chi-yün*, though doubtful evidence for the *Ch'ieh-yün* period, is at least consistent with the idea that the former was a lost medial -l- rhyme and the latter not.

The dental fricatives

Besides the palatal affricates and the supradental stops, certain other Middle Chinese initials quite often show connections with dental stops. These include especially the palatal continuants *y* and *ś*, and also *z* (occurring only before *i*) and occasionally *s*. Thus we find series like:

移 M. ye : 多 M. ta, 奎 M. ta, 趨 M. djie, etc.

羶 M. śjen : 贗 M. tan, 儻 M. tan', jjen, etc.

But there is another type of series in which continuants play the major part. For example:

余 M. yo, 除 M. śja, 敍 zjo' : 塗 M. dou, 除 M. djio, 茶 M. dou, da, śjo, 稌 M. thou, dou.

予 M. yo', 序 M. zjo', 紓 M. śjo, zjo', 野 M. ya', jjo'

與 M. yo', 蕙 M. zjo, yo' (note also 羣 M. kjo')

俞 M. you, 揄 M. you, du', 輸 M. you, zjou, 蠅 M. śjou : 歎 M. du, 偷 M. thu

延 M. yen, 堯 M. śjen : 挺 M. thjen, 誕 M. dan'

吾 M. ywen', 沿 M. ywen : 殷 M. zjwen

世 M. śjei', 冀 M. śjei', zja', 摠 M. yei', 泄 M. sjet, yei', 冀 M. yei', yi', 栗 M. yep, 僕 M. yep, hjep, 撲 M. yep, sep, zjet, śjet

曳 M. yei', 洩 M. yei', sjet, 緹 M. sjet

引 M. yin' : 紉 M. djin'

申 M. śjin, 棘 M. yin' : 神 M. zjin, 電 M. den'

身 M. śjin : 轉 M. den

失 M. śjit, 佚 M. yit, 軼 M. yit, det, 扶 M. thjit, 秩 M. djit

易 M. yan, 傷 śjan : 飴 M. dan, 湯 M. than, śjan, 場 M. djjan, 楊 M. thjan'

易 M. yek, ye', 賜 M. śjek, 緹 M. sek, thei'

由 M. yu, 柚 M. yu', djuk, 褒 M. zju', yu', 抽 M. thju, 迤 M. dek

Many more could be added.

A feature of the many *hsieh-sheng* series of this type is that the stops which do occur in them are confined almost entirely to the sonants *d*, *ḍ* and the aspirated surds *th-*, *ṭh-*. The unaspirated voiceless stops scarcely occur at all and the palatal affricates are very rare, in marked contrast to their frequency in series characterized by dental stops.

It is not at all easy to understand why there should be such a distribution if we simply follow Karlgren in restoring an unaspirated *d-* for *y-* and make no other change. Why should aspirated *th-* have greater affinity than unaspirated *t-* for unaspirated *d-*? Why should *ś-* and *z-* (restored by Karlgren as *dz-*) have greater affinity for *d-*, *d'-*, *th-* than for *ts-*, *s-*? It is evident that to make sense of these series a much more drastic hypothesis is required.

One of the keys to the problem is to find the original value of Middle Chinese *y-*. Karlgren restored it mostly as unaspirated *d-*, sometimes as *z-* or *g-*. We have already rejected the theory of two kinds of voiced stops in Old Chinese. Moreover, as we see, the series in which *y* occurs are typically quite different from the normal dental stop series.

The transcription value of Middle Chinese *y* in the period between Han and T'ang seems fairly clear. It was a palatal fricative *ž*. This is illustrated by such examples as 阿育 M. 'a-yuk = Aśoka, M. kjou-yək = Kausika, (p. 77 above) where we must suppose an intervocalic voicing of *ś* to *ž* in the underlying Prakrit. When we find Middle Chinese *y-* representing Sanskrit *y-*, as in 閻 yem = Yama, it is probably because in the Prakrit *y-* had also become a fricative *ž*. (See Bailey 1942, pp. 909, 919).

For earlier times this value will not do. In 栗 (read 栗 M. sjok)

弋 M. *yək* = *Soydik* in the *Hou Han-shu* (ca. A.D. 120) we find it for Iranian δ . Earlier still in 烏弋山離 M. *'ou-yək-šaən-lie* = Alexandria in the *Han shu* it represents foreign *l*. The Tai forms of the tenth earthly branch 酉 M. *yu'* are also of interest, namely: Ahom *rāo*, Lü *hrau*, Dìoi *thou* (= δu), Lāññā *law*. An initial closely related to *l*- is also indicated by the paronomastic definitions of this word in Han dynasty works by 老 M. *lau'* and 留 M. *liu* (Li Fang-kuei 1945, p. 340, Egerod 1957). The best value to fit all this evidence seems to be a dental fricative δ . This is phonetically close to *l*. At the same time it is close enough to the dental stops that we should not be surprised to find it occasionally appearing in dental stop series. Another theoretical possibility would be *r* but this would be much less satisfactory. It would be surprising to find the Chinese using their *l* for the *r* and their *r* for the *l* in transcribing Alexandria!

That δ should be palatalized by a following *-j-* is of course quite parallel to what happened to the dental stops and occasions no difficulty. There is however no reason why it should not have occurred before unyodized (short) vowels as well. The peculiar distribution of the initials in the series we have just examined suggests the answer. Initial *d* before unyodized endings seems to correspond to *y-* before yodized endings. We may therefore postulate the development: $*\delta-$ > M. *d-* $*\delta j-$ > $*zj-$ > M. *y-*.

The way is now clear to explain the origin of δ and the occurrence of *th* in the series. Clearly δ must have had an unvoiced counterpart θ and its development will be: $*\theta-$ > M. *th-*, $*\theta j-$ > M. *šj-*.

The occasional occurrence of *d-* and *th-* in these series suggests that one should reconstruct $*\delta l-$ > M. *d-*, $*\theta l-$ > M. *th-*.

To find initials δ and θ - in Old Chinese is perhaps unexpected in terms of comparative Sino-Tibetan linguistics. On the other hand Tibeto-Burman has two liquids, *l* and *r*. There is good reason to think that our δ corresponds to Tibeto-Burman *l* while Chinese *l* corresponds in the main to Tibeto-Burman *r*. In illustration of this one may propose the following word comparisons:

羊 M. *yan* "sheep" : Tib. *lug*

塗 M. *dou* (< $*\delta ah$ < $*\delta ah$ < $*\delta av$?) "road" : Tib. *lam* "road"

Cf. also 道 M. *dau'* (< $*\delta u$; phonetic is 首 M. *šju'*)

葉 M. *yep* "leaf" : Tib. *lob* "leaf"

容 M. *yong* "room", "allow" : Tib. *lon* "leisure, time"

Chinese θ - may similarly correspond to Tibetan *lh-* in:

脫 M. *thwat*, *dwat*, "take off", "escape", M. *thwai* "easy, leisurely" :

Tib. *lhod-pa* "loose, relaxed".

Similarly Chinese 鐵 M. *thet*, "iron", if derived from Old Chinese $*\theta ek$ < $*\theta ek$ (on the final see *Asia Major* 1960, p. 63, the phonetic is however 呈 M. *diēng*), agrees perfectly with the Common Tai *l'èk*. Tibetan *l'èags*

"iron" is no doubt also cognate. Since $*ly$ in Tibetan gives \dot{z} , *l'* here may be from $*lhy$ (see Forrest 1961, p. 132).

As examples of Tibetan words with *r* where Chinese has *l* we may cite: Tib. *drug* "6", : 六 M. *luk*; Tib. *hbrug* "dragon" : 龍 M. *liōŋ* (< $*vlōŋ$, see below); 里 M. *liə'* (< $*vli$? see below) : Tib. *hbris* "draw", Burm. *re*; 劣 M. *liwet* (< $*lōt$) "inferior" : Tib. *rud* "fallen mass", Old Burm. *jut* < $*rut$ "inferior", *hrut* "degrade" (Benedict 1939, p. 216).

One might be tempted on the basis of this to change Old Chinese *l* to *r* and replace our δ by *l*. This would agree quite well for some of the transcription values but it would not agree very well with the way in which our δ appears in phonetic series with dental stops. Moreover it would be exceedingly confusing, for one would not know at what precise stage one should metamorphose all *r* into *l*. It seems best therefore to retain δ and θ for all stages of Old Chinese, leaving open the question whether they were earlier *l*, *lh*.

$*\theta-$ > $*h-$

We occasionally find *h-* in the palatal continuant series, usually in variant readings: 匯 *dwa'*, *hywe*, 僕 *yep*, *hjep*. This suggests that $\theta-$ may have had a variant development to *h-* in some dialects. This hypothesis will account for the puzzling early transcriptions of the name of India: 身毒 M. *šjin-dok* (*Shih-chi* 123) and 天竺 M. *then-cjuk* (or *-tok*) (*Hou Han-shu* 118). The existence of variant pronunciations of 天 has been noted by several scholars. Bodman notes that in the *Shih-ming* Liu Hsi gives two glosses for this character. He first glosses it with 顯 M. *hen'*, remarking "the (word) heaven in Yü, Ssu, Yen and Chi is pronounced with the 'belly' of the tongue". He then glosses it with 坦 M. *than* and says, "in Ch'ing and Hsü the 'head' of the tongue is used to pronounce it". (Bodman 1954, p. 28.) The explanation must be that the word was pronounced with initial *h* (or perhaps a velar fricative x) in the regions named by Liu Hsi, that is in the central area around the capital, and with initial *th* farther east. The pronunciation with M. *h* has been preserved in 祆 M. *hen*, the name given to Zoroastrianism in China which, as Albert Dien has shown, is merely a special application of 天 "heaven" (Dien 1957). The character 天 is used in 摩天提伽 M. *ma-then* (read: *hen*)-*dei-gja* = Skt. Mahardhika (Bailey 1946, p. 784). If we restore a Han dynasty pronunciation for 天竺 as $*hen-tük$ it gives a good equivalent for an Iranian Hinduka.

The earlier transcription M. *šjin-dok* is superficially easier but in fact requires the same explanation. It will not do to regard it as based directly on the Indian form *Sindhu-*, since the Chinese has a palatal, not a dental, sibilant. M. *šjin* implies an Old Chinese $*\theta šn$ and we can therefore postulate a Han dynasty pronunciation $*hēn$ or $*hin$.

The supposition of Han dynasty pronunciations in $*h-$ will also

account nicely for a number of glosses in the *Shih-ming* in which Middle Chinese *th* or *ś* are associated with *h*, *kh* or *ʿ*, e.g.: 60 苦 M. *khouʿ*: 吐 M. *thouʿ* < **θah*; 50 烏 M. *ou*: 舒 M. *śjo* < **θāh*; 61 庫 M. *khouʿ*: 舍 M. *śjaʿ* (numbers as in Bodman 1954).

Clusters with *ś* (θ)

If **ś* is cognate to Tibetan *l*, we should expect to find it occurring in initial clusters with other consonants. One may note the following *hsieh-sheng* series which point to such clusters with velars:

唐 M. *daŋ*: 康 M. *kaŋ*, (庚 M. *kaŋ*)
 羊 M. *yaŋ*: 姜 M. *kjaŋ*, 羌 M. *khjaŋ*
 與 M. *yoʿ*: 舉 M. *kjoʿ*
 頌 M. *yoŋ*, *zjoŋ*: 公 M. *kuŋ*
 邪 M. *ya*, *zia*: 牙 M. *ŋa*
 窯 M. *yeuʿ*: 羔 M. *kau*, 顛 M. *kyeu*, 糕 M. *ciak* < **kēōk*
 宦 M. *yə*: 姬 M. *kjə*, *yə*
 翼 M. *yəʿ*, 翼 M. *yək*: 冀 M. *kjiʿ*
 藥 M. *yak*, 麴 M. *śjak*: 樂 M. *ŋauk*, *lak*
 谷 M. *yok*, *kuk*, 容 M. *yoŋ*
 衍 M. *yen*: 愆 M. *khjen* (also 衍 M. *cjen*)
 羨 M. *yuʿ*: 久 M. *kjuʿ*, 柩 M. *giuʿ*
 鹽 M. *yem*: 監 M. *kam*, 藍 M. *lam*
 隕 M. *duai*, 憤 M. *thuəiʿ*, 遺 M. *ywiʿ*: 貴 M. *kjwəiʿ*, 橫 M. *kjwiʿ*,
 贖 M. *ŋwaaiʿ*, 匱 M. *giwiʿ*

In these series the reflexes of Old Chinese **g* are rare. We may suggest that the probable course of development was for *-ś-* to disappear after *k* and *kh* but for *g*, weakening to *h*, to disappear before *-ś-*, which gave M. *d* or *y*. Hence we shall reconstruct: **gdaŋ* > M. *daŋ*, **khdaŋ* > M. *kaŋ* (**klaŋ* > *kaŋ*), etc. It need not of course be assumed that the presence of medial *-ś-* in some words of a phonetic series must imply its presence in all words. In some cases medial *-l-* as an alternative is indicated. In others there is every reason to think that there was no cluster. Thus 貴 M. *kjwəiʿ* certainly did not have a cluster when it was used in M. *kjwəiʿ-śjaŋ* = Kušan (first century A.D.). In series where we have *ŋ* alternating with *y* we also find reflexes of *θ*, i.e. *th* and *ś*. This probably indicates the developments: **ŋθ* > **ś* > M. *d*, *y*; **ŋhθ* (= **ŋθ*) > **θ* > M. *th*, *ś*. Initial *ŋ* survives, as in 樂 M. *ŋauk*, 贖 M. *ŋwaaiʿ*, when the medial element was *-l-*.

In the cases so far considered we have had Old Chinese back or central vowels, or, in the case of M. *yə*, *yək*, a vowel which had become retracted from **i* to **ə* already by the time the clusters may be assumed to have simplified. Alternation of M. *y* with velars is rare before the front vowels *e* and *i* and it seems that in this case the pattern of development was

somewhat different. **g* did not disappear, **-ś-* left its trace before original long vowels in the forms of the close medial *-y-*, which did not however cause the palatalization of the preceding velar as did the medial *-y-* which had developed earlier by the breaking of the long vowel. This hypothesis will allow us to account for the fact that the *Shuo-wen* regards 壬 M. *then* < **θeŋ* as phonetic in 𠄎 M. *keŋ*, 頸 M. *kyeŋ*, *gyeŋ*, etc. We should expect an original **kēŋ* to have given M. *cjeŋ*. The actual development can be postulated as: **kdeŋ* > M. *keŋ*, **kdeŋ* > **kdeŋ* > **kzyeŋ* > M. *kyeŋ*. There is evidence of *-l-* clusters in the series also: 𠄎 M. *khaeŋ* < **khleŋ*, 莖 M. *giaŋ* < **glēŋ*, etc. Bodman has already proposed a cluster in the word 頸 M. *kyeŋ*, *gyeŋ* because of the *Shih-ming* gloss with 頤 M. *ljeŋ* (Bodman 1954, p. 49).

We may similarly postulate *-ś-* in:

緊 M. *kyinʿ* < **kśinʿ* < **kśēnʿ*, cf. 𠄎 M. *khaeŋ* < **khleŋ*
 藥 M. *khyiʿ* (phonetic said to be 去 M. *thuət*)
 吉 M. *kyit*, 詰 M. *khyit* (cf. the *Shih-ming* gloss of this word by 實 M. *zjit*)
 劓 M. *kye*, 岐 M. *gye*, 岐 M. *khyeʿ*
 遣 M. *khyenʿ*
 企 M. *khyeʿ*

and possibly also in the alternative readings with unpalatalized initials of 枳 M. *cjeʿ*, *kyeʿ*, 甄 M. *cjin*, *kyen*—if these are genuine Middle Chinese readings and not merely dictionary readings retained because of the use of these characters to represent Indian *k*.

If medial *-ś-* disappeared without trace before short vowels, it is possible that it should be restored in some cases where the series indicates *-l-* clusters but the vocalism does not confirm them. Thus 各 M. *kaek* "each" may be from **kśak*. This would suggest an etymological relationship to 舉 M. *kjoʿ* < **kśā* "all".

Medial *-ś-* may play a part in the *hsieh-sheng* relationship: 已 M. *yeʿ*: 矣 M. *hjaʿ*, 俟 M. *zjaʿ*, 埃 M. *əi*, 駭 M. *ŋaəiʿ*, etc., but this series is anomalous in several ways.

The clusters **nś*, **sś*, **sθ* will be discussed below. It seems likely that there would also have been clusters of *-ś-* with dental and labial stops and *m*.

The dental nasals

We have noted the existence in Middle Chinese of dental, palatal and retroflex nasals: *n*, *ń*, *ŋ*. Like the corresponding reflexes of the Old Chinese dental stops, we may derive them from a single dental nasal. We have evidence for the use of Middle Chinese *ń* to represent foreign *n* in Han dynasty transcriptions such as:

若榴 M. *ńja-ljuʿ* "pomegranate", cf. Sogdian *nʿrkh*, **nāraka*. The

earliest occurrence of the word seems to be in the *Nan-tu fu* of Chang Heng, ca. A.D. 100 (*Wen-hsüan* 4, p. 52). It also occurs as 栝榴 in the *Kuang-ya* (*Kuang-ya shu-cheng* 10 B, p. 1340). The form *shih-liu* 石榴 is, no doubt, a graphic corruption. The longer form *an-shih-liu* 安石榴 must stand for *M. 'an-n̄ja-liu', with initial *a-* as in Western forms like Pahlavi *anār*. The vocalism of the final syllable presents further problems but these will be left aside for the present. (See Laufer 1919, pp. 276-87.)

貳師 M. n̄ji-n̄ji = Nesef, Nakhšab, present Karchi, in Sogdiana. Historical grounds for this identification of the capital of Ta-yüan which the Chinese besieged and captured in 101 B.C. will be given elsewhere (*Shih chi* 123).

We even find this same character still used for dental *n* in: 阿迦貳吒 M. 'a-kja-n̄ji-ta = Akanisṭha in Lokakṣema's transcriptions at the end of the second century A.D. (T.224). On the other hand we already find palatal *n̄* in such a word as 般若 M. pan-n̄ja = Skt. *prajñā*, Prakrit *pañña*.

We thus find a situation quite parallel to the palatalization of dental stops and we can confidently postulate *n̄j* > *n̄j̄*.

The analogy of the retroflex stops would lead us to suppose that retroflex *ṇ* was derived from **nl*. *Hsieh-sheng* contacts of *ṇ* and *l* are few but we may note the following:

凜 M. lem "thin ice", n̄jem "to glue, stick to". The word M. n̄jem is undoubtedly cognate to a series of other words in *n̄*: 昵 M. n̄jit "close, familiar, glue", 黏 M. n̄jit "adhere", 裨 M. n̄jit "lady's clothes nearest to the body", 尼 M. n̄ji, "close". Furthermore these forms in *n̄* seem to be related to 邇 M. n̄je "near" by the -*l*- infix (see below).

We may also note 質 M. n̄jim, irregularly read *lin* in Pekingese.

It seems likely that **nl* had been simplified to *n̄* by the end of the second century A.D., since we find 尼 M. n̄ji used for both dental *n* and cerebral *ṇ* in Lokakṣema's transcriptions. (Though a distinction was kept in careful usage between M. *n* and *n̄*, as we see from successive transcriptions of Sanskrit syllabaries (Li Jung 1952, tables opposite p. 164), *n̄* is frequently used for *n* before *i* because of the absence of dental *n* in this context.) The character 尼 is rarely found in earlier transcriptions. Instead we find 泥 M. nei (cf. p. 89) and the use of this in the standard early transcription of *nirvāna* 泥洹 M. nei-h̄iwan (or -h̄wan) is probably in this earlier tradition.

In a few cases we find M. *y* alternating with *n̄*, *n̄j̄*:

孕 M. yəŋ : 乃 M. n̄ei, 仍 M. n̄jəŋ

芮 M. yei, 芮 M. ywei, n̄jwei 內 M. n̄wei

淫 M. yim : 壬 M. n̄jim

This must be compared with the Tai forms of the third earthly branch 寅 M. yin which, as Li Fang-kuei remarks "all seem to point back

to a Primitive Tai palatalized nasal" (1945, p. 338). We can account for the phenomenon by postulating **n̄j̄* > M. *y*. Since we have **nl* clusters, **n̄δ* clusters might also be expected.

As in the cases of the other nasals, we shall postulate an aspirate **nh* in Old Chinese. Its reflexes in Middle Chinese are the same as those of **θ* and we may suppose that it became **θ* at one stage in its development. **nh* is revealed in *hsieh-sheng* series like the following:

隱 M. thək : 匿 M. n̄jək

態 M. thəi : 能 M. n̄ai, n̄əŋ

荼 M. thəŋ, nou : 奴 M. nou

灘 M. thən : 難 M. nan

聃 M. thəm, nam

妥 M. thwa : 綏 M. n̄wəi'

饜 M. śjəŋ : 囊 M. n̄əŋ, 囊 M. n̄jəŋ

恕 M. śjə : 如 M. n̄jə

攝 M. śjep, nep : 聶 M. n̄jep

Corresponding to *n̄* < **nl* we find *th* < **nhl* in a few cases:

聃 M. thjə' : 耳 M. n̄jə'

絮 M. thjə', n̄jə' (also *sjə'* < **snh-*, see below)

丑 M. thju' : 柎 M. n̄ju'

The first member of the last example is the second earthly branch and we have Tai loans for it. They seem to imply Primitive Tai **pl-* (Li Fang-kuei 1945, p. 338). There is no trace of labials in the series however and we should like to reconstruct **nhl* > **θl*. Tai **pl-* might perhaps represent **f*, as a substitution for **θl*.

Laterals

The lateral initial *l* did not undergo palatalization after *yod*. Except where it disappeared entirely in the simplification of initial clusters, it seems to have been a stable phoneme from Old Chinese to Middle Chinese.

It is probable that we should also reconstruct an aspirate **lh* in Old Chinese, on the analogy of the aspirated nasals, to explain cases where *l* alternates only with *th* or *th̄*—though in some cases clusters are to be suspected even here:

體 M. thei' : 禮 M. lei'

獺 M. that, th̄at : 刺 M. lat, 賴 M. lai'

摠 M. thju : 留 M. lju

离 M. thje : 離 M. lje

A case of **lh* in a transcription may perhaps be recognized in the earlier form of the word for "camel", 橐(駝)陀 M. thak-da < **lhak-ṣaṣ* (?) which appears in the second century B.C. but is replaced in Later Han by 駱駝 M. lak-da. The new transcription can be most easily explained

if we suppose that Chinese *lh had changed to th and was therefore no longer appropriate to represent a foreign liquid. Unfortunately the original of the word is quite unknown—it may have been Hisung-nu or Tokharian. The *hsieh-sheng* series of neither 羸 nor 駝 show contacts with l, but both contain retroflex stops, showing evidence of -l- clusters. (For the history of the forms see Schafer 1950.)

Clusters with -l-

The theory concerning the retroflexion of dental initials and the effect on the vocalism of the loss of medial -l- which has been developed above enables us to restore -l- clusters with considerable confidence in many cases. Certain problems remain however, especially when M. l is itself the surviving member of the cluster.

The most numerous clusters are those with velars and laryngals. In this case Karlgren supposed that medial -l- had been lost after all initials except his unaspirated *g*-. We have eliminated this phoneme from our system but in place of it we have *h* and it provides an attractively simple solution to suppose: *hl > l, *gl > gi/h. There seems to be no insuperable obstacle to this. There are it is true cases where we might wish to suppose that *g, rather than *h, had been lost before l as in double readings like 苙 M. giip, liip or 璆 M. gyeu = 鏐 M. liou (Karlgren 1957, No. 1069 i and b) or where there are readings of the same character in k and l that look like variation between voiced and unvoiced initial, e.g. 鞞 M. kjou, liou (also lu). Such examples are few however and may be looked on as exceptional.

Another difficulty might seem to be presented by the use of 樓 M. lu < *hloh in Lou-lan = Krorayina. One must however remember the peculiarity already noted about transcriptions from that region, i.e. the use of Chinese laryngals to represent foreign back velars or uvulars (see p. 91 above). The native pronunciation of Krorayina may have had an uvular at the beginning which prevented it from being represented by Chinese *kl. The same considerations may apply to 藍市 M. lam-ji (Shih-chi 123), 藍氏 M. kam-jje' (or cje) (Han-shu 96 A), 藍氏 M. lam-jje' (or -cje) (Hou Han-shu 118) the name of the capital first of Ta-hsia and then of the Yüeh-chih in Bactria (cf. Haloun 1937, p. 259). The first syllable of this transcription must represent the name later known as Khulm. Khulm is a large ancient site in the heart of Tokharestan east of Balkh, strategically situated on the crossroads between the east-west road and the north-south route between Transoxanian and the Hindukush. It is a natural place to have been made a capital city by the Yüeh-chih. I hope to give a fuller discussion of this identification from the historical point of view elsewhere. It will suffice here to point out the variation between *hl- and *kl- to represent the foreign initial which was later an Iranian X-. Whether the

name is originally Tokharian or Iranian, the Chinese probably first heard it through Tokharian, perhaps as *q-.

It should be noted that hw- did not disappear before -l- as is shown by cases like 嚙 M. hwak, 榮 M. hwan where the series clearly points to labiolaryngals rather than velars. This occasions no difficulty however. In the few cases where we find M. l- in *ho-k'ou* rhymes showing contacts with velars, the medial -w- can be explained in other ways than as a result of a labiovelar or labiolaryngal initial—either by the breaking of a rounded vowel before a dental ending or by *vl- (see below).

The time of the simplification of l clusters

A number of examples of clusters of velars or laryngals + l from the Han period have been given already and more could be added. One may note 翳昆 M. kaek-kuən < *klek-kun, equivalent to the slightly later 堅昆 M. ken-kuən, an early form of the name Kirghiz (Shih-chi 110, p. 0245.1, Han-shu 94 A, p. 0596.1, cf. Han-shu shu-cheng). Examples may still be found in Buddhist transcriptions. The character 劫 M. kjap is used for *kalpa*. It probably goes back to an original *klāp. Because of the confusion of rhymes jap and jap the vocalism is here an unsatisfactory guide and there are no contacts with l in the *hsieh-sheng* series. The supposition of medial -l- would however enable us to account for the presence of 法 M. pjap < *plāp in the series. We probably have 劫 M. kjap earlier in the transcription of Kujula kadphises, if we accept Pelliot's emendation of the last syllable 卻 M. kjak (1914, p. 401). Pelliot noted this as a transcription in which foreign l was not represented by the Chinese. If we restore *klāp we have *khūh-dzūh-klāp which can represent a *kujūl(a)kap- by metathesis. The same character also occurs in 劫貝 M. kjap-pai, 劫波育 M. kjap-pa-yuk, 劫貝 婆 M. kjap-pai-sa = Skt. *kārpāsa*, *kārpāsika* "cotton" (Pelliot 1959, pp. 440-1). Pelliot assumes that these transcriptions are based on Prakrit forms with *kapp*- but it is possible that Chinese *klāp- represents *kārp*- by metathesis. The form in -yuk seems to indicate *-zūk or *-zik for -sik(a). The significance of the departing tone in M. pai will be discussed in connection with the finals.

Another transcription in which Pelliot noted that -l- seemed to be ignored was 舍頭諫 M. śja-du-kan = Śārdūlakarṇa. Here again the syllable M. kan implies *kl- which may stand for -(a)k- by metathesis.

The character 著 M. gjī is something of a problem. Its vocalism should imply *glēδ. Yet it is used in 焉著 M. jan-gji = *Ārgi where it should not have a cluster and also in the Hsiung-nu title 屠著 M. dou-gji which is, I believe, the ancestral form of Turkish *tegin*. It occurs also in early Buddhist transcriptions, sometimes with the value *j*-, as in 著域 M. gjī-hjwək = *jivaka* 比耆陀 M. bji'-gji-da = *vijita* (?) (T.202, trans.

ca. A.D. 425), 耆那 M. *gji-na* = Jina. These transcriptions seem to point to a reading *M. *jji* < **gēδ* which has not been preserved in dictionaries. One may note also that it is used for 耆 M. *jji* in the *Shih-ching*. We also find it however used for *g*- in 耆闍 M. *gji-jia* = Skt. *gr̥dhra-* (T.224). A form like Pali *gijja* would not require us to suppose any *gl-* in the Chinese but in the Old Khotanese *Suvarṇabhāsa* we find *gr̥jakūlu ggaru* = Buddhist Sanskrit *gr̥dhrakūṣa-*, with *-rj-* from a Prakrit (see Bailey 1949 p. 134). The best solution seems to be to posit two Old Chinese readings **gēδ* and **glēδ*, only the latter of which survived to Middle Chinese.

Clusters of labials + *l* are also found. A possible early example is 虎魄 M. *hou'-phak* < **ha'-phlak* "amber" (*Han-shu* 96 A, under Chi-pin, Kashmir). This may represent Greek **ἀμραξ* "amber". The equation had been suggested by G. Jakob in 1889 but was rejected by Laufer. Though the Greek word is only attested in latinized form in Pliny as a term used in Syria, the epithet "snatcher" is an appropriate one for amber and may well have been known in other Greek speaking regions. We should of course not be surprised to find evidence of Greek influence in north-west India in the first century B.C. (cf. Laufer 1919, p. 523). A probable **bl* cluster that has already been alluded to is 梵 M. *bjam* = Brahman- (see 114 above). Another case in an early Buddhist transcription is 那那 (read 那) M. *pjin-na* < **plān-na* = Pūrṇa- in *Pūrṇamaitrāyaṇīputra* (T.224 p. 427B, see also T.2128 p. 361C).

Doubt has been thrown on the existence of *ml* clusters by the failure to show any trace of this in the Tai forms of 卯 M. *mau'* (Li Fang-kuei 1945, p. 338—this may however have originally been **vl-*, not **ml-*). Though such clusters may have been simplified relatively early, one or two probable examples may be found. One is 都密 M. *tou-mjit* < **taḥ-mlit* the name given in *Hou Han-shu* 118 for the city governed by one of the five *yabgu* of the Yüeh-chih. This must be a transcription of Tarmita, later Termes, situated north of the crossing of the Oxus and an important strategic point that the Yüeh-chih would have been certain to occupy. One of the stages on the journey to Ta-ch'in, the Roman Orient, mentioned in the *Hou Han-shu* and the *Wei-lüeh* is 阿蠻 M. **a-man*. Hirth's identification with Ecbatana is still often quoted but there is only the vaguest of phonetic resemblances and the suggestion of Miyazaki that it represents Armenia is much more likely. I hope to discuss this itinerary in detail elsewhere. (See Hirth 1885, Miyazaki 1939.) The transcription should go back to **aδ-mlan* and the *-l-* could represent the foreign *-r-*, once again by a metathesis. I do not know of any examples of **ml* in Buddhist transcriptions.

The cluster **sl* is probably to be found in 史 M. *sjə'* < **slē* = S(u)liy "Sogdian" (?). This character was used as the surname for natives of Kesh who came to China. Kesh seems to have the main centre of the native kingdom of Sogdiana in the Han period and was probably the place meant

by the various forms of that name that appear in Chinese in early times: 蘇薩 M. *sou-haai* (one of the countries which sent an embassy along with An-hsi, Parthia, in ca. 110 B.C., *Shih-chi* 123; one of the petty kingdoms under K'ang-chü, *Han-shu* 96 A; capital of K'ang-chü, *Chin-shu* 97), 粟 (read: 粟) 弋 M. *sjok-yək* (country mentioned in *Hou Han-shu* 118), 粟德 M. *sjok-dək* (country mentioned in *Pei-shih* 97). (See Marquart 1901, pp. 303 ff., Barthold 1928, p. 134, Shiratori 1928, Pelliot 1938, p. 148.) The use of this surname is, to be sure, only attested much later towards the end of the sixth century, but other "Sogdian surnames", especially An 安 and K'ang 康, were being used already in the second century in the names of foreign monks and it is quite likely that 史 originated at the same period. (This name will be discussed further with regard to its final.)

Clear examples of clusters of dental stops + *l* are not easy to find. A likely case seems to be 因坻 M. *yin-dji* < **in-dliδ* < **ēn-dlēδ* = Indra, (T.224). Professor J. Brough informs me that *dr* remained in this word in Gandhari Prakrit.

At about the same period we find M. *d* < **δl* used for foreign *l* in two transcriptions of Alexandria that appear in the *Wei-lüeh* 烏遲散 M. *'ou-dji'-san*, 澤散 M. *ḍak-san*. Earlier, **δ* alone had been used for foreign *l* (see p. 116 above). By this time *δj* was becoming palatalized to *z*. It is not quite clear whether it had yet been hardened to *d* when not followed by *yod*. In any case the combination *δl* may have been the best available means to express the peculiar quality of an Iranian *l*. (Presumably the name came through an Iranian intermediary.) (Hirth 1885, pp. 181, 190.)

There are clearly very good grounds for thinking that *-l-* clusters persisted at least up to the end of the second century A.D. This agrees with the evidence of the sound glosses in the *Shih-ming*, which might otherwise have been suspected of archaism. When the history of Buddhist transcriptions has been worked out in all its details we may be in a better position to say just when they finally disappeared.

l as a derivational infix

The new reconstructions of *-l-* clusters now proposed give much support to Wulff's theory of *l* as a morphological infix (Wulff 1934). There are very many words which are obviously cognate which turn out to be related through medial *-l-*. The question requires extensive treatment in relation to the other morphological devices such as variation between voiced and unvoiced initial, prefixed *s-* (see below) and the falling tone (*i.e.* suffixed *-s*, as will be shown in the treatment of the finals). Here only a few examples will be cited. In some cases the infix makes a transitive verb out of an intransitive or a causative out of a transitive:

至 M. *cji* < **tits* "arrive" : 致 M. *tji* < **tlits* "bring"

出 M. *cjwit* "go out" : 黜 M. *tjwit* "expel"

合 M. *həp* "join" : 洽 M. *həp* "unite"

拔 M. *bət* "protrude", M. *bət* < **blət* "pull out"

Compare also: 性 M. *sjeŋ* "life, innate disposition" : 生 M. *ɕjaŋ* < *sləŋ* "bear", "be born, live".

The derivation may take a variety of other forms, however, e.g.:

齊 M. *dzei* "equal" : 儕 M. *dzəi* "equals"

貫 M. *kwan*, *kwan* "perforate", *kwan* < **kwlan* "be familiar with, practise".

圈 M. *kjwan* "turn round" : 卷 M. *kjwen* < **kwlan* "roll"

跨 M. *khəu* "squat over", *khwa* "step over, pass over"

The sibilant series of initials

In Middle Chinese we find three dental affricates: *ts*, *tsh*, *dz*—and two fricatives: *s*, *z*. The voiced fricative *z*, however, occurs only before *-j* and in *hsieh-sheng* series it does not freely alternate with the other sibilants. It is doubtful whether it existed as an independent phoneme in Old Chinese. In a few cases it appears to be a variant treatment of *dzj*—note double readings such as 憎 M. *dzəŋ*, *zju*, 担 M. *dzja*, *zja* (also *tʂa*, *tʂja*), 費 M. *dzjin*, *zjin*, 鷺 M. *dzjim*, *zjim*. Otherwise *z* is found almost exclusively in *hsieh-sheng* series of the *δ*-type.

We are left with a very few cases in which *z*-alternates only with *s* : 司 M. *sja*, 嗣 M. *zja*, or occurs on its own without *hsieh-sheng* relatives, e.g. 咒 *zji*. In the case of 嗣 "heir", the word is certainly cognate to 襲 M. *zjip* "inherit". Here the *Shuo-wen* gives 襲 M. *dəp* as phonetic, which is in turn phonetic in 襲 M. *ɕjəp*; so once again we have reason to connect *z* with *δ* or *t* rather than the other sibilants.

If *z* did exist independently and was not merely a conditioned development of *s* or (more rarely) a variant of *dz*, we should expect to find a reflex of it before unyodized vowels but there is nothing which can be pointed to as probably representing this.

The fact that M. *z* is most frequently found in **δ* series suggests that it may originate from **sδ*. We can postulate its development as follows: (1) when not followed by yod from an original long vowel, **sδ* > **zδ* > **zd* > M. *d*, (2) when followed by yod, **sδj* > **zδj* > *zy* = M. *zj*. Examples are very numerous, e.g.:

象 M. *zjaŋ* < **sδāŋ* : 像 M. *daŋ* < *(*s*)*daŋ*.

祥 M. *zjaŋ* < **s(g)δāŋ* : 羊 M. *yaŋ* < *(*g*)*δāŋ*

夕 M. *zjek* < **sδāk* "evening" (cf. Tibetan *zla-ba* "moon"): 夜 M. *ya* < **δāks* "night"

袖 M. *zju* : 由 M. *yu*

俗 M. *zjok* : 谷 M. *yok*, *kuk*

習 M. *zjip* (cf. Tibetan *slob* "learn"): 熠 M. *yip*

似 M. *zjə* : 以 M. *yə*

續 M. *zjok* : 賈 M. *yok*, 讀 M. *duk*

循 M. *zjwin* : 盾 M. *duən*, *zjwin*

Series of this kind also sometimes contain words in M. *s*-, before both yodized and unyodized endings. We may postulate: **sθ* > *s* in both cases.

E.g.:

窠 M. *sja* : 台 M. *thəi*, *yə*, 飴 M. *zjə*

條 M. *sju* : 攸 M. *yu*, 條 M. *deu*

賜 M. *sje*, 錫 M. *sek* : 易 M. *yek*, *ye*

隴 M. *sjwe* : 隴 M. *zjwe*, 隴 M. *dwa*, *hywe*, 隴 M. *ywe*

隸 M. *sji* : 隸 M. *yi*, *dəi*.

If I am right in reconstructing M. *zjwin* as **sδün*, it is likely that 伊循 M. *yi-zjwin* < **ē(δ)-sδün*, the city in the territory of Lou-lan where the Chinese established a garrison in 77 B.C., is a transcription of the name that lies behind the *Ἰσηδών* of Ptolemy. A T'ang dynasty geographical text identifies 伊循 with 七屯 M. *tshet-duən* city on the south side of Lop Nor (Haneda 1930). Enoki now proposes to emend 七屯 to 一屯 M. *yit-duən* in order to justify the identification with 伊循 but this is unnecessary (Enoki 1961). M. *tshet-duən* can very well represent a later form of the word underlying **ē(δ)-sδün*, *Ἰσηδών*. (The final **δ* of the first syllable can sometimes be ignored in transcriptions.) It is also no doubt the same as the place *Rtse-hthon*, *Rtse-hton*, *Rtse-mton*, *Se-toñ*, *Se-to* mentioned in Tibetan documents (Thomas 1951, pp. 160-4). The proposal to identify 七屯 with *Ἰσηδών* has already been made by Herrmann 1938, p. 126. For another recent conjecture about the name see Hamilton 1958, p. 120. I now withdraw the proposal to take 七 as "seven" made in *T'oung-pao* 1952, p. 352.

Another possible place where we may reconstruct **sθ* is in 四 M. *sji* "four". This does not superficially show much resemblance to the Tibeto-Burman forms of the numeral for which Benedict reconstructs a prototype **b-li* (1948, p. 202, cf. Wang Ching-ju 1931). In the phonetic series however one finds 𠵼 M. *thji* and 𠵼 M. *hji*, both of which can point to **θ* = Tibeto-Burman *lh*. Moreover the alternative graph for the numeral "four" 肆 has as its phonetic 隸 M. *dəi*, *yi* < **δits*, **δits*. We can therefore reconstruct M. *sji* < **sθits*. (In order to account still better for the Tibeto-Burman comparison one might conjecture further that **sθits* came from an earlier **fθits* (= **fδits*). M. *thji* ~ *hji* could then indicate **fl*—see below.)

Retroflexion of sibilant initials

Though the sibilant initials did not undergo palatalization between Old Chinese and Middle Chinese, they did undergo retroflexion under the influence of medial *-l*, like the other dental consonants. We find *hsieh-sheng*

contacts between *l* and the Middle Chinese retroflex sibilants in such cases as the following:

吏 M. *liə* : 史 M. *ʃji*, 使 M. *ʃji*, *ʃji*
 六 M. *liuk* : 黠 M. *tʃhjuək*, 𪛗 *tʃjuək*, *dʒjuək*
 婁 M. *lu*, *liu* : 數 M. *ʃjou*, *ʃauk*
 梁 M. *liəŋ* : 𪛗 M. *tʃhjaŋ* (cf. 初 *tʃhjo* < **tʃhlāh*)
 麗 M. *lie*, *lei* : 釀 M. *ʃie*, 瀾 M. *ʃae*, *ʃie*
 率 M. *liwit*, *siwit*, *ʃiwi*
 林 M. *liim* : 霖 M. *ʃiim*

Before certain short vowels retroflexion apparently did not take place:

立 M. *liip*, 拉 M. *ləp* : 颯 M. *səp*
 藪 M. *su* : 數 *ʃjou*, *ʃiou*, *ʃauk*, 婁 *lu*, *liou*, cf. 藪 *su*, *ʃjou*

Benedict 1948, p. 199, has proposed to see Chinese *ʃ* as coming from **sr* and cites in evidence: Tibeto-Burman **srík* "louse", 虱 M. *ʃit* "louse"; Tibeto-Burman **ʃring* "be born", 生 M. *ʃjaŋ*. The comparisons are very convincing but they probably mean that one must derive Tibeto-Burman **r* from a dental **s*. Transcription evidence in favour of **sl* > M. *ʃ* has been cited above.

If **sl* still existed in the second century A.D., we must assume a different origin for M. *ʃ* in some cases; for we find it in transcriptions of an earlier period where there is no possibility of an *r* or an *l*, e.g.: 山 M. *ʃaən* in M. **ou-yək-ʃaən-liə* = Alexandria (p. 116 above), 霜 M. *ʃjaŋ* in M. *kjwəi-ʃjaŋ* = Kushan (*Han-shu* 96A), 師 M. *ʃji* in M. *ʃji-tʃjə* "lion" = Tokh. *ʃecake*, *ʃiʃák* "lion" (see p. 109) and in M. *ʃji-ʃji* = Nesef (see p. 120). A clue as to the probable origin of M. *ʃ* in these cases is provided by a few series where we find it alternating with laryngals or velars, especially *ŋ*.

𪛗 M. *ʃa*, *ai* : 夏 M. *ha*, *ha*
 所 M. *ʃjo* : 戶 M. *hou*, 屨 M. *kou*
 疋 M. *ŋa*, *ʃjo*
 朔 M. *ʃauk*, 𪛗 M. *ʃaək*, *sou* : 𪛗 M. *ŋək*, 𪛗 M. *ŋjak*
 產 M. *ʃaən* : 𪛗 M. *ŋjen*, 顏 M. *ŋan*

The most likely explanation seems to be in terms of a combination of *s* + *h* (or *s* + *h* < *ŋh*). As we shall see below, there is good reason to think that *s* functioned as a prefix which could precede other types of initials. Phonetically the development seems very plausible—we may compare the retroflexion of *s* after *k* in Indian *kʃ*.

In order to account for the Tai loans of the cyclical character 午 M. *ŋou*, which point to an earlier **zŋ*- (Li Fang-kuei 1945), we must suppose that, before *ŋ*, *s* first became voiced and then disappeared: **sŋ* > **zŋ* > *ŋ*. It probably similarly disappeared before **g* in 戶 M. *hou* < **sga* "door" (cf. Tibetan *sgo* "door") and presumably also before **k* in 屨 M. *kou* < **skah*. The two values of 疋 probably come from **sŋ*- and **sŋh*-.

the other hand it is not to be assumed that because one word in a series had prefixed **s* we have to reconstruct this in the whole series. Thus 許 M. *hou*, *hjo* must, on our theory, imply **ŋh*-, not **sŋh*-, and when 所 M. *ʃjo* is used for these words (Karlgren 1957, 91a-c) it presumably implies that **s*- was treated as a movable prefix. It should be further noted that as a place name 許 M. *hjo* is alternatively written 鄒, with, however, the same pronunciation. The phonetic is in this case 無 M. *mjo* < **māh* and there is no trace of initial **s* in the series. This must be an example of a phonetic in **m*, with **mh* in the series, used for a word in **ŋh*, since **mhā* would give M. *hjo*, with labialization of the vowel (cf. 騰 M. *hjo*, etc.).

In series of this kind we also quite frequently find M. *tʃh*- e.g.:

鑿 M. *tʃhan* : 產 *ʃaən*
 楚 M. *tʃhjo* : 疋 M. *ʃjo*, *ŋa*
 麤 M. *tʃhaən* : 麤 M. *haən*

𪛗 M. *tʃhjuək* (< -*p* (?)), used in transcribing Akṣobhya, *Hōbōgin*, p. 39) : 𪛗 M. *ŋiim*

and we should probably also associate with this type of series cases in which *ʃ* and *tʃh* alternate with each other or with *s* but without other initials of the sibilant series:

殺 M. *ʃaəi*, *saət* : 刹 M. *tʃhaət*, 擻 M. *saət*
 爽 M. *ʃjaŋ* : 爽 M. *tʃjaŋ*

Noting the frequent alternation of *h* and *kh* in phonetic series, one might suppose that *tʃh* in these series was from **skh*. The difficulty with this from a theoretical point of view is that in many cases it seems to imply an alternation **skh* ~ **sŋh* rather than **skh* ~ **sh*. I therefore adopt this solution only provisionally, and with reserve.

It is noteworthy that the retroflex sibilants appear to have had the same effect on the vocalism whether they were derived from **sl*, **tʃhl* or from **sh*, **sŋh*, **skh*. This is not at all surprising. What is more difficult to explain is the appearance of Division II vocalism in some, but not all, cases where *s* appears to have been lost before *ŋ*, *h*, *ʃ*. We cannot very well attribute this to initial **s*, since, in the one case where we have clear evidence of a **sŋ* cluster, the sibilant had no effect on the vocalism, i.e. 午 **sŋa* > M. *ŋou*, like 吾 **ŋəh* > M. *ŋou*. It seems likely that we must sometimes postulate more complex clusters such as **sŋl*, **sŋl*, etc. We may particularly note in this connection the following phonetic series, in which we get most of the few cases of the anomalous initial *ʒ* in the *Ch'ieh-yün*:

矣 M. *hja*, 俟 M. *zja* (also *gja*, *hja*), 駘 M. *ŋaəi*, *zja*, M. *aəi*, 𪛗 M. *haəi*, *aəi*, 𪛗 M. *ʃja* (not in the *Shuo-wen*).

The phonetic is here said to be 𪛗 M. *ya* < **ʃā* (< **hā*?). This might justify us in reconstructing 矣 as M. *hja* < **hā*, with *h* irregularly

preserved, and postulating 侯 *shli- > *zhli- > zja- (or giä-, or hja-). Note also 彘 M. zja < *svli- (?) (see below). The possibility of reconstructing 矣 as *hli- raises interesting possibilities of connecting it with the Mandarin perfective particle 了 *le*. Lack of parallel cases or comparative evidence must however make the reconstruction of this series still very conjectural.

The clusters *ŋδ, *sŋδ

For 邪 M. zja, ya we should probably reconstruct *sŋδ-, *ŋδ-. The presence of *δ is confirmed by the fact that M. zja 'slanting, perverse' is the same word as 斜 and the character is used as a loan for 叙 M. zjo- (Karlgren 1957, No. 47a). The series of 余 is a typical *δ series (see above) but the *Shih-ming* gloss 語 M. ŋjo- : 敘 M. zjo- again suggests the possibility of *sŋδ (Bodman 1954, p. 61). Further, 余 M. yo 'I' may be cognate to 吾 M. ŋou 'I'. It would however carry us too far afield to pursue these suggestions further at this time.

To reconstruct *sŋδ- does not help to explain the difference in vocalism between *zjo- and *zja. We have suggested above the hypothesis of a diphthong *ea/ēā to account for this, i.e.: *sŋδā- > M. zjo-, *sŋδēāh > M. zja. On this basis we should probably reconstruct 牙 M. ŋa 'tooth' as *(s)ŋeāh, rather than *(s)ŋlah, though an alternation in the series between -δ- and -l- would also be possible. (The *hsieh-sheng* derivatives have both M. y- < *ŋδ- and M. z- < *sŋδ-, so, though they may suggest, they certainly do not prove, the presence of *s-. See Simon 1956 for a comparison with Tibetan so 'tooth'.)

The following series seems to show an alternation between *ŋ and *ŋh:

教, 藝 M. ŋyei- : 教, 勢 M. sjei- < *hyei- < *ŋh-

We must however account for the failure of ŋy to palatalize to ŋ. A solution in terms of *ŋδ (see p. 118 above) seems excluded, since *ŋδi- or *ŋδy- should give M. y-. The answer is probably that we have *sŋ ~ *sŋh. The initial sibilant prevented palatalization of ŋ, but not of *h < *ŋh. The presence of prefixed s- is indicated for the series by other words: 習 M. sjet < *snhēāt 'familiar', 褻 M. sjet 'garment next to the body', both cognate to 裨 M. ŋjit' etc. (see p. 120 above). It is no doubt *s- that provides the link between M. ŋ, ś < *sŋ, *sŋh and M. s < *snh. We find M. ŋ < *n < *sn (?) in 熱 M. ŋjet 'hot', cognate to 然, 爍 M. ŋjen 'burn'.

Clusters of s + labiolaryngals

We have noted above that in circumstances that gave rise to the close medial semivowel -y-, *hw gave rise to M. yw, falling together with the same phonemic combination deriving from *δ. We might therefore expect that in similar circumstances *shw, if such a combination existed in Old Chinese, would give rise to M. zjw, corresponding to M. zi < *sδ. We do

in fact find M. z occurring in labio-velar series before the close front vowels, thus:

圓 M. zjwen, hwen : 捐 M. ywen, 員 M. 'wen-

旬 M. zjwin 'complete cycle, ten days' : 勻 M. ywin 'even, all round', 鈞 M. hwen, etc.

(The *Shuo-wen* does not state that 勻 is phonetic in 旬 but the *ku-wen* form there quoted implies it. The two words are no doubt cognate.)

穗 M. zjwi- : 惠 M. hwei-

慧 M. zjwei-, zjwi- : 慧 M. hwei-

燭 M. zjem : 閻 M. yem < *hwēm (?), see p. 105 above and also p. 140 below

還 M. zjwen : 豎 M. zjwen, hwan, gywen, 諷 M. hywen, 纒 M. hwen-

(The phonetic here is 袁 M. hjan. In order to account for the e vowel in the derivatives we may postulate *-ean/-ēān.)

We also sometimes find initial s in series of this kind:

恤 M. sjwit : 血 M. hwet, 洩 M. hjwək

荀 M. sjwin, 洵 M. hwen, sjwin

總 M. sjwei-

The close relation between these s- initials and *hw seems clear. It implies that *shw did not fuse to šw, like *sh > š. Instead s was lost before short, unyodized, vowels but remained at the expense of the following h before yod: e.g. 血 M. hwet < *shwit (< -k ?) 'blood' (cf. Sino-Tibetan *s-hwi 'blood', reconstructed by Benedict 1948, p. 198), but 恤 M. sjwit < *shwit. This differs from what we suppose happened in the case of *sθ which yielded M. s before both yodized and unyodized vowels. Moreover, since hw was not subject to palatalization before -y-, we cannot explain it simply by analogy with *shwy > *zhwy- > zyw- = M. zjw- by the side of *hwy- > M. yw. The following case would indicate indeed that the change *shw > M. sjw- was not confined to situations which gave rise to medial -y-:

亘 M. sjwen : 桓 M. hwan, 垣 M. hjan

(Karlgren 1957, No. 164, doubts the reading *sjwen* but this is confirmed by the use of this character for -suar-, e.g.: 阿會亘 'a-hwai'-sjwen = ābhāsvara-, *Hōbōgirin*, p. 9.)

Clusters of s + dentals

Hsieh-sheng contacts between s and n are commoner than between s and ŋ. E.g.:

羞 M. sju : 楛 M. ŋju

媵 M. sjun : 戎 M. ŋjun

需 M. sjou : 儒 M. ŋjou

絮 M. sjo-, ŋjo-, ŋjo-, thjo- : 如 M. ŋjo

襄 M. *sjaŋ* : 襄 M. *njaŋ*
 隼 M. *sjwin'* : 隼 M. *njwin*
 翼 M. *sje* : 爾 M. *nje'*
 綏 M. *sjwi* : 稌 M. *njwi*

Note also the following two series which are indicated by the graphs and by the *Shuo-wen*, even though the finals are very divergent.

西 M. *sei* : 迺 M. *nei'*

囟 M. *sjin'*, 細 M. *sei'*, 思 M. *sje* : 函 M. *nau*, 農 M. *noŋ* (cf. also 遷 M. *tshien*, 僊 M. *sjen*, which in the modern graphs have 西, but in the Archaic graphs had 囟 as phonetic, see *Shuo-wen* 3A).

By analogy with **sj*, we should expect that **sn* would first become **zn* and then M. *n*; where we find M. *s* we can postulate **snh*—this is consistent with the general rule that the reflexes of **nh* are the same as those of **θ*. We shall not, of course, assume **sn* as a matter of course in every case where *n* shows contacts with *s*, since *s* could be a prefix.

Tai loans of the names of the cyclical characters provide evidence of **zŋ* (< **sj*) and **sm*, but not of **sn*. This gap in the evidence is provided by the word 胡荽 (葫荽, 葫荽) M. *hou-sjwi* "coriander". That it is a foreign loan word is proclaimed by the variations in spelling. It is certainly an old importation since it appears, fully domesticated, in a literary piece by Shih Ch'ung 石崇, ca. A.D. 300 (*T'ai-p'ing yü-lan* 980.5b). Laufer 1919, p. 198, compares it with Middle Persian *gošniz*, New Persian *kisniz*, *kušniz*, etc. He supposes earlier Iranian **koswi*, **košwi*, **gošwi* in order to justify the comparison, but this is unnecessary as well as linguistically dubious. The phonetic series of the first and third of the characters used to represent the second syllable allows us to postulate **sn* clusters and we can reconstruct **snhwəδ*. (Final *-*δ*, which here apparently stands for Iranian -*z*, will be discussed in connection with the finals.)

The first syllable gives rise to certain problems. I have consulted Professor H. W. Bailey and Dr. I. Gershevitch about the Iranian forms. Though forms like New Persian *kisniz*, Turkish *kisniz*, Russian *kisniz*, imply an unvoiced initial, there appears to be rather good evidence in favour of early forms in *g*-. Laufer's Middle Persian *gošniz* is apparently based on the Pahlavi *gəšniz* found in the Shorter Bundahišn 27.15. The Greater Bundahišn 117.15 has *kšniz* but the *k* is marked with two dots, implying voicing, as if the text has been corrected. The Frahang i Pahlavik 6.2 (ed. H. Junker, 1912) has Pahlavi *gšniz* = **gašniz* (with *g* marked by two dots), Pazand *gašniz*, as equivalent to Aramic *kušbrt* = **kušbartā* "coriander". Armenian *ginj* "coriander", occurring in the Old Testament and therefore dating from A.D. 4th-5th centuries, is probably borrowed from Iranian. (Cf. Baluchi *gēnič*, *hēnič* for the loss of -*f* before *n* within Iranian. N.B. Gilbertson and Mayer have *hēnič*.) Note also the form *gašniz* found in Ishkashmi in Northern Afghanistan. There is another plant name Pahlavi *kāšniz*, New Persian *kāšni*, *kāšni* "endive". It immediately precedes *gašniz* in the Frahang i Pahlavik. Possibly the two words were assimilated so that *gašniz* could be changed to *kāšniz*. In view of this it seems likely that the first syllable of the Chinese word is part of the transcription and does not merely mean "foreign". This is also indicated by the variants with the additional grass radical which imply that the word is an inseparable whole—the alternative pronunciation of this character,

M. *hou* is confined to the meaning "large *Allium*" and may be disregarded. M. *hou* can theoretically go back to either **gaš* or **haš*. The latter is the more probable in view of the use of the character in the meaning "why", where the word it represents is evidently related to M. *ha* < **həδ* "what". (For the use of the latter character to represent Indian voiced aspiration, see p. 87 above.) The probability that it did not have a stop initial in Chinese is not however an insuperable obstacle to its representing Iranian *g*-, since it is very likely to have come by way of Sogdian, in which the voiced stop would have regularly become a fricative *ɣ*-. Unfortunately the word itself does not appear to be attested in Sogdian.

The alternative spelling 菱 M. *sjwi* is of great interest for there is no other evidence of the presence of **n*- in the phonetic series: 允 M. *ywin'*, 菱 M. *tshjwin*, 俊 M. *tsjwin'*, etc. We should perhaps reconstruct M. *ywin'* < **nδ*-. (According to the *Shuo-wen*, 巳 M. *yə'* < **δə*. (< **hδi* (?), see pp. 119, 129 above) is phonetic.)

The series of 允 is unusual in that we have contacts between M. *y* < **nδ*(?) and the dental affricates. There are *hsieh-sheng* contacts between *n* and the affricates, particularly *tsh*, which may help to explain this. Thus 千 M. *tshen* "thousand" appears, in its Archaic form, to have 人 M. *njin* as phonetic and is in turn phonetic in 年 (季) M. *nen* "year". (信 M. *sjin* probably also has 人 as phonetic, though this is not recognized by the *Shuo-wen*.) These words probably originally ended in *-*ŋ*, cf. Tibeto-Burman **ning* "year" reconstructed by Benedict 1948, p. 200, and 佞 M. *neŋ* which no doubt has 仁 M. *njin* as phonetic. On analogy with the hypothetical **skh* > *tsh* we can reconstruct **sth* > M. *tsh*. This will allow us to compare M. *tshen* "thousand" with Tibetan *ston* "thousand" (< *st'oni* ?). The difference in vocalism still remains to be explained.

We again find an alternation between *tsh* and *n* in:

次 M. *tshji* "order, second" : 二 M. *nji* "two"

The words are no doubt cognate and one is led to ask, as in the case of the relationship between *tsh* < **skh* and *ʃ* < **sjh*, (see p. 129 above) whether the aspirated affricate has not in fact developed out of an aspirated nasal under some as yet undetermined circumstances. We also find 恣 M. *tsji* and 茨 M. *dzji* in the series. If M. *tsh* in this series comes from **sth*, we must suppose also **st* > M. *ts*, **sd* > M. *dz*. This seems quite a likely phonetic change at a time when all clusters were being simplified, for it replaces clusters with unitary phonemes made up of the same elements already existing in the phonological system. In 捷陀訶盡 M. *gjen-da-hə-tsjin'* (or -*dzjin'*) = Gandhahastin (T.224, p. 470) I can cite one case in which Chinese *ts* (or *dz*) stands for Indian -*st*-. This is to be sure not conclusive, since in the absence of *st*, we can well imagine that *ts* could be used for it by metathesis.

Returning to 菱 M. *tshjwin*, we may now reconstruct the initial as **sth* (for **snh* ?). The problem of accounting for the relation between *n*~*s*~*tsh* is precisely analogous to that of *ŋ*~*ʃ*~*tsh*.

The hypothesis *st > ts, etc., could account for cases like the following in which, contrary to the usual strict separation between dental affricate series and dental stop series, we find the same phonetic used for both types:

七 M. tshet "seven" < *sthit : 叱 M. chjit < *thit (here again *sth- may be for *snh-, cf. Burmese *nit*, Bārā *mi* "seven" and other similar forms involving *n-* or *hn-*, but also Kanauri *stif*. Wang Ching-ju 1931).

崔 M. dzuai : 侏 M. cjiw

全 M. dzjwen : 輕 M. jiwēn, tshjwēn

才 M. dzai, 戔 M. tsai : 戴 M. tai`

Cf. also

酉 M. yu' < *δū : 昏 M. dzju < *sdūh, 酒 M. tsju' < *stū.

Buddhist transcriptions of Viṣṇu might be expected to show *sn if it still existed. Though the sibilant was lost in Central Indian forms like Pali *Veṇhu*, this was not true of Central Asian Prakrit to judge by the form *Viṣṇa-* found in Khotanese proper names. (See Bailey 1942, p. 922, 1954, p. 23 l. 5, p. 35 l. 25, p. 62 l. 1, p. 70 l. 13.) We find: 毗紐 (or 鈕) M. byi-nju', 韋 (or 達) 紐 M. hīwəi-nju', 韋紐 M. hīwəi-nju' (besides others in which the sibilant is explicitly represented, see *Hōbōgirin*, p. 67). It is noteworthy that in no case do we find a falling tone word in -i' in the first syllable which could represent a sibilant at this period (see Bailey 1947, this matter will be treated further in connection with the finals). If the sibilant is represented at all, it must be in M. nju'. Since we have 羞 M. sju' in the series, we may suppose for 紐 and 鈕 an original *snl-, giving *sn- or *zn-.

Labial stops

There are rather few indications that the labial stops underwent phonetic change between Old and Middle Chinese. The fact that we have Division II endings and both Division III and Division IV in the "split" rhymes after *p*, *ph*, *b* indicates that -l- clusters existed and were simplified by the loss of -l- in every case. It seems likely that medial -δ- also existed after labial stops and was similarly lost. The vocalism might possibly help in certain cases to reconstruct them but this will be left for further discussion. We may provisionally note the following cases in which, if we suppose that medial -l-/-δ- is the link joining series with velar and labial initials, we should need to reconstruct -δ- after labials:

便 M. byen', 緋 M. kaŋ' < *klaŋ', pyeŋ' (see Karlgren 1957, no. 745 f.), 更 M. kaŋ (phonetic said to be 丙 M. pjaŋ' < *plāŋ')

并 M. pyeŋ, 迸 M. paŋ : 并 M. ken, 形 M. hieŋ

妃 M. phuəi', phjəi, 配 M. phuəi', 圮 M. bji' < *bl- : 己 M. kjə' (配 "match" is etymologically related to 匹 M. pyit "mate" which has

入 M. pəet < *plet or *pleat as phonetic and may therefore have *pδ-).

There is every reason to think that there would also have been *s*-clusters with labial stops. Positive indications of this are few. Presumably in most cases *s*- disappeared without trace. We may however note:

罪 M. dzuai' "crime, guilt" : 非 M. pjəi' "is not", "wrong"

We might suppose in order to explain this: M. dzuai' < *sdwəδ' < *sb- (by assimilation of *b to the preceding dental consonant). This word is also written 辜 in which 自 M. dzji' appears to play the phonetic role (though this is not stated in the *Shuo-wen*). This has a very diverse phonetic series: 頤 M. byi', 泊 M. kji' < *(s)klōts < *-ps (?) "and" (cf. 及 M. kjip < *(s)klōp "and"—the phonetic series has 駁, 跖 etc., M. səp), 臬 M. ŋet < *(s)ŋ(δ)et (羈, 擊 M. ŋet "unstable" are the same word and so are 闌 榮 M. ŋet "post"—for *s*- in the latter series see p. 130), 習 M. zjəp < *sδəp, 息 M. sjək < *sθ- (?), etc. This would seem to justify very well a reconstruction M. dzji' < *sb-, or even better *sbδ- in view of the frequent appearance of medial -δ-/-l- in the series. The latter alternative would provide stronger grounds for expecting the assimilation to *sd- and should perhaps be preferred for that reason also. If *sb- always gave M. dz we should expect to find more examples. On this hypothesis we should reconstruct 罪 as M. dzuai' < *sbδəδ' and 罪 辜 M. tshuai' would be *sphδəδ'. 自 is said to be the drawing of a nose and is no doubt etymologically related to 鼻 M. byi' "nose" < *b(δ)əts (< *-ps ?) (phonetic in 鼻 M. phji' < *phl-) and perhaps to Tibetan *sbrid-pa* "sneeze" (Simon 1929, p. 174).

Labial nasals

The labial nasal *m*, also mostly remained unaltered from Old Chinese to Middle Chinese. In *hsieh-sheng* series it occasionally has contacts with the stops but is more often kept separate. It does, however, frequently show contacts with *h*. To account for this Karlgren reconstructed the cluster *xm. Tung T'ung-ho 1948, pp. 13-14, proposed instead a voiceless *ɱ*. As in the case of the other nasals and *l*, I wish to propose an aspirate *m^h*. This corresponds to Haudricourt's reconstruction for Common Tai. As far as the phonological system is concerned, it is certainly preferable to associate the unvoiced nasals with the aspirates rather than with the unaspirated surds.

The following are likely to be examples of *m^h:

荒 M. hwəŋ : 亡 M. mjaŋ

悔 M. huəi' : 每 M. muəi'

慶 M. hīwə' : 慶 M. mjə

蕘 M. hwəŋ : 夢 M. məŋ, 夢 M. muŋ

微 M. hīwəi : 微 M. mjəi

忽 M. huət : 勿 M. mjwət

昏 M. huən : 民 M. myin, 恨 M. muən

焜 M. *h̥wəi'* : 尾 M. *m̥jəi'*
 耗 M. *hau'* : 毛 M. *m̥əu'*
 憐 M. *hou* : 無 M. *m̥jou*
 威 M. *h̥wet* : 滅 M. *myet*

In these cases we find not simply M. *h*, but M. *hw*, except in rhymes where the vowel itself is rounded, so that medial *-w-* is excluded. In a few contacts of *h* and *m* we do not find this:

悔 M. *həi'* : 每 M. *muəi'*
 黑 M. *hək* : 墨 M. *mək*

Consideration of this will be deferred.

Since **mh* gave *hw* rather than *h*, we should not normally expect it to be palatalized by medial *-y-* and we do not in fact find many contacts between *ś* and *m*. (Nor do we, however, find contacts between M. *hyw* and M. *m*—M. *h̥wet* in the above example has Division III vocalism.) In the case of: 少 M. *śjeu'* < **mh̥əu'* : 眇 M. *myeu'* < **m̥əu'* the final labial would have caused **hw* to be dissimilated to **h* and so be palatalized by following *-y-*.

Tai evidence for an **sm* cluster in 戍 M. *sjwit* has been pointed out by Li Fang-kuei 1945. By analogy with the development of **sŋ* we should expect that **sm* gave **zm* > M. *m* and should therefore wish to reconstruct **smh* in this word. The tones in Lü and Diao, which have forms in *s-*, show an original unvoiced initial. Unfortunately the tones of Ahom, where *m* was preserved, are unknown.

戍 is probably phonetic not only in 滅 M. *myet*, 威 M. *h̥wet* as suggested by Li Fang-kuei, but also in 歲 M. *sjwei'*, as indicated by the *Shuo-wen*. The *hsieh-sheng* derivatives of the latter however indicate labiolaryngals rather than *m*: 颯 M. *hwai'*, 顏 M. *h̥wai'*, 噴 M. *iwat*, *hwai'*, 劓 M. *kjwei'*. In view of the other evidence that words with labial initials could serve as phonetics for words with labiolaryngals (see above), we can suppose that 歲 was **shwāts*, rather than **smhāts*.

If we are right in thinking that **smh* and **shw* had the same reflexes in Middle Chinese before yodized endings we might assume that the same would be true before unyodized endings and we should in this case get M. *hw* (see p. 131 above). In fact, however, there are a number of contacts between *s* before unyodized endings and *m* which suggest that **smh* gave M. *s(w)* rather than *hw*:

喪 M. *saŋ* (for **swaŋ*?) "lose" : 亡 M. *mjaŋ* "disappear" (the words are cognate and the former graph contains the latter as phonetic)

孫 M. *suən* "grandson". (This is usually taken to be a compound character—"child" + "line", but the element also occurs in 孫 M. *kuən*, 縣 M. *myen*. The 烏孫 M. *ou-suən* < **ah-smən*, a nomadic people north of the T'ien-shan in the Han period, are probably to be identified with the Ἀσπιρατοι of Ptolemy.)

In spite of the fact that 損 M. *suən'* has contacts with labiolaryngals rather than with M. *m*, it also probably goes back to **smh-* rather than **shw-*. In the *Shih-ming* it is used to gloss 昏 M. *huən* < **mbin*. (Bodman 1954, p. 62).

On analogy with **ŋδi* > M. *y* and **nδi* > M. *y* (see pp. 120-21, 130 above) we might expect to find **mδi* also giving M. *y*. This would account for the following series:

黽 M. *maəŋ'*, *myin'* : 蠅 M. *yəŋ*, 繩 M. *ziəŋ*

Note that M. *maəŋ'* implies **mliŋ'*, so that we apparently have an alternation of **ml* ~ **mδ*.

Labial fricatives

In addition to his other unaspirated voiced stops Karlgren proposed unaspirated *b* in a few cases in order to account for contacts between labials and other initials:

聿 M. *ywit* : 律 M. *liwit* : 筆 M. *pjit*
 緝 M. *lwan*, M. *liwen* : 蠻 M. *man*, 變 M. *pjen'*
 臨 M. *lijim* : 品 M. *phjim'*
 粟 M. *lijim'*, *pjim'*

On analogy with **hl* > M. *l* we should like to reinterpret Karlgren's *b* disappearing before *-l-* as a labial fricative, *β* or *v*. There are comparatively few other cases in which labial stops interchange with *l* in phonetic series. Since *p*, *ph* and *b* all occur before Division II vowels and in Division III of "split" rhymes, we may assume that the clusters **pl*, **phl*, **bl* all lost their medial element before both yodized and unyodized endings, so that we should not expect to find many traces of contact with *l* in stop series. There are however many *hsieh-sheng* contacts between *m* and *l*. Since *m* also occurs before Division II and "split" Division III endings, we have to suppose that **ml* also gave M. *m*. Contacts between *m* and *l* might therefore be explained by alternation between **ml* and **vl* or **ml* and **l*. There is reason to think that this is not the whole story however. We may note the following case in which the same character has alternative readings:

龍 M. *liŋ* "dragon" (cf. Tibetan *hbrug*), *mauŋ* (in the sense of "motley", see Karlgren 1957, No. 1193)
 This would be more understandable if we could reconstruct **vlŋ* > M. *liŋ*, **vlŋ* > M. *mauŋ* rather than suppose that a word properly read **vlŋ* was used for **mlŋ*. There is other support for the idea that **vl* could yield M. *m* before unyodized endings. Thus:

犛 M. *mau*, *lai*, *lǎ* "yak" (the first two readings representing alternative developments of **vl* cf. Tibetan *h̥bri-mo* "female yak")

理 M. *liə* 'pattern' (cf. Tibetan *hbri-ba* 'draw, design'): 埋 M. *maei*
 龙 M. *mauŋ* 'motley': 垆 M. *liəŋ*

In all these cases we find M. *m* before Division II endings alternating with *l* before *yod*.

If a phoneme **v* existed in Old Chinese we should expect it to have occurred not only in combination with *l*. Its normal development would appear to have been M. *m*. Cf. 質 M. *mau* < **vuh* (?): 卯 M. *mau* < **vlū*, 瑯 M. *liu* < **vlūh*. Other examples will be given below.

There are also *hsieh-sheng* relationships which seem to point to an unvoiced counterpart to **v*. Thus we have 龍 M. *thjəŋ* < **lhōŋ* < **flōŋ* (?) and 董 M. *thjək*, *thjək*, *hjuk* < **flik* (?). The last example, indicating *h* and *th* as alternative developments from **fl-*, enables us to suggest an explanation for this alternation in 畜 M. *thjuk*, *hjuk*, *thju*, *hju* < **flūk*, **flūks* (?). 搥 M. *thjo* may likewise be for **flāh*, cf. 膚 M. *pjou* < **plāh*. In this case 慮 M. *liə* is probably from **vlāh*. (慮 M. *lou* 慮 M. *liə*, etc. may on the other hand be from **hl-*.)

Just as we sometimes find *kh* alternating with *h*, *tsh* with *ʃ* < *sh* or *sp**h*, and *tsh* with *s* < **snh*, so we sometimes find *ph* instead of the usual reflexes of **f*, e.g.:

第 M. *phau* < **phlūh*

派 M. *phae*: 脈 M. *maek* < **vlek*, 覓 M. *mek* < **vek*, 永 M. *hijwaŋ* < **hwlēŋ*

It is uncertain whether we should regard this as an alternation between **ph* and **f* or should regard **ph* as a variant development of **f*.

It would appear that, unlike the labial stops and *m*, *mh*, the labial fricatives did not always lead to the labialization of the vowel—note M. *liə*, *thjo* < **vlāh*, **flāh* in contrast to M. *pjou* < **plāh* and the variation between **thjək* and **thjuk* from **flik*. Hence 黑 M. *hək*, 梅 M. *hei* probably represent **fik*, **fi* rather than **mh-*; so also, 夔 M. *hje* < **fih* (or **flih* ?). (Likewise 趨 M. *hei* may come from **vih*, with *h* < **v* rather than *m* < **v* as an exceptional development in front of *ə* < **i*.)

Besides **f* > *h* as in these examples we find quite another probable reflex of **f* in the following series:

𠵹 M. *hjoŋ*, 𠵹 M. *tsuŋ* (cf. 𠵹 M. *tshaŋ*, 𠵹 M. *ʃwa*)

There would at first sight seem to be no reason to reconstruct labial initials in this puzzling series. There is however a character 𠵹, meaning a kind of headdress for a horse, which is used in Buddhist terminology as a transcription of the Sanskrit syllable *vaṃ* (*Hōbōgirin*, pp. 5, 50). It does not appear in the *Kuang-yün*. In the *K'ang-hsi Dictionary* it is read M. *tsuŋ* but in *Hou Han-shu* 90A the character 𠵹 occurs without the metal radical in the same sense and the commentator gives it a reading which implies M. *mjam*, as well as the alternative reading M. *tsuŋ*. The reading M. *mjam* is evidently what lies behind the Buddhist transcription value. We may

further note that the synonymous 𠵹 has only the reading M. *mjam* (see p. 114 above). We may note further that in the above series *ts* only occurs before unyodized *-uŋ* and there are no cases of *tsh-* or *dz-*; *h* on the contrary occurs only before *yod*. The obvious inference is that *ts* here represents the unyodized counterpart of *h* and that we should reconstruct: **f* > M. *ts*, **fi* > M. *hi*. There is one other case in which M. *ts* alternates with labials: 葬 M. *tsaŋ* 'bury': 莽 M. *maŋ* (according to the *Shuo-wen* 莫 **mak* has the same phonetic, cf. 墓 M. *mou* 'tomb'). The change **f* > *ts* is less surprising than it might at first appear. As far as the change in the manner of articulation is concerned we may compare it to what happened to **θ*. There the fricative was replaced by an aspirated stop before the short vowel, here by an unaspirated affricate; the difference probably indicates a weaker pronunciation of **f* than of **θ* in Old Chinese. As regards the change in place of articulation we may recall, in the opposite direction, the development of labials in certain modern dialects out of Middle Chinese affricates (Forrest 1948, pp. 207-8). The change **f* > M. *ts* seems only to have taken place before the vowels **o* and **a*.

In support of the hypothesis of labials in this series we may note the probable connection of 𠵹 M. *hjoŋ* 'breast' with Tibetan *brān* (Simon 1929, p. 172). This would indicate **fl-* rather than **f-*—probably 𠵹, 𠵹 should be reconstructed as **flōŋ* and the subseries of 𠵹 (𠵹 𠵹 𠵹) was distinguished by the presence of medial *-l-*. We have noted above that **fl* could give either **h* or **th*. This reconstruction is further supported by the probable equation of the name of the Hsiung-nu 𠵹奴 M. *hjoŋ-nou* < **flōŋ-naḥ* with the Φροῦνοι of Apollodorus (Haloun 1937, p. 306, n. 1). As Haloun says, "Die sachliche Identität ist m. E. unabweisbar". This equation does not exclude the possibility of connecting the name of the Hsiung-nu with the Hūna of India and the Χοῦνοι, Οῦνοι, Hunni of western writers as has sometimes been thought. There is reason to think that there may have been a simplification of the initial in the Hsiung-nu language *pari passu* with the simplification in Chinese, and perhaps under similar influence, that of neighbouring Altaic languages in which initial clusters were excluded. Haloun perspicaciously thought that the Γροῦνατοι Σκόθαι of Ptolemy might represent a more recent linguistic stage of the name Φροῦνοι. We might further compare the name Γαρινατοι which appears in Ptolemy for a people occupying the Hsiung-nu territory in Mongolia. The Γροῦνατοι Σκόθαι, placed in Transoxania, would represent a western offshoot, possibly the remnants of Chih-chih's following who set themselves up on the Talas River around 50 B.C. (Dubs 1957, p. 6 ff.).

This view is greatly strengthened by the earlier and later transcriptions of the clan name of the Hsiung-nu ruler: 𠵹鞮 M. *liwen-tei* < **vlān-* (or **vlōn-*)*teḥ* (*Han-shu* 94A, p. 0595.4) and 盧連題 M. *hjo-lien-dei* (*Hou Han-shu* 119, p. 0907.1). The later transcription would indicate that

the original labial fricative in Hsiung-nu had become a laryngeal or velar fricative. Presumably this is indicated also by Greek γ -. A still later loss of $-r$ - would give us the Sogdian rw of the early fourth-century letters (Henning 1948, p. 615).

The initials M. tsh and ʃ which we also find in the series of ʃ must be compared with the same initials in series with M. h < $*\eta\text{h}$ and M. η (see p. 129 above). We might expect $*\text{sf}$ to give M. ʃ , and on analogy with the hypothetical $*\text{skh}$ > M. tsh , should then reconstruct $*\text{sph}$ > M. tsh . This does not seem an entirely happy solution and it may be that we must find some other way of accounting for the alternation between ʃ and tsh in both cases.

We should expect $*\text{v}$ and $*\text{f}$ to have occurred in front of $*\delta$ as well as $*\text{l}$. This is probably the best way to account for 準 M. ywit (< $*\text{v}\delta\text{üt}$?) as phonetic in 律 M. liwit < $*\text{vlüt}$. We may also find it in the following:

粵 M. phen , phyen < $*\text{ph}\delta\text{en}$, $\text{ph}\delta\text{ēn}$, 樽 M. yen < $*\text{v}\delta\text{ēn}$, 馱 M. hen < $*\text{f}(\delta)\text{en}$, 聘 M. thjen < flēn (phonetic is 丁 M. ten).

冑 M. yit < $*\text{v}\delta\text{ēt}$, 屑 M. suət , set < $*\text{s}\theta\text{et}$ < $*\text{f}\theta\text{et} = *f\delta\text{et}$ (?), 胗 M. hjit , hjət < $*\text{fl}\delta\text{t}$

四 M. sjit < $*\text{s}\theta\text{its}$ < $*\text{f}\delta\text{its}$ (?—see p. 127 above)

In some cases where we find the reflexes of $*\delta$ in series with labial initials before labial finals it may, however, be the result of dissimilation. Thus:

蘭 M. dəm < $*\delta\text{əm}$ < $*\text{vəm}$: 詔 M. həm < $*\text{hwəm}$, 闕 M. yem < $*\text{hwēm}$ (see p. 105 above).

Other cases where it seemed possible to reconstruct $*\text{f}$, $*\text{v}$ are the following:

(1) 亨 M. phan < $*\text{phlan}$ (or an alternative development of $*\text{flan}$?) "boil", "have sexual intercourse", (= 烹), han < $*\text{flan}$ "penetrate", hjan < $*\text{fān}$ (?) "sacrificial offering, feast". It is possible that the last reading here is from $*\text{flān}$, in spite of the fact that we expect $-\text{jan}$ after laryngeal, velar and labial initials + l . $*\text{hjan}$ does not in fact occur in Middle Chinese. We have noted that the retroflex initials from original $*\text{-lān}$ also have $-\text{jan}$, rather than $-\text{jan}$, and $*\text{f}$, having affinities with $*\theta$, may have done the same. If we reconstruct $*\text{fl}$ - here we must also do so in 饗 M. hjan "feast, enjoy" which is the same word; hence also in 皂 and 香 M. hjan "fragrance" and 鄉, 向 M. hjan "facing" and the other words of these series. An obstacle is 卿 M. khjan "minister" but, in view of the other cases where medial $-\text{l}$ - links labial and velar initials, an alternation $*\text{fl} \sim *khl$ seems not out of the question. In support of this reconstruction one might compare M. hjan "fragrance" and 芳 M. phjan "fragrant"; also 響 M. hjan "echo" with Tibetan brag "echo" (for Chinese $*\text{fl} =$ Tibetan br compare $*\text{flōn} \sim \text{brān}$ "breast", etc.). 餉 M. śjan and the alternative readings of

餉 M. śjan , śjan , besides hjan , hjan may represent $*\theta\text{ān}$ < $*\text{fān}$ and $*\theta\text{āns}$ < $*\text{fāns}$. This would avoid the difficulty of explaining the palatalization of $*\text{h}$ without the presence of $-\text{y}$.

(2) 薑 M. hjək (< $*\text{fik}$ or $*\text{flik}$?), 莢 M. hjək , śjek (< $*\text{hək}$ < $*\text{fək}$), 兩 M. pjək (pjək , rather than pjuk , probably indicates $*\text{plik}$).

(3) 薑 M. hjan , hjin : 薑 M. muən (phonetic is 分 M. pjuən).

(4) 希 M. hjəi < $*\text{fi}\delta$: 緝 M. thji < $*\text{fi}\delta$, 稽 M. haei < $*\text{fi}\delta$.

(5) 萬 M. mjan < $*\text{mānh}$ < $*\text{vāns}$, 邁 M. mai < $*\text{vlats}$, 厲 M. ljei < $*\text{vlats}$, 薑 M. thai < $*\text{flats}$, 藹 M. that , hai < $*\text{flat(s)}$, 藹 M. hai , haei , mai .

In the Old Chinese phonological system one can probably regard $*\text{w}$ in the labiolaryngals and labiovelars as phonemically identifiable with $*\text{v}$, with which it is in complementary distribution. The elimination of $*\text{v}/*\text{f}$ from the phonemic system between Old Chinese and Middle Chinese was accompanied by the change in the role of $*\text{w}$ from being part of the system of initial consonants to being a semivowel.

PHONEMIC UNITS PROPOSED FOR OLD CHINESE

I. Initials

Laryngals	·					h	h
Velars	k	kh	g	ηh	η		
Labiolaryngals	w					hw	hw
Labiovelars	kw	khw	gw	ηhw	ηw		
Dentals	t	th	d	nh	n	θ	δ lh l
Sibilants	ts	tsh	dz			s	
Labials	p	ph	b	mh	m	f	v

II. Initial clusters

- (1) $-\text{l}$ - following initials of all types.
- (2) $-\delta$ - following velars, n , and labials.
- (3) s - preceding initials of all types.

III. Vowels

- (a) Simple: i , i ; e , ē ; a , ā ; o , ō ; u , ū . (b) Diphthongs: ea , eā ; au , āu ; eu , ēu . (c) Triphthongs: eau , ēāu .

I reconstruct five cardinal vowels, long and short, corresponding to the five recognized *Shih-ching* rhyme classes in -ŋ. These vowels also occurred before the velar stop -k and the laryngal finals. In general terms the correspondences to Karlgren's Archaic system are as follows: i, ī = ə, jə; e, ē = ie, jē; a, ā = ā, ja; o, ō = u, ju; u, ū = ō, jō. The high front vowels i, ī had already been centralized to ə, ē before the Han period in many contexts and I have so written them when Han transcription values are in question. The same five vowels are assumed to have originally existed before dental finals also but already in the *Shih-ching* o, ō had become wa, wā, rhyming with a, ā; and u, ū had become wə, wē, rhyming with ə, ē < i, ī. Before labial finals the same fronting and unrounding occurred but, since the labial semi-vowel was excluded by a labial final in the same syllable, the confusion with the original unrounded vowels was more complete. Both *um and *om fell together with M. əm < *im; *ūm gave M. jīm; *ōm fell together with *ām.

Instead of Karlgren's open o, jo I reconstruct the diphthongs au, āu. They occurred before -k and the laryngal finals but not -ŋ (like the other diphthongs and triphthongs in -u and unlike the simple vowels). For the e-diphthongs and triphthongs see pp. 100 ff. above.

Many developments conditioned by special contexts must of course be accounted for in a full discussion of the evolution of the Old Chinese vowel system to Middle Chinese.

IV. Final consonants

Laryngals	·	(h)	h̄
Velars	k	ŋ	(x)
Dentals	t	n	δ
Sibilant		s	
Labials	p	m	(v ?)

Final glottal stop is reconstructed where Middle Chinese had the rising tone. It could occur alone (replacing h̄ in the level tone) or after the nasals and δ, but not the stops. Final -s could occur after any other final. After -ŋ, -n, -m it had probably already become -h by the Han period, and laryngals + s were replaced by -h. *-ks became *-h also, but may have gone through a stage as a velar fricative *-x. *-ts and *ps > *-ts probably became simplified to *-s in the Han period, if not before, but this final sibilant remained until a very late date. The history of *-δs in the Han period is not yet clear to me. *-s and *-h were ultimately responsible for the development of the falling tone in Middle Chinese. This theory of the origin of the tones follows the suggestion of A. Haudricourt 1954 (1) and (2). Detailed evidence and argument in favour of it will be given in the continuation of this article.

Outline of the development of the initials from Old to Middle Chinese

I. Laryngals and labiolaryngals—unchanged except:

- h (but not hw) + -y- > ś.
- hw + -y- > yw.
- exceptionally, ·(w) > k(w), h(w) > kh(w) (?).
- (w)l, h(w)l > ·(w), h(w); hl > l (exceptionally, h̄); hwl > hw.
- s + ·(w) > ·(w); s + h > ś (exceptionally tsh ?); s + hw > hw (before short vowels), > sjw (before long vowels); s + h̄ > h̄ (but, shli- > zjə' ?); s + hw > hw (before short vowels and medial -i-), > zjw (before medial -y-).

II. Velars and labiovelars—unchanged except:

- g, gw > h̄, hw before short (unyothesized) vowels.
- ŋh > h, treated like original h.
- k, kh, g, ŋ, ŋh + -y- > c, ch, j, ŋ, ś; (but *sny > ny ?).
- l- was lost after all these initials, but changed -y- to -i- and prevented palatalization.
- kδ, khδ > k, kh; kδy, khδy > ky, khy, without palatalization of the velars.
- gδ (> δ) > d/y (before open and back vowels), > h̄/gy (before i/i, e/ē).
- skh > tsh, tsh (?).

III. Dental stops—unchanged except:

- t, th, d > c, ch, j, before all long (yothesized) vowels.
- tl, thl, dl > t̄, th̄, d̄.
- st, sth, sd > ts, tsh, dz (?).
- stl, sthl, sdl > t̄s, t̄sh, d̄z (?).

IV. Dental nasals—unchanged except:

- nh > th before short vowels.
- n, nh > ŋ, ś before long (yothesized) vowels.
- nl, nhl > n, th.
- nδ > y before long vowels, (> n before short vowels ?).
- sn > n, snh > s (exceptionally tsh ?).

V. Laterals—unchanged except:

- lh > th, th.
- l- lost after all consonants except h̄ (but not hw) and v (before long vowels); it caused the retroflexion of preceding dental initials.

VI. Dental fricatives:

- Before short vowels δ > d, θ > th.
- Before long (yothesized) vowels δ > y (exceptionally ž), θ > ś.
- δl, θl > d̄, th̄.
- sδ > d (before short vowels), > zj (before long vowels); sθ > s.

VII. Sibilant affricates—unchanged except:

(a) **tsl, tshl, dzl** > **tʃ, tʃh, dz**.

VIII. **s**—unchanged except in combination with other consonants (q.v.); **sl** > **ʃ**.

IX. Labial stops—unchanged except **sbδ** > **zd** > **dz** (?); **sphδ** > **tsh** (?).

X. Labial nasals:

(a) **m** unchanged, except **mδj/mδy** > **y** (ʒ).

(b) Before Old Chinese unrounded vowels, **mh** > **hw**; **smh** > **sw**.

(c) Before Old Chinese rounded vowels, **mh** > **h/ś**; **smh** > **sh** > **ʃ** (exceptionally **tʃh** ?).

XI. Labial fricatives—**v** > **m**, **f** > **h** except:

(a) before long vowels **vl** > **l**.

(b) before ***i** > **ə**, exceptionally **v** > **ɦ** (?).

(c) before short **a, o, f** > **ts**.

(d) **fl** > **ʃh**, or **h** (exceptionally **ph** before short vowels?).

(e) **vδ** > **δ** > **d/y**; **fδ** > **sθ** > **s** (?).

A continuation of this article, in which the final consonants of Old Chinese will be discussed in detail, will appear in the next number of this journal.