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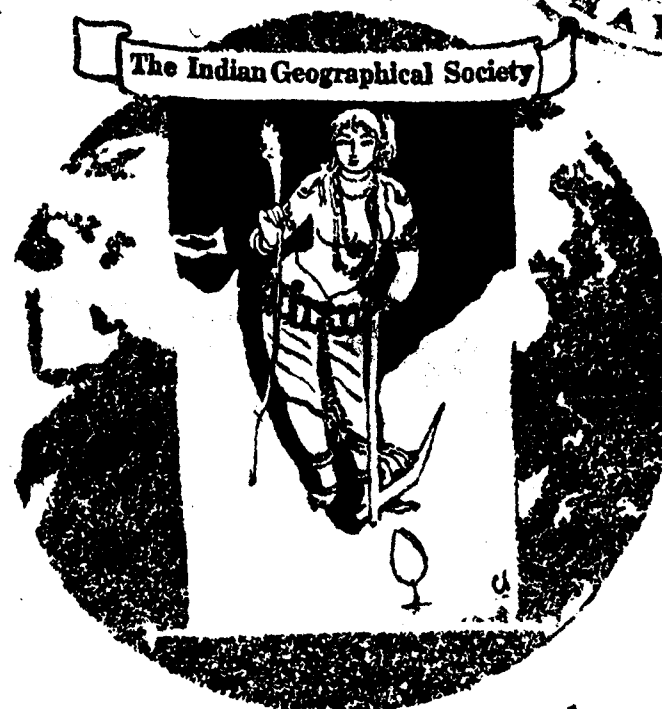
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CONTENTS

	PAGE
ANCIENT INDIAN GEOGRAPHY—By DR. B. C. LAW, M.A., B.L., PH.D., D. LITT., F.R.G.S., F.R.A.S.B., F. Bom., R.A.S. . .	1
GEOGRAPHY AND FEDERALISM—By O. H. K. SPATE, M.A., PH.D. . .	24
INTENSIVE FARMING IN PANJAB—By DR. KAZI S. AHMAD, M.A., PH.D. (LONDON) . .	37
SIKKIM—CONTRIBUTED . .	41
WHEAT IN WESTERN UNITED PROVINCES—By V. S. MATHUR, M.A. (LONDON) . .	49
REVIEWS . .	53

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1944.

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The Indian Geographical Journal

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THE JOURNAL OF THE MADRAS GEOGRAPHICAL ASSOCIATION

Vol. XIX

JANUARY—MARCH, 1944

No. 1

Ancient Indian Geography

By

DR. B. C. LAW, M.A., B.L., PH.D., D. LITT.,
F.R.G.S., F.R.A.S.B., F. Bom., R.A.S.

India known to the Buddhists as Jambudvīpa and to the Brahmins and Jains as Bhāratavarṣa is counted as one of the seven dvīpas of the world. It was one of the nine varṣas or countries constituting the nine main divisions. Jambudvīpa figures in ancient literature as one of the four main continents with Sineru (Sumeru) in the centre. The eastern continent (Pubbavideha) is placed to the east of Sineru, the western continent (Aparagoyāna) to the west, the northern continent (Uttarakuru) to the north and the southern continent (Jambudvīpa) to the south.

Videha was the name of the place in Jambudvīpa where the people coming originally from Pubbavideha settled down. Aparānta was the name of the land which was settled down by the people coming originally from Aparagodāna or Aparagoyāna and the land where the people from Uttarakuru settled down became known as Kuru.¹

The Sineru mountain is located in the middle of the nine varṣas of Jambudvīpa (seven according to the Jain source,

1. Papañcasūdanī, i, 484; Dhammapada Commentary, ii, 482.

Jambudīva-pannatti). To the south of Ilāvṛtavarṣa is the Niṣadha mountain range, and to the south of it is Harivarṣa, the country lying just to the north of Bhāratavarṣa. In between the two is the Himalayan mountain. The Himalayan range extends east and west over a distance of about 1600 leagues. The slope of this range is like that of a bow with its string to the south.² The Himalayan range is divided into greater Himalaya and lesser Himalaya. The former extends eastwards up to the Bay of Bengal and the latter westwards and then southwards up to the Sea below the Varṣadhara mountain, i.e., the Arabian Sea.

India is pictured in the Buddhist literature in the shape of a bullock-cart with its face towards the south. It is extended on the North.³ The surface of India is one of the convex shape of the upper shell of a tortoise according to the Brāhmaṇa literature.⁴ According to the Jaina account the Vindhya mountain range divides India into two halves, the northern half later called Āryāvarta and the southern half later called Dākṣiṇātya or Deccan.⁵

The Himalayan mountain also known as Himavanta, Himācala or Himavā is one of the Seven mountain ranges that surround Gandhamādāna.⁶ According to the traditional description, it extends over a distance of three hundred thousand leagues and contains eighty-four thousand peaks, the highest of them being five hundred leagues. Here the length, the number and the altitude are fabulous. We have mention of seven great Himalayan lakes, e.g., Anotatta, Kaṇṇamuṇḍa, Rathakāra, Chaddanta, Kunāla, Mandākinī, and Sihappāta. Each of them is fifty leagues in length, breadth and depth. These lakes cannot be identified and the description of their length, breadth and depth seems to be mythical. According to the Buddhist account there were five hundred rivers, only ten of which were to be reckoned, the rest having an intermittent periodical flow.⁷ Of the ten rivers the first five e.g., Gaṅgā, Yamunā, Acīravatī, Sarabhū and Mahī formed the Ganges group and the rest, Sindhu, Sarasvatī, Vetravati, Vitapṣā and Candrabhāgā, with the exception of the second

2. Bhāgavata Purāṇa, Chapter XIX.

3. Dīgha Nikāya, II, p. 235.

4. Mārkaṇḍeya Purāṇa, Chapters 57 and 58.

5. Jambudīva-Pannatti, I, 12.

6. Paramatthajotikā, II, 66.

7. Milinda, p. 114.

constituted the Sindhu group. Generally speaking, the first five flowed from the greater Himalaya and other five from the lesser range.

The Buddhists derive the name of the continent of Jambudvīpa from a Jambu tree⁸ which seems to be imaginary. It is on account of this tree that the continent is also called Jambuvana and Jambusaṇḍa.⁹ The continent extends over a distance of ten thousand leagues, of which four thousand are covered by the seas, three thousand by the Himalayas, and three thousand only are inhabited by men. It contained as many as eighty-four thousand towns.¹⁰ According to the Buddhist account¹¹ the number of parks, groves, lakes etc., in Jambudvīpa is trifling while numerous were the unfordable rivers, inaccessible mountains, etc.

According to the Jain account the Bhāratavarṣa which is situated to the south of the Himalayas and between the eastern and western seas abounds in rivers, lakes, hills, dales, forests, trees, creepers, etc. It appears from the north like a bedstead and from the south like a bow. It is divided into six portions.¹²

The origin of the Ganges is traced to a lake called Bindusara which is situated in the middle of the three peaks, Kailāsa, Maināka and Hiraṇyāśrīga.¹³ According to the Jaina account it is connected with a flow through the eastern outlet of a great lake in the lesser Himalayan range called Mahāpadmahrada and that of Sindhu with a flow through its western outlet. The description of the lake with four outlets is similar to the Buddhist account of the lake Anotatta to which it refers the origin of the five great rivers flowing eastwards. Anotatta too is like the Jainapadmahrada, a lotus lake with four outlets on its four sides, from each of which flows a river. The four rivers that flow according to the Jaina account from the four outlets of the Lotus lake are Gaṅgā, Sindhu, Rohitā and Harikāntā.¹⁴

8. Vinaya, I, p. 30; Samantapāsādikā, I, p. 119.

9. Sutta Nipāta, V, 552; Paramatthajotikā, II, p. 121.

10. Cf. Jātaka, IV, p. 84.

11. Aṅguttara, I, p. 35.

12. Jambudīva-Pannatti, I, 9.

13. Mahābhārata, 6, 43, 44.

14. Jambudīva-Pannatti, IV, 34, 35.

The five rivers Gaṅgā, Yamunā, Aciravatī, Sarabhū and Mahī have originated from the Anotatta lake.¹⁵ The river which flows out through the south channel encircles the lake three times under the name of Āvaṭṭa-gaṅgā, then as Kaṇhagaṅgā it flows straight for sixty leagues along the surface of a rock, comes into violent contact with a vertical rock and is thrown upwards as a column of water. This column known as Ākāsa-gaṅgā flows through the air for sixty leagues, falls on to the rock Tiyaḡgala excavating it to a depth of fifty leagues, thus forming a lake which is called Tiyaḡgala tank; then the river under the name of Bahala-gaṅgā flows through a chasm in the rock for sixty leagues, then under the name of Ummagga-gaṅgā^{15a} through a tunnel for a further sixty leagues and finally coming upon an oblique rock, divides into five streams forming the five rivers.

The name of Bhāratavarṣa is derived from king Bharata whose sovereignty was established over it.^{15b} The six divisions in northern India and three divisions in southern, eastern, and western and middle are all internal divisions of India proper. The nine parts of Varāha-Mihira conforming to the centre and eight of the ten points of the compass: eastern, southern, western, northern, south-eastern, south-western, north-western, and north-eastern are all internal. The nine divisions in the Mārkaṇḍeya Purāṇa are all internal.

The system of classification adopted in the Mārkaṇḍeya Purāṇa is as follows: (1) those belonging to the middle country; (2) those to northern region; (3) those to eastern India; (4) those to Deccan; (5) those to western India; (6) those to Vindhya region; and (7) those which are mountainous.^{15c} The Mahābhārata^{15d} refers to eastern, northern, southern, western and the mountainous regions. According to Hiuen Tsang, the five traditional divisions of India are enumerated thus: northern, southern, eastern, western and central.^{15e} The Bhuvanakoṣa of the Purāṇas mentions the following divisions: middle country, northern, eastern, Deccan, and

western. According to Rājasekhara^{15f} to the east of Benares is the eastern India, to the south of Māhiṣmatī is the Deccan, to the west of Devasabhā is the western India, to the north (better north-west) is the northern (better north-western) India. And the tract lying between Vinaśana and Prayāga and between the Ganges and Jumna is the Inland (same as midland or middle country).

Cunningham explains the geographical significance of Hiuen Tsang's 'Five Indies' in the following manner: (1) northern India comprising the Punjab proper including Kashmir and the adjoining hill states with the whole of eastern Afghanistan beyond the Indus and the present cis-sutlej states to the west of the Sarasvatī river; (2) western India, Sind and western Rajputana with Cutch and Gujrat and a portion of the adjoining coast on the lower course of the Narmadā river; (3) Central India, the whole of the gangetic provinces from Thanewar to the head of the Delta and from the Himalayan mountains to the banks of the Narmadā; (4) eastern India, Assam and Bengal proper including the whole of the Gangetic Delta together with Sambalpur, Orissa, and Ganjam; and (5) southern India, the whole of the peninsula from Nasik on the west and Ganjam on the east to Cape Comorin on the south including the modern districts of Berar and Telengana, Mahārāṣṭra and the Konkān with the separate states of Hyderabad, Mysore and Travancore, or very nearly the whole of the peninsula to the south of the Narmadā and the Mahānadi rivers.

According to the Buddhist account the broad divisions of India are six in number e.g., (1) middle country (*madhyadeśa*),¹⁶ (2) Himalayan Region (*Himavanta*),¹⁷ (3) north-western region (*Uttarāpatha*),¹⁸ (4) Deccan (*Dakṣiṇāpatha*),¹⁹ (5) eastern India (*Pubbanta*) and (6) western India (*Aparānta*).

The early Buddhist literature mentions the sixteen great countries of India, Kāśī, Kośala, Aṅga, Magadha, Vajjī, Malla, Ceti, Vamsa, Kuru, Pañcāla, Maccha, Sūrasena, Assaka, Avantī, Candhāra, and Kāmboja,²⁰ each named after the people who settled there or colonised it. The first fourteen are included in the middle

15. Papañcasūdanī, Sinhalese Ed. ii, p. 586; Manorathapūraṇī, ii, pp. 759-80; Paramatthajotikā, II, pp. 437-9.

15a. Cf. Rockhill, Life of the Buddha, p. 253.

15b. Mahābhārata, Bhīṣmaparva, iii, 41.

15c. Mārkaṇḍeya Purāṇa, Chap. 57.

15d. Bhīṣmaparva, Chap. 9.

15e. Beal, Records, i, p. 70; Cunningham, Ancient Geography, p. 136.

15f. Kāvya-mīmāṃsā, p. 93.

16. Vinaya, i, p. 197; Jātaka, i, pp. 49-80.

17. Mahāvamsa, xii, 41.

18. Vinaya, iii, p. 6; Samantapāsādikā, i, p. 175.

19. Vinaya, i, 195-196.

20. Aṅguttara, i, p. 213; iv, pp. 251, 256 and 260.

country and the last two in the northern India. The Jaina literature gives a somewhat different list of sixteen containing Anga, Vaṅga, Magadha, Malaya, Mālava, Accha, Vaccha, Koccha, Pāṇḍya, Lāḍha, Vajji, Moli (Malla), Kāśī, Kośala, Avaha and Sambhuttar.

Middle country: The middle country has been described in Baudhāyana's Dharmasūtra as lying to the east of the region where the river Sarasvatī disappears, to the west of the Black forest,²¹ to the north of the Pāripātra mountain and to the south of the Himalayas.²² The eastern boundary excluded not only Bengal but also Behar which in ancient days included the whole of Magadhan country, the Buddhist land par-excellence. The middle country, according to Manu, extends from the Himalayas in the north to the Vindhya in the south and from Vinasana in the west to Prayāg in the east. It is otherwise known as Inland which extends up to Benares in the east. According to an early Buddhist text,²³ it extends in the east to the town of Kajaṅgala²⁴ beyond which was the city of Mahāsūla; in the south-east, to the river Sarāvatī in the south, to the town of Setakaṇṇika; in the west to the Brahmin district of Thūpa,²⁵ and in the north to the Uśiradhva mountain.²⁶ The eastern boundary is extended still further so as to include Puṇḍravardhana, which in ancient times included Varendra roughly identical with North Bengal.

Thus we see that the definition of the middle country was not the same at all times and with all the authorities. According to Manu, middle country is a tract between Vinasana and Prayāg while in the Mārkaṇḍeya Purāṇa it extends so far east as to include Kāśī and Kośala. The list of six principal cities in the early Buddhist text:²⁷ Campā, Rājagaha, Śāvatthī, Sāketa, Kosambī and Bārānasī suggests an extension which included Kāśī, Kośala and Vatsa in the west but excluded Avantī and Śūrasena.

21. Cunningham, *Ancient Geography of India*, li and xli, f.n.i.

22. Baudhāyana, i, 1, 2, 9, etc.

23. Vinaya Piṭaka, Vol. V, pp. 12-13.

24. Identical with Ka-Chu-Wen-Kilo of Yuan Chwang which lay at a distance of above 400 li east from Campā. Cf. Sumaṅgalavilāsini, ii, 429 and Jātaka, III, 226-227 and iv, p. 310.

25. Cunningham, *Ancient Geography of India*, Intro. xliii, f.n. 2. See also Jāt. VI, 62.

26. It may be said to be identical with Uśiragiri, a mountain to the north of Kankhāl, I.A., 1905, 179.

27. Dīgha, II, 146.

These two countries have been expressly excluded from the middle country according to the Vinaya Piṭaka, an early Buddhist text.

The seven representative rivers of this division are mentioned in one list as Bāhukā, Adhikakkā, Gayā, Sundarikā, Sarasvatī, Payāga, and Bāhumatī²⁸ and in another list as Gaṅgā, Yamunā, Sarabhū, Sarasvatī, Acirāvatī Mahī, and Mahānadi.²⁹ The Doṇa and Timbaru are mentioned along with the Bāhukā and Gayā.³⁰ Bāhukā is evidently the same river as Vāhudā in the Mahābhārata³¹ which the Mārkaṇḍeya Purāṇa connects with the Himalayas along with Gaṅgā and Yamunā.³² The Adhikakkā remains yet to be identified. The Gayā is no other than Phalgu river forming just a united flow of the Nerañjarā of Buddhist fame and the Mahānadi (Mōhānā of Brahmanical fame). The Sundarikā was a sacred river in Kośala. The Sarasvatī is identified with the famous Sarāvatī which taking its rise in the Himalayas disappears at Vinasana. The Payāga must have represented the confluence of the Gaṅgā and Yamunā at Prayāg. The Bhāgīrathī-Gaṅgā flowed through Pañcāla dividing it into northern and southern Kampilla, the capital of the latter standing on its right bank. The Yamunā served as a boundary between Śūrasena and Kośala and further down, between Vamsa and Kosala, Madhurā, the capital of Śūrasena and Kosambi standing on its right bank. The Sarabhū is to be identified with the Sarayū on the left bank of which stands Ayodhyā, the ancient capital of north Kośala. The Aciravati is modern Rapti on the right bank of which stood Śrāvastī, the last capital of Kośala.³³ The Mahī is a tributary of the Ganges.

The Mahā-gaṅgā was either the confluence of the Nerañjarā and the Mahānadi or the Sōn river.³⁴ To the east beyond Prayāga the united flow of the Gaṅgā and Yamunā bore the name of Gaṅgā which formed a boundary between the kingdoms of Kāśī and Magadha. Further down it formed a boundary between Videha and Vesālī on the north and Magadha,³⁵ Aṅga, and Kajaṅgala on the south, on the right bank of which stand Pāṭaliputra, the last

28. Jātaka, V, p. 389.

29. Visuddhimagga, i, p. 10.

30. Jātaka, V, p. 388 f.

31. iii, 84, 67.

32. Chap. 57.

33. Law, Śrāvastī in Indian Literature, p. 9 (M.A.S.I. No. 50).

34. Manorathapūraṇī (Sinhalese Ed.), ii, p. 761 f.

35. Majjhima Nikāya, Vatthupamasutta.

capital of Magadah and Campā, the capital of Aṅga. The Anomā, Rohinī and Kakutthā were the three minor rivers of the middle country. The first river formed a boundary between the territories of the Śākya and the Mallas, the second river divided the Śākya and Koliya territories.³⁶ Cunningham identifies the river Rohinī with the modern Rowai or Rohwaini, a small stream which joins the Rāpti at Gorakhpur.³⁷ The third river called Kakutthā was a river near Kusinārā³⁸ which appears to have formed at one point at least a boundary between the two Malla territories. The river Campā formed a boundary between Aṅga in the east and Magadha in the west.³⁹ It is probably the same river as one to the west of Campānagar and Nāthnagar in the suburb of the town of Bhagalpur. The Kosikī (Kuśī) is a branch of the Ganges.⁴⁰ The Migasammata was a river which rising in the Himalayas flowed into the Ganges.⁴¹ The Hirañnavatī is the Little Gandak and the same as Ajitavatī near Kusinārā which flows through the district of Gorakhpur about eight miles west of the great Gandak and falls into the Chogrā (Sarayū). The Sappinī (modern Pañcāna) was a small stream at Rājagaha. The Sutanu was a small stream at Śrāvastī which must have fallen into the Aciravatī. The Sarāvatī or Saranavatī, probably modern Suvarṇarekhā formed the south-east boundary of the middle country. The Vetravatī (modern Betwa in Bhopal) is an affluent of the Yamunā on the bank of which stood the city of Vetravatī and further south-west stands Bhilsā or ancient Vidisā.⁴²

The Gayāsisa, the principal hill of Gaya, is the modern Brahmayoni and identical with what is called Gayāsira in the Purāṇas. Its shape is like that of an elephant and hence it is so called.⁴³ The Mahābhārata speaks of twenty-five hills of Gayā including the Gayāsira but the early Buddhist texts ignore all but the Gayāsisa. The hills called Prāgbodhi by Hiuen Tsang⁴⁴ on the other side of the Gaya river are vaguely referred to.

36. *Jātaka*, V, p. 412.

37. *Archaeological Survey of India*, xii, 190 f.

38. *Dīgha*, ii, 129, 134 f; *Udāna*, viii, 5.

39. *Jātaka*, iv, 454.

40. *Ibid.*, V, 2, 5, 6.

41. *Ibid.*, vi, 72.

42. *Ibid.*, IV, 388.

43. *Sāratthapakāsinī*, iii, 4.

44. *Beal, Buddhist Records*, ii, 114.

A set of hills under the name of Khalatika finds mention in the Mahābhārata, Barabar Hill Cave inscriptions of Aśoka and Patañjali's Mahābhāṣya.⁴⁵ There were five hills encircling the city of Rājagaha named Isigili, Vebhārā, Paṇḍava, Vepulla and Gijjhakūṭa.⁴⁶ The Vebhārā and Paṇḍava stood side by side. The Vipula is the same as Vaihāravipula.

The Jains following a much later tradition of their own name locate the seven hills thus: 'If one enters Rājgir from the north, the hill lying to the right is Vaibhāragiri; that lying to the left is Vipulagiri; the one which stands at right angles to the Vipula and runs southward parallel to the Vaibhārā is Ratnagiri; the one forming the eastern extension of the Ratnagiri is Chathāgiri, and the hill standing next to Chathāgiri is Śailagiri. The one opposite to the Chathāgiri is Udayagiri; that lying to the south of Ratnagiri and the west of the Udayagiri is Soṇagiri. The Vaibhāragiri extends southward and westward ultimately to form the western entrance of Rājgir with the Soṇagiri.'⁴⁷

The Kāṣāṣilā was a blackrock on a side of Isigili and there was an echoing peak called Paṭibhānakūṭa. The Indakūṭa was near Gijjhakūṭa. The Vedyaka hill has been identified by Cunningham with the Giriya, containing the famous Cave called Indasālaguhā.⁴⁸ The group of five Rājgir hills formed, as it now forms, the head and the Vedyaka, the tail of one and the same short range running from west to east over a distance of nine miles from Rājgir to the village of Giriya.

The Vepulla mountain was known in a very remote age by the name of Pācīna-Vamsa. The name of this hill was changed to Vaṅkaka. The hill then received the name of Supassa. It afterwards became known as Vepulla.⁴⁹

With the Pi-pu-lo (Vipula or better Vaihāra-Vipula) hill to the west of the north gate of Rājagaha Hiuen Tsang associated five hundred hot springs of which several scores, some cold, some tepid, remained at his time. The source of them was traced to the Anotatta Lake.⁵⁰ The Vaibhāragiri is described in a Jain text

45. 1, 2, 2.

46. *Majjhima*, iii, 68 f.

47. *Law, op. cit.*, p. 3.

48. *Dīgha* II, 263, *Sumaṅgalavilāsinī*, iii, 697.

49. *Saṃyutta*, ii, 190 f.

50. *Watters, Yuan Chwang*, ii, 153-54.

as a sacred hill affording the possibility of the formation of Kuṇḍas of tepid and cold water. The hot springs are mentioned in connection with Rājagaha while Buddhaghosa, a Buddhist commentator, definitely refers them to the Vebhāra hill.⁵¹

The Pippali or Pippali and Sattapaṇṇi caves are associated with the Vebhāra hill. Both of them were situated on the north side of this hill. There were crevices, four of which were important.⁵² The Pāsāṇakacetiya was a holy rock not far from Rājagaha.⁵³

There were some natural forests and hill tracts in the middle country. The Kurujāṅgala was a wild region in the Kuru realm which in all likelihood separated the Kuru realm from Pañcāla. The Pārileyyakavana was an elephant forest at some distance from the city of Kauśāmbī and on the way to Śrāvastī.⁵⁴ The Añjana-vana at Sāketa, the Mahāvana at Vesālī and the Mahāvana at Kapilavatthu were natural forests. The Lumbinivana a village in the time of Aśoka, situated on the bank of the river Rohiṇī was a similar forest.⁵⁵ The Sālavana of the Mallas at Kuśināra, the Bhesakalāvana at Suṃsumāragira in the realm of the Bhaggas, the Simsapāvana at Kosambī and the one near Ālavī and the Pippalivana of the Mallas may be cited as typical examples of natural forests.⁵⁶ Similarly Kajaṅgala which lay to the east of Aṅga and extended from the Ganges in the north-east to the Suvarṇarekhā in the south-east was an extensive hill tract. The Vinjhāṭavi which was then a forest without any human habitation represented the forest through which lay the way from Pāṭaliputra to Tāmralipt.⁵⁷

Besides the natural forests, there were innumerable private and royal gardens. The Migadāya at Isipatāna near Benares, the one at Maddakucchi in Rājagaha and that at Bhesakalāvana were the three notable deer-parks. Besides the tanks and wells, there were several pools in the middle country though none of them was so very important as to find mention by name.

51. *Sāratthapakāsinī*, i, p. 38.

52. *Udāna*, iv, 4; Law, *op. cit.*, p. 11.

53. *Sutta-nipāta*, verse 1013.

54. *Samyutta*, III, 95; *Vinaya*, I, 352.

55. *Jātaka*, I, 52 f; *Manorathapūraṇī*, I, 10.

56. *Dīgha* II, 146 f; *Majjhima*, I, 95; II, 91; *Samyutta*, V, 437; *Dīgha* II, 164.

57. *Mahābhārata* XIX, 6; *Dīpavaṃsa*, XVI, 2; *Samantapāsādikā*, III, 655

It is interesting to deal with the realms visited by the Buddha in the middle country. They were Kuru and Pañcāla in the west and north-west, Vamśa in the west and south-west, Kāśī and Kośala in the middle, the Śākya and Koliya in the north, the Vajji and Malla in the east and north-east and Aṅga, Magadha and Kajaṅgala in the east and south-east. The Buddhist mid-land may be shown to have constituted the upper Gangetic valley between the Himalayas in the north and the Vindhya range in the south. Within this area some such small tracts as the Rāmāgāma of the Koliyas, the Pippalivana of the Moriyas, the Allakappa of the Bulis, the realm of the Bhaggas⁵⁸ and the Kesaputta of the Kālāmas⁵⁹ have been included. According to an early Buddhist text the kingdom of king Reṇu was divided into seven separate kingdoms with their respective capitals as mentioned below: (1) Kalinga—capital, Dantapura; (2) Assaka—capital Potana; (3) Avantī—capital, Māhissatī; (4) Sovira—capital, Roruka; (5) Videha—capital, Mithilā; (6) Aṅga—capital, Campā and (7) Kāśī—capital, Bārānasi.⁶⁰ The last three of these were included in the middle country.

Kuru kingdom: This kingdom extended from the Sarasvatī to the Ganges and consisted of three parts viz., Kurujāṅgala, the Kuru land proper and Kurukṣetra.⁶¹ The people originally coming from Uttarakuru colonised it. The Kurujāṅgala was a jungle tract of the Kuru land which extended as far as the Kāmyaka forest. The kingdom of Uttara Pañcāla was founded in this part of Kuru kingdom, in which case it must have stood on the left bank of the Bhāgīrathī Gaṅgā. The kingdom proper had Hastināpura for its capital,⁶² Indraprastha, near modern Delhi according to the *Jātakas*.⁶³ This kingdom was 300 leagues in extent and its capital 700 leagues in circumference. Kurukṣetra is located to the north of Khāṇḍava to the south of Turghna and to the east of the Parīṇa.⁶⁴ While according to the *Mahābhārata*, it is placed to the south of the Sarasvatī and north of the Dṛśadvatī between the lakes of Rāma and Macakruka.⁶⁵ There were two townships in the Kuru

58. *Dīgha*, II, 164 f.

59. *Anguttara*, i, p. 188.

60. *Dīgha*, II, 220 f.

61. *Mahābhārata*, I, 109, 1.

62. *Dīvyāvadāna*, p. 435.

63. *Jātaka*, V, pp. 57, 484; VI, 255.

64. *Vedic Index*, I, 169 f.

65. III, 82, 204.

kingdom named as Kammāsadamma and Thullakotthita.⁶⁶ The first town was a training ground of draught-horses and the second town was so called because its granaries were always full.⁶⁷ There was another wealthy, famous and beautiful town in the Kuru kingdom named Isukāra.⁶⁸

Pañcāla: The Bhāgīrathī formed the dividing line between the Uttara and Dakṣiṇa Pañcāla. The northern Pañcāla had its capital at Ahicchatra⁶⁹ identified with modern Ramnagar in the Bareilly District. The capital of Dakṣiṇa Pañcāla was Kāmpilya identical with modern Kampil in the Farokhabad district.

Vamsa: This country called Vatsabhūmi in the Mahābhārata (II, 30) was about 6000 li in circuit, and its capital Kauśāmbī was about 30 li. According to Hiuen Tsang it was a fertile country with a hot climate. It yielded much upland rice and sugar-cane. Its people were enterprising, fond of arts and cultivators of religious merit.⁷⁰ The inhabitants of this country are criticised as rude and rough.⁷¹ This country was very rich and prosperous and its cotton fabrics were of a very high quality.⁷² Cunningham identifies the capital Kauśāmbī with the present village of Kosam on the right bank of the Jumna. The present distance by road of about 100 miles from Benares to Kosam is the distance of 13 yojanas as suggested by Fā-Hian.⁷³ According to Hiuen Tsang the way from Prayāga to Kauśāmbī lay through a jungle and bare plains covering seven days' journey on foot. Kosam is about 30 miles from Allahabad across the fields and 137 miles by road above the Yamunā. The village of Pabhosā is situated at a distance of about two and half miles north-east of Kosam. At Kauśāmbī there were two famous gardens known as Ghositārāma and Pāvārikambavana.⁷⁴ There was a reserve forest of Pārileyyaka in Vatsa the way to which from Kauśāmbī lay through two villages.

66. *Digha*, II, pp. 55, 290; *Majjhima* I, pp. 55, 501; II, p. 54; *Manorathapurāṇi*, I, p. 144.

67. *Papañcasūdanī*, II, 722; *Avadānaśataka*, II, 118.

68. *Uttarādhyaṇa*, XIV, 1.

69. *Mahābhārata*, Ādi Parva, Chap. 140.

70. Watters, *op. cit.*, I, 366.

71. Lefmann, *Lalitavistara*, p. 21.

72. *Aṅguttara*, IV, 252, 256 and 260; *Arthasāstra* by Shāmaśāstrī tr., p. 94.

73. Watters, *op. cit.*, Vol. I, 367.

74. *Vinaya*, I, 337 f; *Majjhima*, I, 320; *Digha*, II, 81.

Pārileyyaka stood on a road from Kauśāmbī to Śrāvastī.⁷⁵ An early Buddhist text refers to a journey on foot from Kauśāmbī to Adhogangā hill.⁷⁶

Bhagga: The country of the Bhaggas became a dependency of Vatsa with Sumsumāragira as its chief town.⁷⁷ The location of Bhagga is not settled although some place it between Vaiśālī and Śrāvastī.

Ceti kingdom: The country of the Cetis lay near the Yamunā. It may approximately be identified with the modern Bundelkhand and adjoining region. Sothivatī probably identical with the Śuktimatī of the Mahābhārata is mentioned as its capital.⁷⁸ Sahajāti, a town of Ceti probably stood on the right bank of the Yamunā. There was a deer park in the Pācīnavamsa, which lay to the east of Vatsa. There was a Ceta kingdom situated thirty yojanas from the Jetuttaranagara through which lay a way to the Himalayan region.⁷⁹

Kāśī: This is one of the most ancient kingdoms in Northern India with Bārānasī as its capital, twelve yojanas in extent.⁸⁰ The city of Benares stood as it now does on the left bank of the Ganges and was known by different names in different ages. The city derived its name from Asi and Baruṇā the two small streams bounding it on the south and the north respectively. The country was noted as a great centre of trade, most populous and prosperous. One highway connected it with Rājagṛha and another with Śrāvastī. It was noted for silk cloth and perfumes. Kiṭāgiri is mentioned as one of the notable places. It was a very fertile tract with abundance of rain water enabling it to yield three harvests of food grains. The most important place near Benares in the history of Buddhism is the Deer Park at Rṣipatana (modern Sarnāth) which was the place of Buddha's enlightenment and situated at a distance of three or four miles to the north of the modern city of Benares. The ancient city of Benares was a great centre of trade and industry and trade relations existed between it and Śrāvastī and Takṣaśilā.⁸¹

75. *Saṃyutta*, III, 95; *Udana*, IV, 5; *Majjhima*, I, 320.

76. *Vinaya Cullavagga*, xii.

77. *Majjhima*, I, 332; *Aṅguttara*, ii, p. 61; *Vinaya*, ii, 127.

78. iii, 22-50; xiv, 83, 2.

79. *Jātaka*, vi, 514. f.

80. *Ibid.*, vi, 160.

81. *Dhammapada Commentary*, i, 123; iii, 429.

Kośala: The country of Kośala proper was divided into north and south evidently by the river Sarayū serving as a wedge between them. Śrāvastī was the capital of northern Kośala and Kuśāvati was the capital of southern Kośala, Ayodhyā being the earlier capital of the undivided kingdom. Some have located Kuśāvati at the foot of the Vindhya. Śāketa has been mentioned in some early Buddhist texts⁸² as the capital of northern Kośala. It is said to have stood on a high road between Śrāvastī and Kauśāmbī. Śrāvastī was so called either because it was founded near the hermitage of the sage Savattha or because of its great prosperity as a city. It stood on the right bank of the Aciravati river (modern Rāpti). The great trade route from Rājagṛha to Śrāvastī branched off into two roads, one the southern road (better south-western) and the other northern road (better north-western) each lending its name to the region through which it lay. There were several towns in Kosala, e.g., Ukkatthā, Naṅgaraka, Medaḷumpa, Paṅkadhā, Nālakapāṇa, Daṇḍakappa, Setavyā.⁸³ There were some Brahmin villages, e.g., Manasākata, Ekasālā, Nagara-vinda, Icchānaṅgala, Venāgapura and Opasāda. As for other localities mention may be made of Palāsavana, Toranavatthu, Nālandā, and Caṇḍalakappa.⁸⁴ At the south gate of Śrāvastī and within a distance of about two miles from it was the famous garden of Prince Jeta, at its east gate lay the site of the Pubbārāma and in its neighbourhood stood the grove of Queen Mallikā.⁸⁵ Saravana is mentioned as the birth place of Gosāla. The Sundarikā probably not far from Śrāvastī was a sacred river in Kośala. The river Sadānirā (modern Gaṇḍakī) formed a boundary in the east between Kośala and Videha.

Magadha: The kingdom of Magadha roughly corresponding to the modern Patna and Gaya districts of Behar was broadly divided into two, Gayā and Magadha. Magadha is distinctly called by the Jains as Māgahatitthakhetta. The Ganges formed a natural dividing line between Kāśī on the west and Magadha on the east as well as between Magadha on the south and Videha and Vaiśālī on the north. The river Campā (modern Chandan) formed a boundary on the east side between Magadha and Aṅga. Gorathagiri stood just on the border land of Magadha towards Gayā. The

Gayā proper comprised three divisions, all located along the left bank of the Nerañjarā and the Gayā river: Uruvelā, Nadī, and Gayā. The Gayā division contained twenty-five hills of which the Gayāśīra (modern Brahmayoni hill) was the main. The hills of Gayā formed the head of a very old range of hills with its naval at Jajpur in Orissa, and southern extremity at Mahendragiri. The distance by road from Gayā to Uruvelā (Bodh-Gayā) was six or seven miles. The Uruvelā division on the bank of the Nerañjarā contained Senānigāma (identified with the modern village of Urel) and Nala which was the native village of Buddhaghosa, the celebrated Buddhist commentator. According to Hiuen Tsang, Uruvelā extended north and east fourteen or fifteen li at least from a point near the base of the Gayāśīra hill on the otherside of the Phalgū. In its southern extension it was outskirted by an extensive jungle tract of Vaṅkahāra country (roughly identical with Hazaribagh district). The way from Gayā to Benares lay through such localities as Gandhapura, Aparagayā, Sārathipura on the right bank of the Ganges. The earlier capital of Magadha was Rājagṛha also known as Giribraja or Kuśāgrapura. There was a precipice called Corapapāta down which the thieves were thrown. There was a bamboo forest on a road between Rājagṛha and Uruvelā. The other localities of importance, were Veluvana, Jīvaka's mango grove, Bimbisāra's mango grove, Pāvārika's mango-grove at Nālandā (identified with the present village of Burgaon). There was a famous Brahmin village called Dakṣiṇagiri. There were other villages e.g., Nālaka, Siddhatthagāma.⁸⁶ The Jains lay the scene of Mahāvīra's death at Pāvāpurī on the Bīhar Sarif-Nawadah Road. The village of Pāṭaligāma stood on the right bank of the Ganges. This village having been fortified gave rise to the city of Pāṭaliputra, the later capital of Magadha which suffered thrice from the action of water, fire, and earthquake.⁸⁷ Some have located Rājagṛha at a distance of five leagues from the Ganges.

Aṅga: The kingdom of Aṅga was 4000 li in extent according to Hiuen Tsang and it lay to the east of Magadha separated from the latter by the river Campā. On the north it was bounded by the Ganges. Aṅga as described in the Mahābhārata may be supposed to have comprised the districts of Bhagalpur and

82. *Jātaka*, III, 270; *Mahāvastu*, I, 348.

83. *Dīgha*, i, 87; *Majjhima*, ii, 402; *Āṅguttara*, iii, 402; *Ibid.*, v, 122; i, 236.

84. *Samyutta*, iv, 374; *Majjhima*, ii, 209; *Samyutta*, iv, 322.

85. *Sumaṅgalavilāsinī*, II, 365.

86. Rockhill, *Life of the Buddha*, p. 250.

87. *Dīgha*, II, 88.

Monghyr. Its capital was Campā on the right bank of the Ganges, formerly known as Mālinī⁸⁸ which stood at a distance of 60 yojanas from Mithilā.⁸⁹ Bhaddiya and Assapura were the two cities in Aṅga. Āpaṇa is mentioned as a township in Aṅguttarāpa, a tract which lay to the north of Mahī, evidently a part of Aṅga, on the other side of that river.⁹⁰ Aṅga was a prosperous country and Campā was one of the most flourishing cities and a great centre of trade and commerce. In its neighbourhood there was a famous tank called Gaggārā.⁹¹

Kajaṅgala: This country formed an eastern boundary of the middle country beyond the Brahmin village of Mahāsāla. According to Hiuen Tsang this country was 2000 li in circuit and was bounded on the north by the Ganges. The kingdom of Puṇḍravardhana could be reached from its capital by journeying about 600 li eastward across the Ganges. It was a prosperous place where food was easily available. There was a bamboo grove in this country and there was a river called Salaḥavati in the south-east.

Sumbha: This was a country of the Sumbhas with Setaka as its capital. Some have identified it with Suhma (modern Midnapore District) but the location is uncertain.

Vajjī territory: It appears to have comprised the principalities of 8 or 9 confederate clans. Vesālī or Besārḥ was the headquarters of the Licchavis. It was rich, prosperous and populous. It was surrounded by three walls at a distance of a *gāvuta* from one another each provided with gates and watch towers. The early Jain texts mention Kuṇḍagrāma the seat of the power of the Nātas in the suburb of Vaiśālī.⁹² The country of the Bhaggas is placed between Vaiśālī and Śrāvastī. Videha (modern Tirhut) was bounded by the Kośikī in the east, the Ganges in the south, the Sadānīrā in the west and the Himalayas in the north. Cunningham identifies Mithilā with Janakapura. The high road connecting Rājagṛha with Kapilavastu passed through such places at Koṭigāma on the left bank of the Ganges, Hatthigāma. Ambagāma Vesālī, Nādikā, etc. There was a natural forest called Mahāvana in the

88. *Mahābhārata*, xii, 5, 6-7; *Harivaṃśa*, 31, 49.

89. *Jātaka*, VI, p. 32.

90. *Paramatthajotikā*, II, 437.

91. *Dīgha*, II, 111.

92. *Ācārāṅgasūtra*, S.B.E. xxii, pp. x-xi.

neighbourhood of Vesālī.⁹³ Ukkācelā was a Vajjian town on the left bank of the Ganges.⁹⁴ Mithilā, the capital of Videha, had at each of its four gates a market town.⁹⁵

Malla country. The kingdom of the Mallas,⁹⁶ which are stated to be nine according to the early Buddhist texts, comprised in theory nine territories, one of each of the confederate clans. The two territories of the Mallas are prominent, one with its headquarters at Kuśinārā and the other with Pāvā as its chief town. The first abutted on the Śākya territory and the second on the Vajjī. Bhoganagara was a Malla town between Jambugāma and Pāvā on the high road connecting Vaiśālī and Kapilavastu.⁹⁷ The river Kakutthā formed the boundary between the two territories. The Sāla grove of Kuśinārā was on the river Hirañnavatī. In ancient times Kuśinārā was the most flourishing and magnificent city of Kuśāvati, twelve leagues in length, from east to west, and seven leagues in breadth, from north to south.⁹⁸ Anupiya was a Malla town on the high road between Kuśinārā and the river Anomā.⁹⁹ Uruvelakappa was another Malla town. Pāvā may probably be identified with the Kāsiā on the smaller Gaṇḍak and Kuśinārā with the village called Padaraonā, twelve miles north-east of Kāsiā. Hiuen Tsang travelled from Kuśinārā to Benares covering a distance of five hundred li through a great forest.¹⁰⁰

Śākya and Koliya territories: The Śākya country lay to the east of Kośala and south of the Himalayas. It was then rich and prosperous.¹⁰¹ Kapilavastu (identified with Tilaura, two miles from Tauliva in the Nepal Terai) was the capital of the Śākyas. According to Hiuen Tsang the city was situated to the south-east of Śrāvastī. It was situated on the high road which passed through Setavyā to connect it with Śrāvastī. There were other Śākya towns, e.g., Silavatī, Sāmagāma, Cātumā, and Khomadussa.

The Koliyas of Devadaha and Rāmagāma possessed two territories. On the bank of the Rohiṇī river on the Śākya side stood

93. *Sumaṅgalavilāsinī*, i, 309.

94. *Majjhima*, I, 225; *Samyutta*, iv, 261 f.

95. *Jātaka*, vi, 330.

96. *Kalpasūtra*, 128; *Nirayāvalī sūtra*.

97. *Dīgha*, II, 123; *Sutta-nipāta*, vs. 1012-1013.

98. *Dīgha*, ii, 146 f.

99. *Jātaka*, i, 140; *Dīgha*, iii, p. 2; *Vinaya*, ii, 180, 184.

100. *Beal, Buddhist Records*, ii, 43.

101. *Sutta-nipāta*, verse 1012.



Lumbinivana, the birth place of Buddha, the modern village of Rummindei, only ten miles to the east of Kapilavastu and two miles to the north of Bhagavānpur. The river Rohiṇī divided the territories of the Śākya and the Koliyas. Devadaha on the otherside of the Rohiṇī was the seat of government of the first Koliyan territory. Rāmāgāma, the second Koliyan territory, lay to the east of Kapilavastu at a distance of about three hundred li across a wide jungle. Hiuen Tsang had to walk north-east through a great forest, along a dangerous and difficult road to reach Kuśinārā from Rāmāgāma.

Pipphalivana: This was the land of the Moriyas. One finds an echo of its name in that of Piprāvā, a village in the Birdpur Estate in the district of Basti.

Allakappa and Vethadīpa: Allakappa was the land of the Bulis and Vethadīpa was the native land of a brahmin called Doṇa; both of them were kingdoms.¹⁰² Hiuen Tsang locates the site of Dronastūpa, that is Vethadīpa, one hundred li south-east of Mahāsāra identified with Masar, a village six miles to the west of Arrah.

Kesaputta: The Kālāmas are associated with Kesaputta which is a name similar to Pāṭaliputta, Seriyāputa, Satiyāputa, and Kerala-puta.

Ālavī: This is the name of both the country and its principal town. As a principality, it was included in the Kosalan empire. This town was thirty yojanas from Śrāvastī and twelve from Benares.¹⁰³ It lay between Śrāvastī and Rājagṛha. The way from Śrāvastī to Ālavī lay through Kitāgiri.¹⁰⁴ Some think that Ālavī was on the Ganges.

Eastern India: The Pubbanta or Prācyā may be defined as the extreme eastern part of India lying to the east of the middle country. The eastern boundary of the midland changed from time to time, from Prayāga to Kāśī, from Kāśī to Kajaṅgala and ultimately from the latter to Puṇḍravardhana. The only locality to the east of Kajaṅgala was a brahmin village of Mahāsāla. Its south-east boundary was formed by the river Sarāvātī to be identified either with the Silai, which taking its rise in the Chota Nagpur hills and

102. *Dhammapada Commentary*, i, 161.

103. Watters, *Yuan Chwang*, II, 61.

104. *Vinaya*, II, 170 f.

being united with the Dalkisor flows down as the Rūpnārāyaṇ through the districts of Bankura and Midnapore or with the Suvarṇarekhā which also taking its rise in the Chota Nagpur hills flows down through the districts of Manbhum and Midnapore. According to the Jains, Lāḍha was a pathless country with its two divisions; Subbhabhūmi and Vajjabhūmi which may be taken to correspond to the modern district of Midnapore. The country of Lāḍha extended from the south-east corner of the middle country to the Bay of Bengal and lay just to the north-east of Kalinga. The Subbhabhūmi may be taken to have formed the northern division of the district of Midnapore, while Vajjabhūmi with Tāmalitti (Tāmrālipta, modern Tamluk on the western bank of the Rūpnārāyaṇ), the southern division. Tāmalitti was a great sea-port town. Puṇḍravardhana (identified with the modern district of Bogra) lay to the east of the Puṇḍrakakṣa hill about one hundred li east from the northern end of Kajaṅgala across the Ganges. A Brāhmī inscription found at Mahāsthāngarh near the town of Bogra mentions Puṇḍra as a prosperous town.¹⁰⁵ The way to the city of Puṇḍravardhana from Kajaṅgala must have been through the place now covered by the district of Malda.

Vaṅga is mentioned as an important centre of trade and commerce. It is contiguous to Aṅga. The western extremity of Vaṅga bordered on Aṅga-Magadha. The district of Lāḍha was situated between Vaṅga on one side and Kalinga on the other. Vaṅga in its earlier denotation may be taken to have represented central Bengal extending as far west as the eastern end of Kajaṅgala. Subsequently, Vaṅga came to denote eastern Bengal proper, practically identical with Hiuen Tsang's Samatāṭa. Suvarṇakūṭa was another centre of trade and commerce. Some have located it in Kāmarūpa.¹⁰⁶

Himalayan region: According to all Indian traditions Jambudvīpa extended to the north upto the southern side of Mt. Sumeru placed in the middle of a country called Ilāvṛta containing two mountain ranges: the western called Mālyavat and the eastern known as Gandhamādana. The river Jambu taking its rise in the Merumandāra mountain flows down through the Ilāvṛta-varṣa.¹⁰⁷ The Niṣadha mountain range is placed to the south of

105. D. R. Bhandarkar, *Epigraphia Indica*.

106. N. N. Das Gupta in *I.C.* Vol. V, 339.

107. *Mārkaṇḍeya Purāṇa*, Chap. 57.

Ilāvṛtavarṣa to the south of which lay the country of Harivarṣa. In between Bhāratavarṣa and Harivarṣa are placed the Himalayan range and the Hemakūṭa which is also known as Kimpuruṣavarṣa. The Haimavata region is also known as Kinnarakhaṇḍa. According to Theravāda Buddhist tradition the Himalayan region extended to the north upto the Gandhamādana range. As in the Purāṇas so in the Jātakas the Kinnaras, Kimpuruṣas and Vidyādharas are associated with the Himalaya mountains. An early Buddhist text mentions some mountains in the neighbourhood of the Himalayas.¹⁰⁸ The Anotatta or Mānas-sarovar was the most important lake which was associated with the Kailāsa and Citrakūṭa peaks.

Mahāpadmaharada was the name of the two Himalayan lakes, one connected with the western and the other with the eastern Himalayan range. The Ganges that flowed down southwards branched off into five main rivers of the middle country. The Rohitā flowing eastwards may be identified with the Lauhitya or Brahmaputra, Sindhu flowing northwards with the Indus and one flowing westwards with the Sutlej. The Himalayan region was frequented by the hermits, hunters and kings on hunting expedition. The hermits and ascetics built many hermitages. The hollows in the mountains served as dens for lions and tigers. The Himalayan forests are said to have abounded in four species of lions, tigers, panthers, bears, elephants, bulls, buffaloes, etc. They abounded also in reptiles. The rivers and lakes were full of fish. The birds were numerous and there were various kinds of trees.¹⁰⁹

Northern and North-Western India. This part of India extended west and north-west from the Brahmin village of Thūṇa or from Pṛthudaka (Pehoa, that is to say, from a place near about Thāneswar. It was bounded on the north and west by the belt of the western Himalayan range reaching down to the Arabian sea. The region of Uttarāpatha lay to the north of Aparānta and the west of Buddhist Mid-land and was watered by the Himalayan rivers forming the Indus group. The important countries that are included in this region are Aparānta, Śūdra, Gandhāra, Yavanā, Sindhu, Sauvira, Madra, Pārada, Kekaya, Kamboja, Darada, Barbara, Vāhlika and Kāśmīra. Kasmīra-Gandhāra and

108. *Apadāna*, pp. 162, 178, 381, 382, 437, 440, etc

109. For a detailed study see B. C. Law, *Apadāna* in J.B.B.R.A.S., XIII, 1937, p. 236.

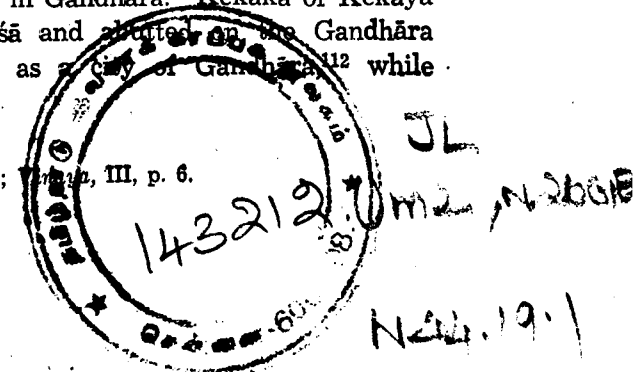
Kamboja are definitely placed in Uttarāpatha in early Buddhist texts.¹¹⁰

The Kamsa territory was the kingdom of Mathurā, i.e., Śūrasena of which Mathurā was the capital in the time of Mahāvīra and Buddha. Gandhāra may be taken to have comprised the whole of the districts of Peshawar and Rawalpindi in the northern Punjab. Its capital Takṣaśilā (modern Taxila) was both a centre of trade and an ancient seat of learning. Kāśmīra is no other than the modern state of Kashmir and Jammu which lies to the east of Peshawar and Rawalpindi. The location of Yona and Kamboja is not definitely settled. They must have been localities near about Kasmīra—Gandhāra. The Mahābhārata definitely locates the land of the Śūdrakas in western Rajputana where the river Sarasvati disappears. The Greek historians place the Sodrai in the western part of the Punjab. The land of the Kṣudrakas, Greek Sudracae, Oxydrakai, is placed in the Greek accounts between the Ravi and the Beas. It may be located in the district of Montgomery. Madra was the country of the Sibis which had Sāgala as its capital. The river Irāvati flowed through it. Alasanda (Alexandria) was a city in the Yona country which was a centre of trade and commerce.¹¹¹ It was both the name of a country and its chief town. Sindhu and Sauvira were two great centres of trade and its chief town. Sindhu may be identified with Sindh on the Arabian Sea. Sauvira has been described as a kingdom with Roruka as its capital. It was probably situated between the Indus and the Jhelum. The way of the caravan merchants from Aṅga and Magadha to Sindhu and Sauvira lay across a great desert which was no other than the great desert of Rajputana. Barbara is associated in the Mahābhārata with Yona, Kamboja, Gandhāra and Kirāta and placed in Uttarāpatha. Barbara or Barbaricum is described in the Periplus as a market town or Minnagara on the Erythraean Sea. Pallava may be identified with Pahlava and Bahika with Vāhika. Utpalāvatī, a city in Uttarāpatha, may be identified with Puṣkalāvatī or Puṣkarāvatī (which is identified with modern Parang and Chārsada, 17 miles north-east of Peshawar on the Swat river) which was one of the two most important cities in Gandhāra. Kekaka or Kekaya territory lay beyond the Vipāsā and abutted on the Gandhāra country. Setavyā is described as a city of Gandhāra.¹¹² while

110. *Anguttara*, IV, 252, 256, 260; *Vibhāṅga*, III, p. 6.

111. *Mahānidāsa*, pp. 155, 415.

112. *Ind. Ant.*, 1891, 375.



according to the early Buddhist texts it is located in Kośala and on the high road between Kapilavastu and Śrāvastī. The Sindhu (Indus), Vitamsā (Vitastā) and Candrabhāgā (Chenab) are the important rivers of Uttarāpatha. The Bhāgīrathī Gaṅgā taking its rise in the Himalayas flowed by the city of Hamsavati. There was another river by the name of Amarikā which flowed from the foot of the Samāṅga mountain belonging to the Himalayan range.

Western India: It represents that part of western India which lay to the west of the Buddhist midland and to the north and south of the Deccan and northern India. According to some it extended westward from the western side of the kingdom of Vatsa. It was the western sea-board of India. The Bōja and Rāṣṭra countries which are mentioned in Aśoka's R.E.V, are the countries in western India. Devasabhā, Surāṣṭra, Bhṛgukaccha, Anarta, and Aburda are the representative countries of the western India. According to Hiuen Tsang's account western India seems to have comprised Sind, western Rajputana, Cutch, Gujarat, and a portion of the adjoining coast on the lower course of the Narmadā.¹¹³ Avantī was the most important among the countries in western India. It appears to have been divided by the river Vetravati into north and south, the north having its capital at Ujjainī and the second at Māhiṣmatī. Both Ujjayinī and Māhiṣmatī stood on the southern high road extending from Rājagṛha to Pratiṣṭhāna. Kuraraghara was a town in Avantī. The country or kingdom of Avantī may be taken to have corresponded roughly to 'modern Malwa, Nimar and the adjoining parts of the central provinces'. Vedisa (identified by Cunningham with the modern Bhilsa in the Gwalior State) lay on the road to Ujjayinī. The kingdom of Śūrasena had Mathurā (modern Muttra) on the right bank of the Yamunā as its capital. Śūrasena is placed to the south of the Kuru country. The way from Śrāvastī to Mathurā lay through an important locality called Verañjā. Matsya mentioned with Śūrasena is to be located to the south or southwest of Indraprashta. Its capital was Virāṭanagara (modern Bairat). It may be supposed to have comprised the State of Jaipur and included the whole of the State of Alwar with a portion of Bharatpur. Surāṣṭra was another important country in western India which was watered by a river called Sātodikā. Its capital was Girinagara (modern Girnar in Kāthiāwād). The Sunāparanta is identified with the modern

113. Cunningham, *Ancient Geography of India*, p. 690.

Konkan. Its capital was Surpāraka, a highly important sea-port on the Arabian sea, modern Sopārā in the district of Thānā near Bombay. The Bhṛgukaccha was another important sea-part town on the Arabian Sea which is identified with modern Broach in Kāthiāwād and identical with the Barygaza of Ptolemy and the Periplus. Bhoja may be identified with modern Berar. The town Satakaṇṇikā may be taken to have represented the place of origin of the Śātakarṇis.

Deccan: This represents south India which extended southward from Māhiṣmatī identified with Māndhātā on the Narmadā. According to the Jains it was the southern half of India to the south of the Vindhya range. The Godāvarī and the Narmadā regions are definitely placed in Dakṣiṇāpatha. Besides two rivers there are other rivers, e.g., Kāverī and Kaṇṇapennā. The famous river Kāverī flowed into the sea. The Kaṇṇapennā was a river in Mysore. Pratiṣṭhāna (modern Paithān) on the Godāvarī is described as the southern terminus of the southern high road extending from Rājagṛha. It was situated near about the modern Pañcavaṭī at Nāsik. On the banks of the Godāvarī stood the two Andhra kingdoms of Assaka with its capital at Potana and Aḷaka or Mūḷaka, the latter standing to the north of the former.¹¹⁴ Kola-ṭaṭṭana was a harbour on the Coromandel coast. Rājagiri, Pubbasela, Aparasela and Siddhattha were all localities near about the Andhaka seat of power, i.e., in the neighbourhood of Amarāvati. The Damiḷa (Drāvida) territories included the countries of Coḷa with Kāñcīpura (modern Conjeeveram) as its capital, Pāṇḍya with Madhurasuttapaṭṭana (modern Madoura) as its chief town and Kerala (Chera).¹¹⁵ Kalinga was a kingdom with its capital at Dāntapura, situated near Chicacole on the Bay of Bengal. Oḍra and Utkala represented the two distinct parts of Orissa. The Mekala country was probably a tract of land comprising the modern Amara-kaṇṭaka hills and adjoining locality. There was a river named Telavāha in the kingdom of Seriva near Andhapura.¹¹⁶

114. *Suttanipāta*, verse 1011.

115. *Cūlavamsa*, liii, 9; lv, 5, 12.

116. *Jātaka*, I, p. 111.

Geography and Federalism

By

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Though much has been written dealing in general terms with "the Earth and the State", there has been singularly little discussion of the direct relations between such fundamental geographical factors as area and population (and their interactions) and the actual political organisation of the State. This is all the more surprising as the early Greek writers on polity had very definite views on the optimum sizes for different types of states, and the Ratzelian school, which may be said to have founded modern geography, was also much interested in problems of space—an interest which has culminated in the far from academic geopolitical concept of *Lebensraum* or living-space. With the federal type of organisation increasingly canvassed as a solution for the two-fold problem of the increasing complexity of local government and the increasing economic interdependence of the countries of the world, it seems worth while to examine the geographical lay-out of existing federal states in an endeavour to establish those conditions which are common to most of them and which appear therefore to favour the establishment and maintenance of this type of political organisation. This essay can only claim to be a very cursory preliminary view of a subject which merits closer study.

According to the *Statesman's Year Book*, there were in 1939 some 75 "States" in the world; an exact figure can hardly be given as there are difficulties of status—e.g., the minor Sheikdoms of the Persian Gulf, the administrations of "Meng-Chiang" (a portion of Japanese-controlled Mongolia), Sin-Kiang and other somewhat anomalous dependencies of China, "Empires" such as Morocco and Annam, can hardly be counted as sovereign states; yet states of a sort they are. However, the 75 are all in possession (or were before September 1939) of a defined area and population and an organised government recognised as such by other powers with whom they have or had independent dealings.

Excluding microscopic statelets such as the 370 acres of Monaco and the 108 of the Vatican, territories such as much of

Mongolia which can hardly be regarded as completely organised modern states, and strictly colonial territories, the following figures represent the range of variation of the states of the world:

Area—1,000 square miles (Luxembourg) to over 8,000,000 square miles (U.S.S.R.).

Population—100,000 (Iceland) to circa 400,000,000 (India, China).

Density of Population—2.3 to the square mile (Australia, Canada) to 500-700 to the square mile (Belgium, Netherlands, Great Britain).

Further analysis (see Appendix) displays the remarkable fact that nearly all the largest states of the world in point of area are federations: no fewer than six out of the nine with over 1,000,000 square miles, while of the remaining three, Mongolia is hardly a fully-fledged state and India and China both display special features which are noted below. In point of population, the situation is quite different, and when we come to consider density the position is almost completely reversed. Of the 13 states with over 25,000,000 people only three (U.S.A., U.S.S.R., and Brazil) are federal, and again we have the special cases of India and China. The figures for density put federal states at the opposite end of the scale from that which they occupy on an areal basis; only one, and that very atypical (Switzerland), has over 50 persons to the square mile, though the U.S.A. approaches this figure.

Putting the figures in a slightly different way, we find that of the 75 states, nine are fully federal, and of these six have over 1,000,000 square miles each, but only two (U.S.A. and U.S.S.R.) have over 100,000,000 people; on the other hand, the only other states in this population class are again India and China, though Germany and Japan approach it. Put together the nine federations have an average:

area—approx. 2,558,000 square miles (very high)

population—approx. 44,881,000 (medium)

density—approx. 17.55 per square mile (very low).

Altogether these nine states account for about 23,000,000 square miles—well over one-third of the land area of the globe—but only about 403,000,000 people—say one-sixth to one-fifth of world population.

Excluding Switzerland, then, it is clear that the federal system is typical for modern states of large area and low density of population; unitary states of similar nature like Mongolia and Arabia, to a less extent Iran, can hardly be classed as "modern" states. It will be seen that all of North America and Australia and most of South America, are organised on federal lines. Another highly significant feature is that all of these large federations (with the exception of the U.S.S.R.) began life as colonial territories of European powers in "new" countries, whose vast areas, thinly peopled (for the most part by disunited tribal communities), led to rapid areal expansion carried out by small numbers of pioneers. With the transport and communication facilities available in the first half of the 19th Century, when most of them were launching out as independent or autonomous states, rigid central control was hardly feasible; on the other hand, the pioneers who were responsible for pushing out beyond the original coastal settlements had no deep-rooted historical traditions in their new homes, and so were able to develop relatively easily a federal sentiment which offset the insistence on "states rights" which was often a feature of the older nuclei, e.g., the original Thirteen Colonies of the U.S.A. or the coastal states of Brazil. At the same time, the independent spirit of these remote frontiers made it essential that the powers of the central government should be exercised with a light rein; failings in this respect were a direct invitation to secession movements. Argentina was long torn by civil wars between the supporters of unitary and federal systems, between Buenos Aires and the distant centres of population in Mendoza and Tucuman; while in at least one case, that of the Republic of Colombia, actual fission took place, leading to the independence of Venezuela and Ecuador.

In nearly all cases federations of the normal type have a very marked peripheral or excentric distribution of population. Even in the U.S.A. and the U.S.S.R., where conditions diverge somewhat from the absolute norm and the general level of development is highest and most mature, this tendency is still marked; and in the other cases a glance at the population map brings out at once the striking concentration of population in the more fertile and temperate areas along the coasts, or in Canada along the southern border. In Mexico the extreme heat and unhealthiness of the narrow coastal strips introduces a modification; altitude compensates for latitude and the greatest density of population is found in the south of the Mexican plateau. Often, again, the federation contains within itself complementary climatic and economic regions—this of course being largely a function of great area, which

may express itself in latitudinal extension or in distance between the littoral and the continental interior, or both. Although the younger federations are still largely if not essentially primary producers, they were developed in the 19th Century by stocks from a Europe in the full flush of industrialism, and consequently, except in the minor South American republics, their technology is generally advanced and even Australia, Brazil, and Argentina have a considerable industrial development.

The other geographical features common to the typical federations are not perhaps so directly dependent on area as those just noted, although (especially in earlier days) difficulties in communications were perhaps partly responsible for their existence. These features are a tendency to erect "artificial" capitals, and the administration of outlying territories by the federal centre.

The distinction between "artificial" and "natural" capitals is of very dubious validity and really belongs to an older age of geography. For a federation, it is entirely natural to seek a neutral capital, one which will not be too closely associated with the interests or the traditions of any one of the component units. But a neutral site almost implies a new town, since the older ones, if they are of any importance at all, will naturally have such associations. Moreover, in cases where two distinct types of economy or two distinct racial groups are united in one federation, as not infrequently happens, it is obviously undesirable to establish the seat of government in a town unduly exposed by its local connections to the influence of one section only; hence a border location is often sought. Of course, a site originally advantageous from this point of view may cease to be so with territorial and economic expansion, but in such a case the vested interests and sentiment which gather round a capital will generally ensure that it retains its political primacy. A case in point is that of Washington, originally in a very central position relative to the Thirteen Colonies but almost immediately made markedly eccentric by the Louisiana Purchase (1803) which added the immense territory between the Mississippi and the Rockies to the Republic; from a narrowly American point of view a better capital might now be found at Chicago or St. Louis.

A brief survey of the principal federal capitals of the world will emphasise these points. Washington was not only centrally situated on the Atlantic, but stands on the border between the agrarian and slave-holding South and the commercial and rapidly industrialising North; indeed during the Civil War its situation became that of a border fortress. It was in fact founded as part of a political

bargain between Southern and Northern interests, supplanting Philadelphia, and was a completely new-planned city erected in the midst of almost empty woodlands; the District of Columbia in which it stands is a Federal Territory, formed by cession from the States of Maryland and Virginia. *Ottawa* similarly stands on the border between the French and English sections of Canada; with nothing like the economic importance of Quebec or Toronto, it had not the sectional traditions of either. *Canberra*, like Washington a newly-planned town built from nothing in a Federal Territory (ceded by New South Wales), was chosen because the concentration of wealth and population in south-east Australia made a capital in that general area essential, while the rivalry between Victoria and New South Wales was and is so intense that Melbourne and Sydney mutually excluded each other.

In South America, *Rio de Janeiro* and *Buenos Aires* are exceptions to the tendency to neutrality; but in the former case the Brazilian government, looking a very long way ahead, has set aside a Federal Territory far in the interior (on the Matto Grosso plateau) as a site for future capital to be built when the general development of the country warrants it. It may be conjectured however that strong opposition will be raised by the vested interests inseparable from a great centre of administration. In the Argentine the conflict between centralising Buenos Aires and such provincial centres as Mendoza, Cordoba, and Tucuman has so often resulted in civil strife that the argument for neutrality may be said to be greatly strengthened. The Union of South Africa has adopted a unique solution; here, as in Canada, two distinct though related racial and historical traditions are involved, and until recently it might almost be said two economies. As two of the constituents of the Union are Boer and two British in their origins, the need for a neutral capital is clear; but it has been met, not by the creation of a new federal centre, but by dividing the functions of a capital: *Cape Town* is the seat of the Legislature, *Prætoria* of the executive administration.

Even in the older federations and semi-federal states of Europe (which will be discussed below) something of the same tendency is noticeable. *Berlin* and *Moscow* are indeed exceptions, but in both cases we have the further exception of one constituent of the federation—Prussia and the R. S. F. S. R.—having an overwhelming preponderance of territory population and economic potential. Tsarist Russia was a unitary state—the Soviet Union is probably unique in being a successful federation formed by

devolution rather than by a combination of originally sovereign or autonomous units—and although *Moscow* had enormous historic prestige it had not been a capital for over a century. Even in Germany, it may be noted that the Supreme Court sits not at *Berlin* but at *Leipzig*, some slight concession to the junior partners in the Reich.

In Switzerland, *Berne* is approximately on the borders of French and German speech, and originally was greatly inferior in economic importance not only to *Zurich* (which is still twice the size of the capital) but also to *Geneva*. *The Hague* again was originally little more than a service-village to a royal country-house, and even today cannot be compared economically with either *Amsterdam* or *Rotterdam*, which outstrip it in population by 300,000 and 100,000 respectively. There is no doubt that in the 17th and 18th Centuries, which the hereditary Stadt-holders of the reigning House of Orange were rather tolerated than powerful rulers, they preferred a seat well away from the strong and arrogant merchant oligarchies of these great trading cities.

Another political problem which has had to be faced by several federations is that of the disposal of newly-acquired territory, whether contiguous or detached. In the case of the United States, the original colonies had wide claims, which they were hardly in a position to exercise effectively, to strips of land running back from their defined boundaries along the Atlantic Slope. After some negotiation these lands were vested in the Federal Government, which administered them directly until they had developed sufficiently to be organised first into "Territories" and finally into States. The later acquisitions by the Louisiana Purchase (1803) and by cession from Mexico (1848) were treated similarly; the last to be admitted to full Statehood were New Mexico and Arizona (1912). *Alaska*, purchased from Russia in 1867, is still in the Territorial stage. It is clearly undesirable for new acquisitions, gained by the blood or treasure of all, to be given over to one constituent of a federation; and in some cases, such as that of *Alaska*, lack of geographical contiguity further enforces either the erection of a new constituent or direct administration by the centre. So Brazil has its Acre Territory in the extreme sub-Andine west, Imperial Germany had the Reichsland of Alsace-Lorraine, the two partners of the Dual Monarchy of Austria-Hungary administered jointly the occupied Turkish province of Bosnia-Herzegovina.

So far we have been dealing essentially with the great modern federations of vast extent and at least relatively small population,

which are the normal type of existing federal states. Switzerland has been briefly mentioned as a typical federation; it is in reality the sole survivor of its class, which has been historically most important—the league of city-states or of rural cantons which fought for and obtained their autonomy in the midst of feudalism. It may be hazarded that Switzerland alone has survived not only by virtue of its buffer-state position between greater powers, and the defensive capabilities of its mountainous terrain, but also and perhaps much more by reason of its democratic spirit and institutions by means of which both trading cities and rural communities were enabled to support each other. There were other cases, such as the Italian city-state leagues, in which internal tyranny and sectional jealousy and the exploitation by the towns of their countryside wrecked fair prospects of political stability and progress.

Similar state-structures appear to have existed in ancient Sumeria and in all likelihood in Buddhist and Hindu India, and were typically developed in classical Greece. The temporary leagues of mediaeval Italy were usually ruined by individual cities overplaying their own hands, but in Germany the trading cities of the Rhine and the great sub-Alpine and sub-Carpathian routes, although rarely politically united, eventually took their places as Free Cities within the framework of the Holy Roman Empire. In the 15th Century the great if somewhat loose federation of the Hanseatic League achieved a considerable degree of unity of action and dominated the trade of northern Europe from Bergen to Antwerp and from London to Novogorod and the eastern Baltic, and treated on equal or more than equal terms with territorial sovereigns. The Netherlands were in their palmy days essentially a league of trading oligarchies, the **Seven Provinces**, whose common organ was the States-General which bulks so large in 17th Century European history.

Finally we may note in passing another type of federalism which is really only a convenient administrative grouping of colonial territories, especially where "indirect rule" is in force. Examples are the Federated Malay States or, even better, the complicated structure of French Indo-China, which consists of one direct colony (with a deputy in the French Chamber, when that existed), four protectorates (ranging from the "Empire of Annam" to petty chiefdoms in the Laos country), and a leased territory. Similar groupings exist in French West Africa, and the principle may well be extended to British territories in East Africa. The

importance of this form of organisation however lies in the future rather than the present, and it may perhaps be looked upon as providing a cadre for autonomous development.

Before passing on to consider the general conclusions to be drawn from this sketch, we may examine catalogue-wise a number of states which may be regarded as intermediary forms between fully federal and fully unitary governments.

(1) The Union of South Africa, Bolivia, and Colombia are semi-federal states which conform to the type of states large in area but small in population; the most important of these is South Africa, which is really a unitary state with a very high degree of decentralisation to the four provinces of which it is composed; the federal solution to the problem of a neutral capital has been described above. The Netherlands is also a semi-federal state, the **Seven Provinces** having considerable local powers, but historically and demographically it approaches more nearly to the city-state and rural canton type of which Switzerland is to-day the only exemplar.

(2) India and China are special cases where a very large extent of territory is associated with a very large population and consequently high density (circa 300 and 150 to the square mile respectively). China is nominally a unitary state, but in practice, since the 1911 Revolution, the central power has often been so weak as tacitly to recognise various local autonomies, and it remains to be seen whether and to what extent these will persist in a reconstructed China. In the case of India, size and cultural diversities, as well as the peculiar position of the Indian States, have given rise to many official and unofficial schemes for constitutions ranging all the way from a highly centralised government to loose confederations and even actual scission; the question of India's future form of government is however still an open one. We may note in passing that though the process of "historical imitation" was doubtless the chief force in the transfer of the capital from Calcutta to Delhi, the creation of a small Province by cession from the Punjab and United Provinces is suggestive of the "federal territory" device.

(3) Spain and Germany provide interesting contrasts in historical development. The former has been for three and a half centuries formally a highly centralised state, but there has been a persistent struggle between the unifying compulsion of the Spanish monarchy and separatist tendencies inherited from the strong historic individuality of such components as Catalonia,

Galicia, and the Basque country, reinforced by the general poverty of communications. Generally it may be said that the Meseta (Castille and Leon), where Islamic power was felt as a menace to a later date than in areas left behind by the Christian advance, has tended to concentration, the richer and more densely populated marginal areas—Catalonia, Valencia, and we may include Portugal—to separatism. Local particularism, never quite dead (it played a considerable part in the resistance to Napoleon) triumphed with the Republic of 1931, which gave full autonomy to Catalonia and some measure of devolution to Galicia and the Basques; but it can hardly be denied that this sectionalism also helped to destroy the Republic, while the backbone of the insurgent forces, with their strong appeal to traditionalist feeling, seems to have been found once again on the table-lands of Leon and Castille.

The German evolution, on the other hand, displays a traditionally federal structure gradually becoming more and more centralised. Historically, and especially after the Treaty of Vienna (1815), Germany was a loosely grouped confederation. With the advent of the Industrial Revolution, sheer economic pressure led to the formation of the *Zollverein* or Customs Union which was preceded by partial and even antagonistic groupings of the various petty states but was gradually built up under Prussian leadership in the third and fourth decades of last century. If its formation was powerfully aided by the growing sentiment of national unity, its success repaid the debt with interest. By 1866 Austria, whose large non-German elements militated against her satisfactory assimilation in a German Union, was expelled, and in 1871 the German Empire emerged as a highly organised federal state, very different from the almost anarchic Germany of the Holy Roman Empire or the Confederation, a mere congeries of states and statelets all playing their own hands. The Reich had two peculiar features: one of its components, Prussia, had a definite hegemony (over three-quarters of the total area and two-thirds of the population); and it united monarchical and republican states, the latter being represented by the survivors of the old Free Cities, Hamburg, Lubeck, and Bremen, still autonomous partners in the Empire although politically (not commercially) much fallen from the great days of the Hanseatic League. Despite appearances, it would be premature to assume that federalism is finally disposed of in either Spain or Germany; its revival in these two countries would provide an intermediate form between the large modern federations and those of the Swiss type, and might also give a lead to those cases in which federal solution to separatist problems seems to be indicated.

The most obvious of these cases are Czecho-Slovakia and Yugo-Slavia; the latter state in particular has suffered severely from the ill-judged suppression by dominant Serbian elements of the original plan for a Triune Kingdom of Serbs Croats and Slovenes. The old Austro-Hungary itself was a Dual Monarchy in which these two countries were in federal relationship with each other, and it is possible that a bold extension of the federal principle to the other nationalities of the Empire, if adopted in good time, might have preserved the Empire from the catastrophe which overtook it in 1918.

So much for the leading geographical features of existing federal states; it remains to be seen whether any general points emerge which may be of significance in the current discussions of federalism as a practical world policy. The increased political and economic interdependence of an age in which we are forced to think globally, and the increased complexity of local administrative problems, do indeed appear to suggest the adoption, wherever it is feasible, of the federal method—which may be roughly and briefly defined as an aggregation into larger units for purposes best served in common, with, however, the corollary of increased devolution of local affairs. Certainly there are numerous symptoms of such tendencies; cartels like the inter-war Ruhr-Lorraine coal and steel agreement, international production and marketing agreements such as those covering rubber and sugar, the numerous reconstruction and rehabilitation agencies, the vogue of regional and zonal planning. At present three of the six greater powers are fully federal, while two of them (the British Commonwealth and the U.S.S.R.) are Federations of Federations. Of the three unitary powers, Germany and Japan will presumably be greatly reduced in strength and prestige as a result of the war: indeed, a revival of federalism may well take place in Germany. If we add to the nine fully federal states the "special cases" of India and China, then over half the area and population of the world is contained in no more than 11 states, all of which are federal or have some tendency to federalism. This certainly represents a powerful trend which cannot be ignored.

It can hardly be disputed that federalism has shown itself sufficiently flexible to meet a wide diversity of governmental needs, from those appropriate to highly developed industrial regions such as the eastern sections of the U.S.A. to nomadic or oasis lands like Soviet Central Asia. However, our survey suggests that modern federalism at least is essentially a form appropriate to "new" lands of vast distances and thin populations. Whether it

would work so well in regions of deep-rooted historical loyalties and conflicts—such as south-eastern Europe—is perhaps another matter; the history of Germany provides object-lessons for both sides of the argument. Much talk of spheres and blocs is loosely optimistic; the question of boundaries alone teems with difficulties. The Danubian and Balkan countries are not only divided in their external interests but often pulled in different directions internally; Bohemia for example looks to the west, down the Elbe, Slovakia eastwards by the Danube. This whole region between the upper courses of the Rhine, Elbe, and Danube is a great watershed not only physiographically but also racially, linguistically and culturally. The U.S.S.R. is generally, and rightly, regarded as regarded as the great exemplar of a "multi-national" state, but it must be remembered that it had a pre-history as a going concern, and the active directing groups, whether governmental or revolutionary, had a common language, even if it was a second language in some cases. It is too early to attempt to evaluate the full significance of the recent constitutional changes. In south-eastern Europe the only organism which might conceivably have provided a similar nursery for federalism was the Austro-Hungarian Empire, and it is unlikely that after its miserable failure to reconstruct itself in good time the Succession States which have been building up their own traditions will wish to resurrect it. In another area, however, the Arab lands, although by no means to be described as "new" countries, appear to be entering a stage of cultural development in which federal forms of organisation might well be appropriate.

It is tempting to play the game of "bloc-making", to sketch out the lines of four or five great Monroe Doctrines. It seems certain that the present war will reduce seriously the number of states rating as "Powers", and this being so it would seem that the method best adapted to the harmonious adjustment of local needs and autonomies with the categorical imperative of global interdependence would be the eventual adoption of some degree of federalism. From our brief survey we may at least conclude that in any such groupings the principles of complementary economic regions and of neutral capitals would be desirable, if not essential; and initially at any rate advance would perhaps be surer by way of the *Bundesstaat* or League of States rather than of the *Staatenbund* or fully federal state. It would be pleasant but rash to carve up the world, on paper, and allot our neutral capitals—Havana, Manila, Geneva? But these pastimes are perhaps better left to the politicians pure and simple, if any such there be.

APPENDIX

A. LEADING STATES BY AREA.

(Million square miles, 1939)

1. U. S. S. R.	8.174	Federal
2. Canada	3.467	Federal
3. Brazil	3.276	Federal
4. U. S. A.	2.977	Federal
5. Australia	2.975	Federal
6. China	2.903	Excl. Manchuria, Mongolia and Tibet.
7. Mongolia	1.875	Area and Status ill defined.
8. India	1.581	Incl. State
9. Argentine	1.080	Federal
10. Mexico	0.788	Federal

B. LEADING STATES BY POPULATION.

(Millions at given date).

1. China	422.7	Estimated 1936
2. India	389.0	1941; incl. States
3. U. S. S. R.	170.5	January 1939.
4. U. S. A.	131.7	1940
5. Germany	79.6	1939; incl. Austria and Sudetenla
6. Japan	69.3	1935; excl. Korea, Formosa etc.
7. Great Britain	46.5	1939; excl. Northern Ireland.
8. Italy	45.6	1942
9. France	41.9	1936
10. Brazil	41.4	1940

C. LEADING STATES BY DENSITY.

(Per square mile on given date).

1. Belgium	704.4	Dec. 1940
2. Netherlands	686.5	Dec. 1938
3. Great Britain	522.1	June 1939
4. Japan	469	Oct. 1935
5. Italy	359	April 1936
6. Germany	308	May 1939
7. Luxembourg	297	Dec. 1936
8. Haiti	275	Very approx.
9. Czecho-Slovakia	271.5	Dec. 1930
10. Switzerland	268	Dec. 1941

D. THE FEDERATIONS.

	Area (million sq. miles)	Population (millions)	Density (per sq. mile)	Date of Independence (I) or Federation (F)
1. U. S. S. R.	8.174	170.467 (1939)	20.85	1917-1923 (F)
2. Canada	3.467	11.420 (1941)	3.3	1867 + (F)
3. Brazil	3.276	41.356 (1940)	12.62	1822 (I), 1899 (F)
4. U. S. A.	2.977	131.669 (1940)	44.2	1776 (I), 1787 (F)
5. Australia	2.975	7.137 (1941)	2.4	1901 (F)
6. Argentina	1.080	13.517 (1942)	12.5	1816 + (I)
7. Mexico	0.788	19.474 (1940)	25.49	1822 (I), 1857 (F)
8. Venezuela	0.352	3.491 (1936)	9.9	1830 + (I)
9. Switzerland	0.016	4.266 (1941)	268	1291 + (F)

The areal preponderance of the Federations, and their relative insignificance as regards density of population, will be obvious.

Intensive Farming in Panjab

By

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By far the larger area of the province of Panjab is devoted to extensive arable subsistence farming. The area under crops which responds to intensive farming is limited, although the acreage under American cotton and sugar-cane has much increased in recent years. Market gardening is confined to the vicinity of towns and cities within easy transportable distances.

The Panjab farmer characteristically occupies a small holding, and he must get all his livelihood from it. Yet intensive agriculture is rare, and pure subsistence farming of an extensive kind is still the general rule. The reason is that traditionally he has been concerned with the growing of cereal crops—wheat, barley, rice, maize, millets, chiefly wheat for direct food supply, and custom is still a potent force in his choice of these crops and the methods by which he grows them. Unlike France and other countries of Western Europe, smallness of holding has not forced the farmer into intensive farming because he is generally content with a low standard of life.

Not amenable to intensive farming, his primitive and non-intensive methods of growing food crops, which represent an adjustment in times past to the physical conditions of the Panjab, can provide only for the low standard of living characterised by a diet that is at once plain, monotonous and often inadequate in quantity. A large acreage is under fodder crops, primarily intended to supply power for agriculture in the form of draught bullocks and only secondarily to supply milk and meat for human consumption.

It is this low standard of living which forms the greatest obstacle to agricultural progress in the province here, as elsewhere, a standard so low as to prohibit the efforts, mental and physical, that are necessary to improve it. The climate, too, particularly the hot weather conditions, tends to strengthen the disinclination to do more work than a bare minimum, and the general result is an

attitude of passivity and a willingness to be satisfied with a bare escape from starvation.¹

This passivity, it is true, is partly dependent on the farmer's ignorance of the forces of nature. He ascribes a good harvest, in large part, to natural forces outside his control and in a minor degree to his own exertions. To him, variation in yield is the result of weather conditions. It is generally difficult to make him believe that improved methods, or skill, or exertion can save his crops in an unfavourable season, or can substantially increase the output, if the conditions are favourable.

The diet imposes a great obstacle to the change from extensive to intensive farming. All attempts to introduce on a large scale more profitable, higher yielding and more nutritious food crops must fail, unless the people are prepared to alter their diet and consume the new crops. Examples are potato and cabbage. They grow well in the hills, giving yields worth well over a hundred rupees per acre, as compared with the few rupees of millets they displace. They can also be grown in the plains. They have great food value, respond well to manuring and intensive cultivation, and are excellent crops for well-irrigated lands, but their cultivation is limited by the slowness of the people in adding to their diet. In the last forty years they have gained considerably in popularity, but they are still a very minor element of the diet when compared with their position in Western Europe. These examples are sufficient to indicate how greatly diet changes could contribute to improvements in agriculture.

In Panjab the dominating factor in agriculture is water, not merely the quantity but also the time when it is available. Unfortunately both the quantity and time of supply of water limit intensive farming. Outside the montane and sub-montane districts the supply of water is limited. It does not adjust itself to the time when the water is in demand. This point may be illustrated by one or two examples.

Owing to the late rise in the rivers feeding the eastern canals, American cotton is not grown in any quantity. Further difficulty arises in cases where water is wanted for ripening one crop at the same time that it is in demand for sowing another. In the canal

1. This is even more noticeable in many other parts of India.

colonies this difficulty to a certain extent could be surmounted by the use of wells, where they exist, to supplement the canals, but the charges for canal water are so low that the colonist will not use wells. Fruit-growing and market-gardening are not likely to be successful without the command of water from wells.

In Europe the spread of intensive cultivation is mainly the result of the urbanisation that accompanied the industrial and commercial expansion of the last century; and here communications are so well developed that eggs, milk, butter and vegetables and even flowers can be transported hundreds of miles without any significant loss of freshness. But in Panjab large towns are few and widely spaced. Till 1931 only Lahore and Amritsar had populations over one lakh, another five towns have grown to cities during the succeeding ten years—Rawalpindi, Multan, Sialkot, Jullundar and Ludhiana. Communications, apart from the railway, are still mediaeval, and long-distance transport for perishable produce is of exceptional difficulty.

Even the economic pressure, which is one of the chief factors leading towards intensive cultivation,² has not forced the hands of the cultivator into intensive farming to any appreciable extent. The increase of population and rise in the cost of living have been amply offset in Panjab by increase in the cropped area, following improvements of great magnitude, especially canal irrigation. Economic pressure is still in an early stage, so the desire for intensive farming has been slow to come.

For intensive farming capital is necessary. Shortage of capital in the hands of the tenants is one of the causes for the backward state of farming; and unfortunately very little of the capital that flows towards the land is devoted to its improvement. On account of the social value of land ownership, most of it is directed to the purchase of new land. The investment of millions of rupees in land

2. Farmers do not usually expend more capital and more labour on a given land until they are driven to it. The highly intensive system of cultivation in Japan, which is the most characteristic feature of its agriculture, is not due to the natural industry of the Japanese, but to the absence, until recent years, of any outlet for its rapidly growing population. It was the only alternative to starvation. In America, where land has hitherto been plentiful, but labour dear, farmers have preferred to secure a small return per acre from a large area to striving after a higher yield from a smaller area.

purchase does not of itself add anything to the agricultural wealth of the province.

The ignorance of the farmer of how to put the land to the most productive or most profitable use is another important factor responsible for the lack of intensive farming. To remove this ignorance, it will be necessary to overhaul the educational system and adapt it to rural needs on a much larger and wider scale than is done today.

Commercialisation of Agriculture:—We have seen above, in brief, how and why the province generally lags behind in the methods of intensive farming. While rural conditions have so far favoured a system of subsistence farming, with the opening of new land, increase of production through irrigation, development of means of transport, and the gradual awakening of the people to the possibility of a better standard of living, this old self-sufficient type of agriculture is in some measure being replaced by a more commercialised system—by the cultivation of money crops such as cotton, oil-seeds and sugar-cane. Gradually the demands of the market are beginning to replace custom as the deciding factor in what to produce and this is particularly the case in the canal colonies. So the price of wheat in a Panjab Mandi now depends not only on local conditions but on world conditions, such as the state of the wheat crop in Australia or Argentina, epitomised in the Liverpool price. To a considerable extent the Punjab farmer is still protected against the evil effects of price fluctuations by his habit, even now, of devoting a considerable portion of his holding to such subsistence crops as hemp for home rope-making, cotton for home spinning, and so on, but the trend to commercialisation, though slow, is unmistakable. And it can be said that in this respect Panjab is much ahead of the other provinces of India.

Sikkim

(Contributed)

Sikkim is a small state about 100 miles long by about 50 wide. The whole area is drained by one river, the Teesta and its tributaries. It is unique in several respects and one of them is in its geography. In this small state, there are packed some of the highest mountains in the world; indeed it is geography run wild. In the K. 2 district of the Karakoram and in Tehri Garwhal there are large areas of snow mountains but Sikkim appears to show the greatest confusion of high peaks and deep-cut valleys. Although the country is within a day's journey of Calcutta, some parts of it are so inaccessible due to the jumble of heavy forest, gorges, cliffs and glaciers and the difficulty in exploring at high altitudes, that some sections are still inaccurately mapped. Just recently Sikkim and other inaccessible parts of the Himalayas such as the Karakoram and Garwhal hills, have been the scene of intensive exploration by parties of mountaineers. From 1925 onwards there have been a number of expeditions in Sikkim, most of them in the Zemu valley with the fascinating object of putting the map right. Most of them took plane tables or photogrammetric instruments and in fact the best map of this area is not that of the Survey of India but a map prepared by a German climber called Kurz. The valleys of Sikkim and the trade routes are of course well-known.

Sikkim is unique also in its climate. One can safely say without fear of contradiction that Sikkim has the largest variety of climates in the smallest space. As Sikkim is outside the reach of the N.E. monsoon, it gets only the S.W., which sweeps over India and breaks against the wall of the Himalayas which practically entirely stop it. Thibet which is beyond the wall gets hardly any rain and is almost a desert. The monsoon sweeps into the valley of the Teesta and the lower foothills are extremely wet. As the Himalayas here curve in a sort of horseshoe, and as one gets further north up the Teesta valley, one gets beyond the main line of the range and into country similar to the dry Thibetan plateau. The range of altitudes in the country is also extreme, from 2,000 ft. to 28,000; tropical heat to arctic conditions. So the combination of wet and dry and hot and cold make it possible to find almost any climate, somewhere in Sikkim. In the deep valleys which

are 2,000 to 3,000 feet the rainfall is as much as 200" a year; in the northern parts it is probably not more than 20" and just over the passes in Thibet, it is still less. In the low valleys there is very wet heat; Sikkim is of course well outside the tropics, but as it is also well inside the great land mass of Asia, in the low parts the weather is very hot. At the other extreme is found arctic conditions above an elevation of about 17,000 ft. Large areas of the state are under eternal snow or under tongues of ice coming down to about 16,000 ft. in the valleys. These glaciers are very large in extent. Though they are not so big as those in the Karakorams which are the largest in the world, they are still very extensive, the best known perhaps being the famous Zemu glacier on the slopes of Kinchenjunga.



One of the northern Sikkim peaks—Camera at 15,000 feet.

About the early history of Sikkim, probably little is known. Kashmir had of course close connections with the Mughal Emperors but the Eastern Himalayas were unknown in those times. As is seen on any map, the State of Sikkim is thrust like a finger into Thibet and it is natural that there should be some political connection between the two countries. This is so to-day and no doubt was so before the British came to India. However, the country is small and economically unimportant and it seems to have been neglected. At

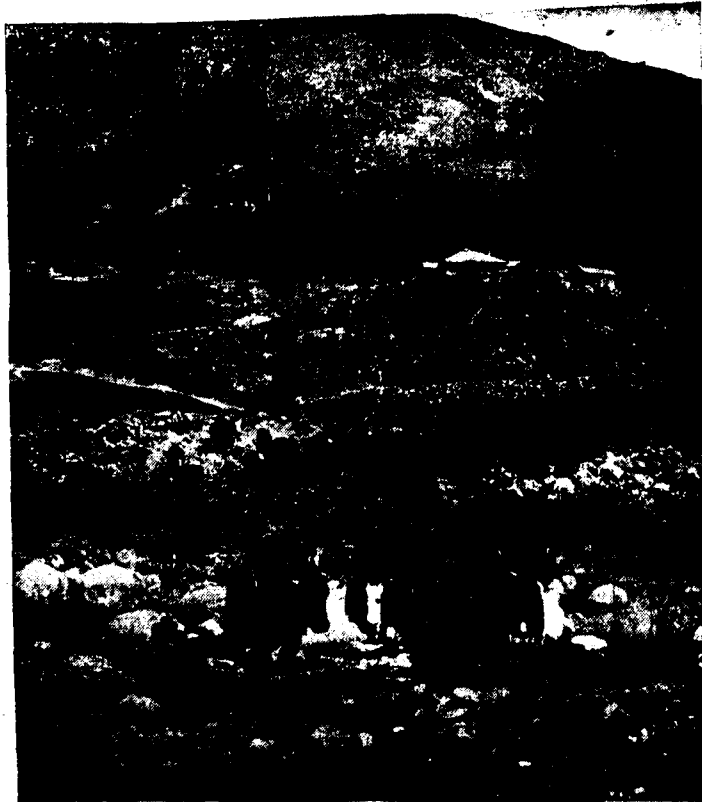
the beginning of the nineteenth century the British Raj assumed protective rights over the state but there was no interference whatever. However, in 1850 trouble began with the Raja and on account of certain indiscretions of his and of trouble with Thibet, conditions were disturbed, but a few years later the troubles were amicably settled. Political relations with Thibet are still very close, in fact closer than with India. The Raja is of Thibetan family and there is close contact between him and Lhasa. The Raja rules with the help of a British Resident, but he is almost entirely responsible for the internal affairs of the state. The Government of such a small place with only 60,000 inhabitants has rather a comic opera flavour. The Secretariat is a small bungalow and the Minister of Justice has to share a room with the Minister of Transport!

Thibet is closed to all foreigners, and the same holds true to a lesser extent to the small hill states on its borders. Nepal, like Thibet is entirely closed. Bhutan and Sikkim are closed but permission is usually granted to visit these places to people who travel only for pleasure. It is reported that this is the wish of the rulers of these countries so that there should be no exploitation by outsiders. The fact remains that besides being remote geographically these states are remote also politically and economically.

The people of Sikkim are very mixed indeed. There are a number of aboriginal inhabitants called Lepchas who seem to have occupied the very thick dense jungly parts of the country up to modern times. As one would expect in such dense jungle and steep valleys which do not lend themselves to agriculture, they are forest people, able only to find a poor living from the birds, beasts, insects and trees of the forest, finding honey, shooting small animals with arrows, snaring birds and eating wild fruits. But a more vigorous people have come in from neighbouring Nepal, usually known to us as Gurkhas. These people, easily distinguishable by their short stature and broad Mongoloid faces, have driven the aborigines (called Lepchas) from the lower valleys into the northern and more inaccessible places. With great industry and hard work they have cleared stretches of forest. No one but a born hillman would ever think of cultivating such country, for none of it is flat and most of it slopes at 30° to 45°. So by means of terracing with great labour, the Nepalis grow their rice in tiny patches of ground irrigated by hill streams, and plant barley and wheat in the high valleys. The Nepalis are a loveable type. They live in a bracing climate and seem much more active and cheerful than the Bengalis in the plains below. They always meet one cheerfully, and

usually with a smile. Though to many of them life must be hard, perhaps harder than for the plainsman, yet they are a happy looking people. The climate is rigorous but it seems to agree with them. One particularly notices the children who appear full of health, fun and mischief. Besides, the Nepalis there are also Bengalis from the plains and many Thibetans. In fact, the majority of those one sees on the tracks in the north, are Thibetans trading from place to place.

Sikkim is so mountainous that unless there happened to be large mineral deposits one could hardly look for much in the way of economic development. The country has not been exhaustively surveyed geologically but so far as is known no minerals of any importance have yet been developed. In any case, as has already



Yaks at Yumthang, 12,800 feet

been mentioned, economic exploitation by outsiders is frowned upon. So the small population depend on agriculture and transport traffic. It might be possible to extend the agriculture to grow tea, rubber, cinchona or cardamoms. Tea gardens which cover the

Darjeeling district stop abruptly at the dividing line between British India and Sikkim. However, there really isn't a lot of scope for such crops and actually the people in the lower valleys cultivate only rice and maize and in the higher valleys wheat and barley. Recently also the growing of potatoes and apples has become important in the very high valleys where so far the rearing of sheep and yaks was the only industry. The latter are of great use as beasts of burden, source of milk for food and of hair which is woven into clothing, ropes and tents. Indeed the yak, ungainly though it appears, is of first rate economic importance in the high Himalayas. The yak hair is very long and is woven in special looms to make a variety of very useful articles. Clothing is chiefly made from wool of the mountain sheep, hand carded and spun. Where the cold is intense, people wear the whole sheepskins. In summer the snow line retreats to about 17,000 ft; in winter it is about 9,000 ft. Those who live in these high places have two houses, one at 9,000 where they live in winter and one high up at 12,000 or more. In summer they live a nomad life pasturing their herds of sheep and yaks in all sorts of inaccessible valleys just beneath the eternal snows, with perhaps a catch crop of potatoes planted to reap in October, before they have to retreat to their lower villages when the winter snow falls. No doubt they have a hard life and one has to be born to such work to be able to stand the rigours, of the climate and the rarified atmosphere, but even such a life must have its compensations lived in such marvellous surroundings. —

Besides agriculture, the only other industry of Sikkim is transport. Thibet owes its political isolation to the very great difficulty of getting there. There are several routes into Thibet but they are all difficult. However, some contact with the outside world is necessary since there is an exportable surplus of wool, salt, skins and borax. Also the bare plain of Thibet supports no trees and if wood is wanted for building, it has to be fetched from British India. Through Sikkim happens to be one of the easiest routes into Thibet and the former country is the main channel through which this trade goes on. Even here, there are only mule tracks and the passes are from 14,000 ft. to 16,000 ft. So naturally, transportation charges are high. However, Sikkim undoubtedly benefits from the trade. There is only one cart road in the state about 30 miles long from British India to the capital, Gangtok, all the rest are mule or footpaths. They are extraordinarily bad ones too. They are cut in the side of steep valleys constantly washed away by rains and landslips, now plunging down, now up again. One

never knows if the path has been swept away in a recent storm necessitating a dangerous detour, or if some river has taken away a bridge and fording the icy water may have to be tried at the risk of one's life. Some attempt is now being made to improve the road to Gangtok and thence to Lhasa, the capital of Thibet. It is hoped, since the Burma road is now blocked by the Japanese, to provide an alternative route via Gangtok, and Lhasa to China. It seems a rather far fetched idea, since all transport after Gangtok would be by mule but those in authority evidently think it practicable. To illustrate the high cost of such transport, fuel oil is 4 annas per gallon at Siliguri and Rs. 7-8-0 at Lhasa.

The Buddhism of Thibet is the religion also of Sikkim, but the Buddhism or Lamaism of these countries is somewhat different from that of Ceylon and other Buddhist countries. It is stated by some authorities to be somewhat debased though others strongly deny this.* A tourist, who takes a cursory interest is hardly able to judge. However, the monastery or gompas is certainly more interesting. The people appear very devout in religious observances but as the principles and practices of Buddhism are extremely abstruse one wonders if the ignorant peasants understand much. Hence the mechanical prayers made by erecting printed banners to flutter in the wind, the use of prayer wheels, small and large and the mechanical repetition of the universal prayer—Om mane pudme hum. The aboriginal Lepchas are animists and one cannot but notice in Sikkim the number of charms which are worn to keep away evil spirits; it is probable that amongst the common people Buddhism is considerably debased to animism. However, the common people are not supposed to understand but to contribute to the support of the Lamas who will think and pray for them. Whether the Lamas are lazy parasites, or whether they are earnest seekers after truth, one does not know.

Be this as it may, the gompas are very interesting indeed to travellers. The buildings and the sacred objects with the frescoes always found on the walls, never fail to interest one.

Perhaps the most interesting feature about Sikkim after the great mountains—is the flora. The Himalayas generally are well

*Those interested may refer to the "Peaks & Lamas" by Marco Pallis, an Englishman who studied the subject deeply and almost became a Buddhist and also to "The hands of the Thunderbolt" by Lord Ronaldshay, a writer who on the other hand thinks Lamaism has become degenerate.

known for their rich flora especially flowering plants. The most famous are the rhododendrons of which there are almost hundreds of varieties. Those who have not lived in temperate climates may not have seen rhododendrons and azalea bushes in flower. They are a lovely sight. Sikkim and other Indian hill districts are the original habitat of these bushes and from there they have been taken to temperate countries all over the world. In smoky England the hearts of many are gladdened in the spring after a cold winter by the masses of flowers of all shades carried by the rhododendrons. All of them had their origin in the Himalayas. In Sikkim there are dozens of different sorts and colours and in May the high valleys are ablaze with them. Another famous indigenous flower is the primula, also a spring flower. From Yumthang at a height of 11,800 ft. one could see the valley floor for miles as a carpet of mauve primulas. Just below Yumthang there is an open marg—the local name for a place where the valley opens—and there is a grazing ground. Just after the melting of the snows, there grows up in this valley a carpet of mauve primulas, so thick that one could not walk without crushing the blooms. Dotted all over, are clumps of bushes of rhododendrons full of pink and mauve flowers. Towering up on both sides are giant crags 17,000 ft. on one side and 21,000 on the other, all snow crowned. It is a sight that one can never forget. Another well-known flower is the orchid, though this grows of course at lower altitudes in the deep jungle of the low valleys. One has often heard of the deep tropical impenetrable jungle but it seems to be rarely found in India. Of course travellers describe the Amazon basin as impenetrable and probably it is found in Borneo too. The elephant country in the high lands of Travancore round Periyar is very thick, but until one goes to Sikkim, one can never see the real jungle one reads about. In places where paths do not exist, a way must be cut with axes. Although dangerous wild beasts such as tigers are rare, there is something worse—leeches. These small worm-like insects simply swarm in Sikkim and it is quite possible to have half a dozen sucking one's blood without knowing. Even on a path one gets them but if one tries to force through the jungle one may get so many that they constitute a danger in themselves. This thick jungle is the home of the orchid; practically every tree in the lower valleys is festooned with them. In June during the monsoon is the best time when they are in full blossom. In addition, the trees are covered with all sorts of parasites and lichens, and climbing vines are festooned from one to another,

Sikkim is also the home of the bamboo. Of course bamboos are grown everywhere but in Sikkim there is such a variety. There are about 30 sorts, from big ones, a foot across which are sawn up and used as buckets, to very small ones like a pencil. It is quite usual there to go to the well for water, not with a chatty but with a hollow bamboo.

Besides being a paradise for a botanist, Sikkim must be very interesting indeed to an entomologist with its wealth of beautiful butterflies.

There seems to be no more pleasant place in which to spend a holiday than the uplands of Sikkim. The climate is so wet however only three months are possible, May, October and November. In June, July, August, it is miserably wet and the views are obscured by clouds, and in December, January and February, it is cold and snowing. But an energetic person who likes walking and camping and who doesn't mind the cold will be rewarded by wonderful views of peaks and valleys, and wild flowers in profusion.

The Secretary "N. Subrahmanyam Memorial Committee" begs to remind you to send your contributions as early as possible.

Wheat in Western United Provinces

By

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Wheat is the most important winter crop of the Western United Provinces, comprising of the 'Doab' and the southern districts of 'Bundelkhand'. The proper wheat-belt is, however, confined to the drier and more irrigated districts of the north and north-west. The map showing the percentage of irrigated wheat brings home the fact that irrigated wheat increases westward. To illustrate this let us draw a straight line stretching from the district of Shahjehanpur to Muttra. It indicates a gradual increase from east to west viz Shahjehanpur—28%, Etah—70%, Aligarh—90% and Muttra 90%.

Wheat does not require a great deal of water. Temperature is of great significance in the wheat cultivation.¹ The period of wheat growth is temperature limited. Wheat is sown in the end of October when the seed bed has sufficiently cooled down, and is harvested in the end of March or beginning of April, when the crop has ripened under a rapidly increasing temperature. For getting good results, temperature must be borne in mind and wheat should be sown at its proper time when temperature conditions are favourable, and harvested also at its proper period. The general farmer does not pay any heed to this fact and the practice is to sow the seed whenever the fields are cleared of summer crops, sometimes too early and sometimes too late. "To some extent therefore wheat growing in India is a gamble in temperature".² This fact is not very much responsible, however, for the diverse distribution of wheat cultivation in our area. Temperature conditions are on the average, the same. Absence of rainfall in winters has been the chief handicap of wheat cultivation and this has been remedied by the construction of canals and tube-wells. The more elaborate the irrigational facilities in a district are, the more area is grown with wheat and greater yields are derived from the fields. The map indicates that the largest area under wheat is in the northern districts which have a widespread chain of canals and tube-wells, while the southern districts show a much smaller area under the same, as the irrigational facilities there are not so elaborate and

1. Howard, A., Crop Production In India, p. 100.

2. Ibid.

irrigation is usually done by means of ordinary wells. But most of the wheat there is irrigated (see map) although the percentage of area under wheat is comparatively lower. In the districts of Muttra and Agra the area is less than that of their neighbours. This may be attributed to the presence of hard-rock material in the soil. The roughness of the soil in these two districts is not favourable for digging either ordinary wells, or tube-wells and the main sources of irrigation are the canals. Jhansi, Banda, Hamirpur and Jalaun are irrigationally backward and the soil there is not fertile except in the patches of black soil. The percentage of irrigated wheat is, therefore much smaller. Coming to the question of yield, irrigation again proves to be of importance. The northern irrigated districts, definitely have a higher yield than the southern districts of Bundelkhand (unirrigated and infertile) and the districts of Cawnpore, Fatehpur and Allahabad which have not much of irrigation.*

Some useful work has been done on the improvement of wheat production in India. The most important as we have said before, is the introduction of irrigational facilities which has made its cultivation more profitable and secure, even in unfavourable years. Yield of irrigated wheat is much higher than unirrigated. The average output per acre in the year 1878 for the province was 779 lbs. according to the figures collected in the report of wheat cultivation and trade in the year 1878; while the corresponding figure for 1935-1936 is 1,000 lbs. that is, there has been an increase of about 200 lbs. per acre owing to irrigation.

Coming to the technical side of the problem, the supply of nitrogen by means of manures (the most feasible being farm-yard manure or green manuring with *Sesam*) is the most urgent requirement of wheat, if heavy yields are to be had. A botanical survey of wheat of all kinds and varieties has been made and the best yielders have been selected by breeding and crossing. Sir Albert and Lady Howard are unquestionably the actual founders of the modern Indian wheats. Their work dates back to the year 1905 and by the year 1915 the stability of Pusa 12 (an improved variety of wheat) for general distribution became assured. Pusa 4, another improved variety was also found to be of better quality. These

*The average yield of irrigated wheat for the several districts is as follows:—

Muzaffarnagar, Meerut, Bulandshahr, Aligarh, Budaun, Bareilly, Pilibhit, Shahjahanpur,—1300 lbs. acre.

Muttra, Agra—1200 lbs. acre.

Etah, Mainpuri, Etawa, Farrukhabad, Cawnpore, Fatehpur, Partabgarh, Allahabad, Saharanpur, Bijnor, Moradabad, Bareilly—1150 lbs. acre.

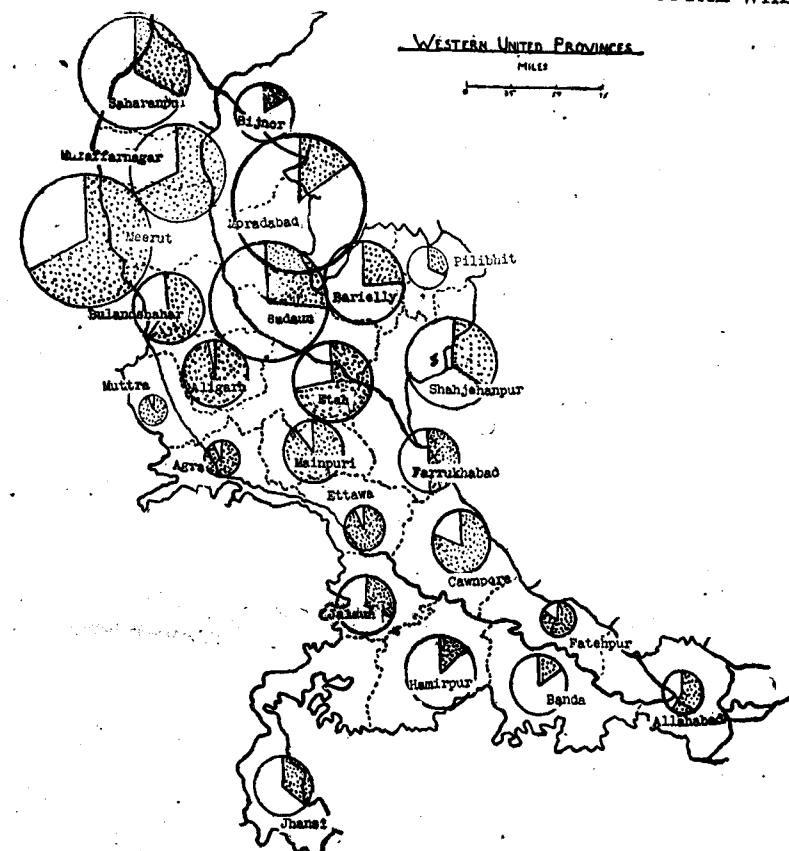
Jhansi, Jalaun—1000 lbs. acre.

Hamirpur, Banda—900 lbs. acre.

improved varieties when grown under the same conditions as ordinary wheat give a higher yield, the difference being three to four maunds,³ (one maund is equal to 80-lbs.).

The proper use of irrigation water is the chief problem that confronts the Indian agriculturist. Over-watering is the general practice. This is harmful and reduces the proportion of grain to total crop and the length and weight of straw increases far more rapidly than the weight of grain.⁴ Irrigation water gives best results if it is made to cover the largest possible internal surface. The further we can stretch the water, the better it is. The present system by which water is charged, by the area irrigated or by individual crops and not by the amount of water used, tempts the

SHOWING PERCENTAGE OF IRRIGATED WHEAT TO TOTAL WHEAT.



Note.—The circles represent total wheat sown, the dotted space denotes irrigated wheat.

3. Based on the reports of experiments carried out on the various agricultural stations up to the year 1936-1937 and on verbal investigations.

4. Howards, Saving of Irrigation Water in Wheat Growing. An agricultural pamphlet.

farmer to over-water his fields and he never thinks of the disadvantages of over-watering.

Wheat is subject to losses in various ways, some of which are due to weather changes. Sometimes in the irrigated areas a promising crop of wheat is damaged to the extent of about 10 per cent by the plants lodging. This trouble is partly due to the storms and partly to the weakness of the straw in the plants. Some wheats resist lodging better than others. Pusa 12, Pusa 4 and Cawnpur 13 are better varieties⁵ in this respect.

Rusts are among the worst diseases of wheat and cause considerable damage to the crop. In our area, rusts appear in January and February and continue till they perish by the intense heat of the sun by the months of March and April. Dr. K. C. Mehta of Agra has done some very useful work in trying to solve the rust problem. He has been given some grant of money by the Imperial Council of Agricultural Research and has two laboratories one at Agra and the other at Simla. At the latter place he studies the rust germs which in his opinion originate in the hills and are then carried to the plains by wind. According to him, the best method of diminishing the damage is to grow rust-resistant varieties. Experiments are still in progress to analyse this point.

Taking into consideration the climatic factors, the following hints might be of use for an extension in the wheat cultivation, not only in this area but in India as a whole.

1. The temperature factor should always be borne in mind and seed sown at the proper time, not until cold weather has fairly set in, about the end of October. If there have not been any showers in the end of October the fields should be irrigated, but only once before the actual sowing.

2. Efforts should be made to encourage the cultivation of types of wheat that resist lodging and are also considerably immune from rusts.

3. About the variety problem we offer no suggestion. It is the work of the technical research worker; we may add that before a particular variety is introduced in a particular area, it should be found out beforehand whether that locality and its environments are suitable for the profitable cultivation of that variety. Introduction of new varieties should be guided by the Geographical factor.

5. C. Maya Das; Studies in Agricultural Improvement p. 26.

6. Russell, Sir John, Report on the Work of the Imperial Council of Agricultural Research in applying Science to crop production in India p. 100.

Reviews

The series New Oxford Geographies provide a graded course for pupils in Secondary Schools and try to give them a conception of the World and its diverse environments and peoples, which should enable them to see social and political problems in a truer perspective. Special emphasis is laid on the human aspect and the basic geographical principles are dealt with, as they arise in connection with various regions. There is, throughout the volume of the series under review, concrete and detailed descriptions of places and scenes to exemplify and illustrate inter-relations between man and his environment.

The volume is illustrated with numerous sketch maps and fine photographs of special geographical interest, both closely linked with the narrative. It is, however, regretted that the diagram illustrating the apparent path of the sun at Rio on p. 102 of the section on South America is not quite correct. The paths should have been drawn inclined towards the north point of the horizon at the proper angle of $66\frac{1}{2}^\circ$ to the horizon and not perpendicular to it as shown in the diagram. On page 28 of the section on North America, in the climatic graphs, it would have been more accurate if the temperature figures were plotted in the middle of the monthly interval, instead of at one end. On the whole, the book is well got up and is exceedingly suited for use in schools having English as the medium of instruction. To suit the curricula of different schools the series is available in 2 alternative arrangements of the continents. The continents are available in separate books also.

K. RAMAMURTHY.

S. Muhammad Husayn Nainar: Arab Geographers' Knowledge of Southern India, University of Madras.

Dr. Nainar has attempted to collect all the information concerning Southern India found in the writings of Arab Geographers and travellers from the ninth to the fourteenth century. He has divided his book into four Chapters. The first chapter deals with the geography of India with special reference to places in Southern India, the second with ethnology, the third with kings and kingdoms, and the fourth with the list of products.

The first chapter is the most important. The author has taken great pains in identifying the places named by Arab geographers. He has succeeded in his attempts to a large extent but many places still remain unidentified. A large number of the names of places in the South are Dravidian and in the writings of the Arabs they have assumed fantastic forms. It is exceedingly hard to discover their equivalents in the Indian languages. A number of places in the Far East have names belonging to languages spoken in those parts, centuries ago. Only guesses can be made concerning their identity.

Dr. Nainar has undoubtedly been more successful here than his predecessors—Reinaud, Yule, Gibb, Barbier de Meynard and Pavet de Courteille, G. Ferrand, and others.

The information collected together in the last three chapters is rather scrappy and not equally enlightening. M. Sayyid Sulaiman Nadvi has for instance given a fuller and more readable account of some of these topics in his book "Arab-O-Hind Ke Talluqat".

Dr. Nainar however brings together some of the information which is scattered in many books, and in doing so has rendered a valuable service.

TARA CHAND, ALLAHABAD.

S. Muhammad Husayn Nainar: *Tuhfat-al-Mujahidin* (University of Madras 1942).

Shaykh Zaynu'd-Din, the author of *Tuhfat-al-Mujahidin* was an Indian Muslim, who was a resident of Ponnani, Malabar district. He lived during the period of 'Ali 'Adil Shah (1558-80). He compiled the treatise "with a view to inspire in the faithful the desire of fighting the worshippers of the Cross: for a holy war with them is an obligatory duty". He narrated in it the evil deeds of the Portuguese against the faith of Islam in India, how they oppressed the Muslims, forcibly converted them to Christianity, enslaved and killed the men, violated the honour of their women, plundered their ships, destroyed their trade and demolished their mosques.

The book is divided into four chapters. The first three chapters which are quite short constitute a sort of introduction to the lengthy fourth chapter which describes the story of Portuguese atrocities from their arrival in India in 1498 to 1583. The first chapter is a sum-

mons to *jihad* against unbelievers. Zaynu'd-Din points out that against the unbelievers who permanently dwell in their country, it is not imperative on the part of all Muslims to wage holy war; but against those who invade the territories of the Muslims an obligatory duty is imposed upon every Muslim to carry on *jihad*. He supports his thesis by quotations from the Qur'an and Hadith.

The second chapter describes the advent of the Muslims in India, the conversion of the last Cēraman Perumal to Islam, their settlements in the towns on the Malabar Coast. The third chapter is devoted to an account of the customs of the people of Malabar, such as, death, inheritance, marriages, untouchability etc. Zaynu'd-Din notes the kindness which the Hindu rulers showed to the Muslims and remarks: "The Muslims and their trade prospered because of the regard shown to them by the rulers,—notwithstanding that these rulers and their troops were all 'unbelievers.....The Muslims of these towns who were the subjects (of the Hindu rulers), were in a minority not exceeding one tenth of the total population".

The fourth chapter narrates the story of the continuous and implacable hostility that raged between the Muslims and the Portuguese. The one bright feature of this murderous warfare in which human life and property were held cheap and mosques and even tombs were freely desecrated and destroyed, was the unshakable constancy of the ruler of Calicut, who through good weather and foul, unflinchingly supported the Muslim cause, in spite of the great sacrifice of men and money which it entailed. From 1498 to 1583 with unexampled staunchness he remained a friend and ally of the Muslim merchants, and even though Muslim rulers of the Deccan (in whose territory Goa and other ports lay), and of Gujrat (who was over-lord of the territory round Diu) showed faint-heartedness and mutual distrust, the Calicut ruler bravely faced the wrath and enmity of the Portuguese and their ally the Raja of Cochin. He was their supporter in war and peace, he watched over their interests and advanced them, and it is recorded by Zaynu'd-Din that after the battle of Shaliyat in 1571 when the Zamorin had forced the Portuguese to surrender their fort, he razed the fort to the ground and gave the material to the Muslims to re-erect on the old site the cathedral Mosque which the Portuguese had destroyed. Here is an amazing story of the Hindu-Muslim relations which sheds undying lustre upon the otherwise obscure history of petty warfare in a corner of India.

Dr. Nainar deserves well of the historians of India for resuscitating this half forgotten story. For although Lieut. Rowlandson made a translation over a hundred years ago and it was published by the Oriental Translation Fund, its rarity and more so its crudeness as a translation made it of little use to scholars. Dr. Nainar has not only given a scholarly rendering of the Arabic text, but also furnished four appendices in which the names of places in India, in Asia, and in Africa and in the Far East are given with their modern equivalents. His knowledge of the languages of South India has enabled him to identify a great many of the places whose names in their Arabic garb were a stumbling block to the understanding not only of the *Tuhfat-al-Mujahidin*, but also of other Arab travellers and Geographers of India.

DR. TARA CHAND, ALLAHABAD.

A Geographical Conference will be held at Annamalaiagar on the 9th, 10th, and 11th May, 1944. Dr. M. S. Krishnan, M.A., Ph.D., F.N.I. Superintending Geologist, Geological Survey of India, will preside. The programme of the Conference is as follows:—

First day.—Presidential Address by Dr. M. S. Krishnan.

Second day.—Reading of papers.

Third day.—Resolutions; Discussions on (1) Place of A Group Geography in the S.S.L.C. Curriculum and (2) S.S.L.C. A Group Geography Question Papers.

Members desirous of attending the conference are requested to register themselves as delegates by paying the delegation fee of annas eight (for Members of the Madras Teacher's Guild) or Rupee one (for non-members of the Madras Teachers' Guild) on or before the 30th April 1944.

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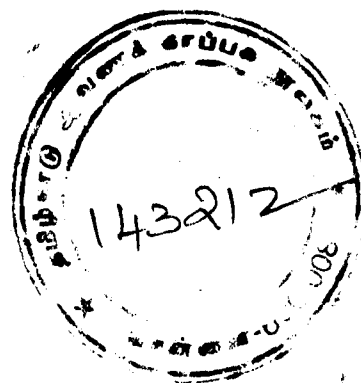
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