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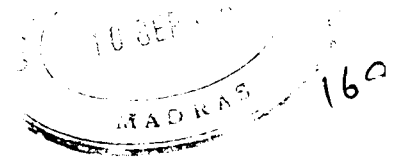
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NĀLANDA

By

K. A. NILAKANTA SASTRI,

The Mine of Learning, honoured Nālandā

—Tāranāth.¹

Early References

Nālandā, the modern Bargaon (Skt. Vaṭa grāma, village of banyan trees),² figures fairly prominently in the early Jaina and Bauddha literature.³ From the Jain books we learn that Nālandā was a prosperous suburb (*bāhiriya*) of Rājagṛha and that Mahāvīra spent fourteen *cāturmāsya*s (period of rest in the rainy season) there. Nālandā is at a distance of seven miles from Rājagṛha, and the Buddhist works treat of them as two different places, and often speak of the country between them—*antarā ca Rājagaham antarā ca Nālandam*. These works also state more than once that the Buddha and Mahāvīra both visited the place at the same time, and that a mango park by name Pāvārika was the usual spot of the Buddha's sojourn whenever he visited the place. And the *Mahā-parinibbānasutta*⁴ says that the Buddha, followed by a great number of disciples, turned his steps towards Nālandā on his last journey. Nāla-grāma, the place of the birth and death of one of Buddha's chief disciples, was doubtless identical with Nālandā;⁵ and the village where Maudgalyāyana, another celebrated disciple, was born, was also in the neighbourhood.⁶

1. *Geschichte*, p. 152.

2. Bosch suggests a possible derivation from the name of Maṇivāṭaka, one of the five villages presented to the Bālaputra monastery, TBG, lxvi (1925), p. 569, n. 101.

3. The passages have been collected together by Dr. Hirananda Sastri—*Proc. Fifth Or. Conf.* pp. 386-400.

4. I, 15-18.

5. *Sudassana Jātaka*, SBE, xi, p. 238.

6. Beal, *Life of Hsuen-Tsang*, p. 105. Also, Watters, ii, 171.

The Name

Of the name Nālandā and of the mango grove in it where the Buddha sojourned whenever he went there, Hiuen Tsang narrates the following legend:⁷ 'The tradition was that in a mango wood in the south of this (Nālandā) monastery was a tank the dragon of which was called Nālandā and that his name was given to the monastery. But the facts of the case were that Ju-lai as a P'usa had once been a king with his capital here, that as king he had been honoured by the epithet Nālandā or 'insatiable in giving' on account of his kindness and liberality, and that this epithet was given as its name to the monastery. The grounds of the establishment were originally a Mango Park bought by 500 merchants for ten *koṭi* of gold coins and presented by them to the Buddha.' Hiuen Tsang thus implied that the monastery of Nālandā rose later on the spot of the mango grove hallowed by the presence of the Buddha on so many occasions.

Hiuen Tsang thus rejects the derivation of the name of the monastery from that of the dragon or serpent inhabiting a tank in the grove, and prefers to associate it with the limitless charities of the Buddha in a former birth as king; Chavannes notes that this name *na-alam-dā*, 'giving without tiring,' or 'that which has not enough of giving', is due, according to certain Chinese authors, to the magnificent donations that the foundation received successively from five princes,⁸ of which more presently.

The biographer of Hiuen Tsang narrates all the legends mentioned so far, and adds some new details regarding the original owner of the site of the monastery which shows that we have here a legend which is growing by progressive exercises in euhemerism; the site is no longer a mango grove, but the garden of a śreṣṭhin by name Āmra, and the five hundred merchants who gave the money for purchasing the garden for the Buddha got their reward duly and became arhats. Here is the account of the pilgrim's biographer: "The Nālandā monastery is the same as the '*charity without intermission*' monastery. The tradition of the old people is this:—To the south of the convent, in the middle of an Āmra garden, is a pool. In this pool is a Nāga called Nālandā, and the convent built by the side of the pool is therefore called after his name. Again there is a saying that Tathāgata whilst a Bodhisattva was the king of a great country and built his capital in this place. He was deeply affected towards the orphans and destitute,

7. Watters ii, 164. Ju-lai is Tathāgata, i.e., Buddha; P'usa is Bodhisattva.

8. *Rel. Em.*, p. 84, n. 2.

and, ever moved by this principle, gave away all he had for their good. In memory of this goodness they named the place '*doing charitable acts without intermission*.'

"The place was originally the garden of the lord (Śreṣṭhin) Āmra (or, *Amara*). Five hundred merchants bought it for ten lacs of gold pieces, and presented it to Buddha. Here Buddha preached the law for three months, and most of the merchants obtained the fruit of Arhatship, in consequence."

I-tsing adheres to the story of the serpent, and says: "This is the model of the *Che-li-Na-lan-t'ouo Mo-ho-P'i-ho-louo* (Śrī Nālandā-mahā-vihāra).⁹ Translated into Chinese this name signifies: 'the happy great residence of the holy serpent.' In the countries of the West,¹⁰ when they speak of a king or of some high functionary or of the buildings of a great temple, they always prefix the particle *che-li* (Śrī) of which the sense conveys the idea of happy and fortunate. *Na-lan-t'ouo* (Nālandā) is the name of a serpent; near about there, in fact, there was a serpent which had the name *na-kia-lan-t'ouo* (Naga-Landa). It is from that that this name is derived. *P'i-ho-louo* (vihāra) has the sense of residence; those who say 'temple' do not make an exact translation."¹¹

Origin

The actual date of the foundation of the vihāra is not easy to ascertain. Fa-hien's silence regarding it has been the basis of the oft-repeated inference that the vihāra came into existence only after the period of his travel in India. But this may very well be doubted, because both Hiuen Tsang and I-tsing assign, as will soon be evident, a much higher antiquity to it, and so does the much later and less dependable Tāranāth. Fa-hien's silence—if indeed Fa-hien is silent¹²—can be taken only to indicate that the place had not yet attained fame as the most celebrated centre of learning in India. For the numerous references to Nālandā in the Buddhist

9. The plan is missing.

10. West of China.

11. *Ib.* pp. 93-4.

12. Watters, ii, 165 indeed says like many others that Fa-hien does not even mention Nālandā by name. I find, however, that Giles' translation contains this at p. 49: 'Nālandā, the village where Śāriputra was born and to which he returned to pass away. Here a pagoda was raised, which is still in existence.' Legge allows the possibility also. Bosch (p. 547 n. 61) holds that Fa-hien's Nāla is not the same as Nālandā, but a place at some

canonical books show that long before the visits of Hiuen Tsang and I-tsing to the great monastery several memorials must have come up to preserve the memory of the spots in the neighbourhood where the Buddha and his disciples had lived and taught, and that these 'gandhakotis' must have been visited by numerous devotees in the course of their pilgrimages in the holy land. In fact the accounts of the two Chinese pilgrims who have most to tell us about Nālandā leave little room to doubt this; but it is more difficult to decide when Nālandā became a cloister and a college with several halls of learning, the chief centre of Buddhist scholasticism that we find it in the seventh century and later. The third or fourth century A.D. or even an earlier time may well be suggested as the period of the commencement of that growth on the intellectual and educational side which in course of time made it the richest and the greatest centre, not only of Buddhist lore, but generally of all learning in India,—in the entire world.

Archaeological evidence does give some support to our view of the antiquity of Nālandā. The exact structure of the main stupa, it has been shown, was remodelled no less than six times after its original foundation, and the fourth remodelling, 'the most interesting and the best preserved,' had corner towers of which three have been exposed; by their beautiful stucco figures of the Buddha and the Bodhisattvas on them, and by the inscriptions of Buddhist texts on bricks found in the core of votive stupas, we may infer that this remodelling took place some time in the sixth century A.D. "Considering the huge accumulations upon which the fifth stupa was built, it seems that the foundation of the original stupa must have been laid about two centuries earlier".^{12a} The date suggested is approximate; it may be earlier. And there is the possibility that even the core of the extant structure replaced some earlier form of which we have no knowledge.

Early History

Let us see what the pilgrims themselves have to say on the early history of the place. And first, Hiuen Tsang:¹³ "Here soon

distance from it, and accounts for Fa-hien's silence *re* Nālandā by supposing that like many other places it was deserted at the beginning of the fifth century when the strong wave of Hindu revival under the Guptas affected Buddhism adversely everywhere in Northern India. I am unable to share this view of the position of Buddhism in the fifth century.

12a. A. Ghosh, *A guide to Nālandā*, p. 3.

13. Watters ii, pp. 164-5.

after the decease of the Buddha, Śākrāditya, a former king of this country, esteeming the one vehicle and reverencing the Three Precious Ones, built a monastery. This king's son and successor Buddhagupta, continuing his father's good work, to the south of the monastery built another one; to the east of this king Tathāgata-gupta built a third monastery; and to the north-east of this king Bālāditya added a fourth. At the formal opening of this last monastery Brethren from all quarters were present by invitation of the king, and among these strangers were two who said they were Chinese. When the king went to visit these latter, they had disappeared in a mysterious manner, and His Majesty was so affected by the incident that he abdicated and joined the Buddhist fraternity (in the monastery he had built). The rule of seniority placed him below all the Brethren, and he did not like this change in his social position. He put his case before the ordained brethren who thereupon made a rule that members of the establishment who were not fully ordained should rank according to age, a rule which is found in this monastery and in no other. To the west of the monastery Bālāditya's son and successor Vajra built another; and to the north of this a king of Mid-India afterwards erected a large monastery. Then round all there was built a lofty enclosing wall with one gate."

The *Life of Hiuen Tsang* also gives more or less the same details; its account of Bālāditya and the priests from China is much more intelligible than the unresolved mystery in the pilgrim's own account, for we read in the *Life*: 'Bālāditya built a Saṅghārāma to the north-east. Afterwards the king, seeing some priests who came from the country of China to receive his religious offerings, was filled with gladness, and he gave up his royal estate and became a recluse.'

I-tsing gives a much briefer account, but adds some fresh data regarding the beginnings of the foundation. He says: 'More than seven yojanas to the north-east of the temple of Great Intelligence (Mahābodhi) we come to the temple of Na-lan-t'oulo (Nālandā). It was formerly constructed by the king Che-li-Che-kie-louo-tie-ti (Śri Śākrāditya) for the pi-tch'ou (bhikṣu) Ho-louo-che-p'an-che (Rājavarṇa) of Northern India. This temple, in its original area, was only a square of fifty feet; later, the kings that succeeded vied with one another in extending it more and more, so that to-day there is no temple more beautiful than this in all Jambu-dvīpa'.¹⁴

14. *Rel. Em.*, pp. 84-5.

Hiuen Tsang also ascribes the foundation to Śakrāditya, but does not say anything of Bhikṣu Rājavamśa or of the original size of the temple.

Critique

Can we identify the monarchs mentioned in Hiuen Tsang's account viz., Śakrāditya, his son and successor Buddha-gupta, Tathāgatagupta, Bālāditya, Vajra, the son and successor of Bālāditya, and lastly the king of Mid-India? It seems that we may well be sure of the identity of Bālāditya. He was doubtless the Gupta king Narasimha Gupta, the pupil of Vasubandhu and the enemy of Mihirakula. And so far as I know, Satischandra Vidyabhushan was the first to treat the names preceding Bālāditya as those of three successive generations of his predecessors, and suggest A.D. 450 as the probable date of Śakrāditya's rule.¹⁵ This line of argument was taken up again in 1928 and developed in much greater detail by Father Heras in his memoir on *The Royal patrons of the University of Nālandā*,¹⁶ placing the foundation of Nālandā in the year A.D. 427 some years after Fa-hien's travels in India. These views have since been adopted by other writers though with minor variations that we need not stop to discuss.

Let us see what can be said in their favour. Though Vidyabhushan and Heras have not said so, I think they were influenced largely by the narrative of the early history of the monastery by the biographer of Hiuen Tsang; for though the pilgrim himself says nothing about the intervals or the relations between Buddha-gupta and Tathāgatagupta, and between Tathāgatagupta and Bālāditya, his biographer does make the first five kings in the list (Śakrāditya to Vajra) succeed in a regular line, the son succeeding to father in every case, and after mentioning the king of Mid-India as the sixth, he definitely says: 'Thus six kings in connected succession added to these structures.' I must hasten to add, however, that though Hwui Li's account has suggested the idea of continuous succession of the rulers, his account of the relationship among them has not been followed by Heras, who adheres to Hiuen Tsang's indications in this regard and finds that they tally with the facts of Gupta history. Thus his scheme of identifications is like this:

<i>Hiuen Tsang</i>	<i>Gupta History</i>
Śakrāditya	Kumāragupta I
Buddha-gupta, son and successor	Skandagupta, son and successor of Kumāra.
Tathāgatagupta, successor	Puragupta, brother (not son) and successor of Skanda
Bālāditya, successor	Bālāditya, (son and) successor.

Other considerations urged in support of the scheme may be summed up thus: Śakra is the same as Mahendra, the Āditya title of Kumāragupta I. Again, the father of Bālāditya was Puragupta (Vikramāditya) who sent his son to Vasubandhu for his education and had therefore Buddhist leanings; clearly he could be referred to as Tathāgatagupta on that account. Further, the time of Kumāragupta, heir to the high intellectual tradition of the nine gems of Vikramāditya's court was eminently suited for the foundation of the University; the Gupta empire was at its zenith, and Kumāragupta himself is known (from a reference to him in Vāmana's *Kāvya-lankāra*) to have been a patron of letters; how best could the title have been earned but by the foundation of Nālandā? He was perhaps no Buddhist himself, but surely a respecer and promoter of the creed and its institutions.

By themselves these considerations appear plausible and they seem to contain the elements of an intelligible story of the development of Nālandā. But there are a number of considerations on the other side which seem to put the whole matter back in the region of doubt and uncertainty. Hiuen Tsang puts the reign of Śakrāditya 'soon after the decease of the Buddha'; his biographer is not so definite and says: 'After the Nirvāṇa of Buddha an old king of this country called Śakrāditya.....built this convent';¹⁷ but then he says elsewhere that Nālandā as a centre of learning had already existed for seven hundred years at the time he wrote (A.D. 688);¹⁸ and Beal has drawn pointed attention to this in a note saying that this implies two things: first that Śakrāditya must have lived about the first century B.C., and secondly that Hiuen Tsang's expression 'soon after the nirvāṇa' must be taken, *cum*

15. *Mediaeval Logic* (1909), App. A.

16. JBORS xiv, pp. 1-23. See also Kimura, *Shifting of the centre of Buddhism in India*.

17. *Life*, p. 110.

18. *Ib.* p. 112 and n. 2. See also n. 1, p. xx.

grano, to mean 'a good while after.' We may not be right to take this as a definite indication of Śakrāditya's date without further evidence of a more tangible character; but we can surely infer that both Hiuen Tsang and his biographer thought that the Nālandā of which they were speaking was of much higher antiquity than the age of Kumāragupta I. Tāranātha likewise speaks of Nālandā as dating from before Aśoka's time, of Aśoka's constructions there, and of the activity of Rāhula, Nāgārjuna and Āryadeva; all this may not be, perhaps is not, history; but it attests sufficiently the prevalent belief in the antiquity of Nālandā.

It is difficult to accept the view that Śakra should be taken to stand for Mahendra when we are dealing with the distinguishing titles of monarchs. Again, Vasubandhu's relation to the Guptas has been much debated. Vāmana in his *Kāvya-lankāra* distinctly says that Vasubandhu was the Counsellor of a son of a Candragupta, and that it was on this account that he was called the refuge of the learned—*āśrayaḥ Kṛtadhiyām*.¹⁹ Vidyabhushan accepts this, as also Paramārtha's statements regarding the discipleship of Bālāditya and the death of Vasubandhu in his reign at the age of eighty, and makes Vasubandhu a contemporary of four Gupta rulers, Kumāra I, Skanda, Pura and Narasimha, assigning him a life period from about A.D. 410 to about A.D. 490. Heras puts a more general construction on the praise of Kumārā Gupta in order to strengthen his claims to be the founder of the University; but this ignores the specific gloss of Vāmana whose comment must be presumed to be based on the context of his citation or on some living tradition on the subject. But quite other views have been taken, and Vasubandhu has been held to have been the contemporary of Samudragupta in the fourth century A.D.²⁰ The explanation offered for Puragupta being called Tathāgatagupta by Hiuen Tsang is by no means convincing, and no reason can be found why Skanda Gupta should be called Buddhagupta. It may be noted at this point that another reconstruction is offered by H. C. Raychaudhuri who equates Buddhagupta with Budhagupta, makes him the youngest son of Kumāra I (Mahendra, Śakra), and postulates a new branch of the Guptas.²¹ I do not think he has answered Fleet's objections to the identification of Buddha with Budha by the analogies he has cited, and I do not think there is

19. III, 2.2.

20. Smith, EHI, 4, App. N. pp. 346-7.

21. *Pol. His. of Anc. India*, pp. 501 and 506.

any evidence worth the name for the genealogy he offers though with an interrogation mark and dotted lines indicating its tentative character; he also postulates a second Bālāditya different from Narasimha and identified doubtfully with Bhānu Gupta. Such are the strange results of trying to read Hiuen Tsang's names into the evidence of the inscriptions. One more point. If Hiuen Tsang applied the name Tathāgatagupta to Pura-gupta for the reason put forward by Heras, why did he then fail to say that Bālāditya was the son of Tathāgatagupta?

Conclusion on early history

I think that it is really no use trying to get more history out of Hiuen Tsang than there is in him; Bālāditya is a real name; of him the pilgrim himself gives many other details in relation to the Hun invasions, and what he says on this subject as also the part of Bālāditya in the growth of Nālandā is fully borne out by epigraphy. The rest seems to be no more than just edifying gossip. Names like Śakrāditya, Tathāgatagupta and Buddhagupta are obviously legendary. It is well known that the pious pilgrim was credulous about whatever concerned Buddhism.

Of the two remaining kings mentioned by Hiuen Tsang, Vajra is identified by Heras with Kumāragupta II, though he admits that the name Vajra is not easy to explain; and the king of Mid-India with Harṣavardhana,—this in spite of the facts that Hiuen Tsang mentions this king of Mid-India amongst past monarchs, and refers later to the constructions of Harṣa as those of Śīlāditya still in progress while he was in India.

Our conclusion is that Bālāditya is the first truly historical name definitely known to be associated with the foundations in Nālandā; the identity of Vajra and the king of Mid-India who are mentioned after him is at present not clear. The earlier history is evidently a made up affair in which history has changed into legend as it does more often in India than elsewhere.²² But we have reason

22. It is perhaps worth while, in passing, to draw attention to some modern legends on Nālandā. In *A Note on the excavations of Nālandā and its History* (JBBRAS, NS ii 1926), pp. 214-6, and in the article on *The Royal Patrons of Nālandā* referred to above, Heras notes that the buildings in Nālandā are found built over earlier structures, and accounts for this by postulating that Nālandā was demolished and rebuilt more than once—first destruction by Mihirakula and restoration by Bālāditya who held a great assembly in commemoration of it; second destruction by Śaśāṅka followed by a restoration by Harṣa; perhaps a third destruction also in the

to think that Nālandā was older than Fa-hien's time and that he knew of it, though somehow he does not give a detailed account. It may be that, as already suggested, the *vihāra* had not attained such great celebrity at the beginning of the fifth century as it did later. It is not improbable that the Guptas patronised it, and much of the expansion of the place might have been due to this patronage, and the Gupta names of the monarchs mentioned by Hiuen Tsang may be a recognition of this general fact, though even of this we may not be quite sure as the names might have been coined in the mint of legend on the analogy of names of kings most familiar to people in the age of the Guptas. In any event, the details of the early history of the growth of Nālandā before the time of Bālāditya are hidden from view.

Epigraphic evidence

The importance of Nālandā in the early Gupta period is borne out by epigraphy. One of the seals recovered during the excavations there bears the inscription *Kumārāmātyādhikaraṇa*²³ in Gupta characters of the fifth century. This need not necessarily mean that Nālandā was the provincial headquarters, but it indicates at the least that some communication was made to Nālandā from such headquarters. An even earlier record is a copper-plate of the time of Samudragupta;²⁴ its genuineness has indeed been called in question, but apparently on insufficient grounds; this record mentions the *gopasvāmi* and the *akṣapaṭalādhikṛta* of the Nālandā village, and also other offices like *mahāpilūpati* and *mahabalādhikṛta*.

Growth

To return to the accounts of Hiuen Tsang and I-tsing. While the former counts only six *vihāras*, I-tsing saw eight of them.

wars of Adityasena Iśānavarman. There is no support for all this either in Hiuen Tsang, our most detailed source for the period, or in Archaeology. Nothing is commoner than repeated reconstructions of growing institutions, and many stūpas are known to have been rebuilt over and over again without their having been destroyed in war. The actual occasions of destruction for which we have definite evidence will be noted in the course of this paper.

23. Bhandarkar's List No. 2103.

24. *Ib.* No. 2075; EI, xxv, pp. 50-3. A coin, archer-type of Kumāragupta (A.D. 413-55), and a clay mould of Gupta coins have also been discovered. —Ghosh, *op. cit.*, p. 10.

Hiuen Tsang records his impressions of the sculpture in the monasteries and temples and gives some details of particular *vihāras*. He says: "In this establishment, the work of a succession of sovereigns, the sculpture was perfect and really beautiful. In the monastery built by Śakrāditya, there is now an image of Buddha, and every day forty brethren are sent to take their food there to requite the bounty of the founder." Watters²⁵ comments on this as follows: 'It is probable that the Śakrāditya monastery was in ruins when Yuan-chwang visited the place, and that the forty brethren were sent from another *vihāra* to eat their breakfast at it, to keep the memory of its establishment and its founder. At I-ching's time there were only the foundations of this monastery visible.' He cites no authority for these statements, and I have not come across any.

Sacred Vestiges

That Nālandā stood on most hallowed ground is emphasised by Hiuen Tsang's account of the sacred vestiges round about the great *vihāra* and his record of the details of some of the miracles connected with them:

"All round the Nālandā establishment were 100 sacred vestiges of which two or three are to be briefly noticed. To the west was a temple at a place where the Buddha had lodged for three months and preached to devas and men, and above 100 paces to the south of this was a tope where a foreign bhikṣu had visited Buddha. This bhikṣu on meeting Buddha prostrated himself and prayed for rebirth as a universal sovereign; Buddha hereupon remarked with sorrow that as this man's merit was vast, and his faith firm, he would have attained Buddhahood if he had so desired. Now he would have to become a sovereign once for every atom of dust from the place of his prostration down to the 'gold wheel.' As he was given up to worldly joy the sacred fruit would be thus remote (that is, he would attain arhatship only after all these countless rebirths). To the south of this tope was a standing image of Kuan-tzū-tsai P'usa,²⁶ sometimes seen with a censer in the hand performing pradakṣiṇa to Buddha's temple. To the south of this was a tope which contained the shaven hairs and nail-clippings of the Buddha for three months; and devotees who performed pradakṣiṇa to this tope were often cured of their ailments. Near

25. *ii* p. 167.

26. Avalokiteśvara.

the tank outside the west wall was a tope where a Tirthika holding a small bird in his hand²⁷ asked Buddha about life and death. South-east from this and above 50 paces within the wall was a remarkable bifurcated tree, according to the A and C texts 80 or 90 (but according to B and D eight or nine) feet high. This tree, the height of which never varied, had grown from a tooth-stick thrown on the ground by the Buddha.²⁸ To the east of the Tooth-stick tree was a large temple above 200 feet high where the Buddha had preached. To the north of this above 100 paces was a temple with an image of Kuan-tzū-tsai P'usa which believing worshippers saw in various forms and at different positions."²⁹

Later Additions

Of the temple of Bālāditya and later additions by Harṣa and his contemporaries we naturally get more specific details in Hiuen Tsang's account :

"To the north of this was a large temple above 300 feet high built by king Bālāditya. In its size and ornamentation and in its image of Buddha this temple resembled the one at the Bodhi Tree.

"To the north-east of Bālāditya's temple was a tope where Buddha had preached and to the north-west was a sitting place of the Four Past Buddhas; to the south was a bronze (t'u-shi) temple in course of construction by king Śilāditya. To the east of this above 200 paces and outside the wall of the establishment was king Pūrṇavarma's copper image of the Buddha more than 80 feet high in a six storeyed building. Two or three *li* north from this was a brick temple with a large image of Tārā P'usa, a popular object of worship. Within the south gate of the wall³⁰ was a large well which had been miraculously produced in the Buddha's lifetime."³¹

It will be noticed that Harṣa's bronze temple was not yet completed during Hiuen Tsang's stay in India. Pūrṇavarman is said elsewhere by the pilgrim to have been the last descendant of Aśoka and to have resuscitated the Bodhi tree after its destruction by the cruel and tyrannical Śaśāṅka of Gauḍa.³²

27. Also mentioned by I-tsing, p. 163 post.

28. Also mentioned by I-tsing, *Record* p. 35, *Rel. Em.* p. 95.

29. Watters ii, p. 170.

30. Of the Tārā temple, Spooner A.R.E.C., 1916-17, p. 45.

31. Watters : *Yuan Chwang*, ii, p. 171.

32. Watters ii, p. 115.

General Description : Hwui-Li

This account of the Master of the Law is brilliantly supplemented by the general description of the vihāra given by his pupil Hwui-Li in the biography of the Master :

"Moreover, the whole establishment is surrounded by a brick wall, which encloses the entire convent from without. One gate opens into the great college, from which are separated eight other halls, standing in the middle (of the Saṅghārāma). The richly adorned towers, and the fairy-like turrets, like pointed hill-tops, are congregated together. The observatories seem to be lost in the mists (of the morning), and the upper rooms tower above the clouds."³³

"From the windows one may see how the winds and the clouds produce new forms, and above the soaring eaves the conjunctions of the sun and moon may be observed.

"And then we may add how the deep, translucent ponds, bear on their surface the blue lotus, intermingled with the Kie-ni (Kanaka) flower, of deep red colour, and at intervals the Āmra groves spread over all, their shade.

"All the outside courts, in which are the priests' chambers, are of four stages. The stages have dragon-projections and coloured eaves, the pearl-red pillars, carved and ornamented, the richly adorned balustrades, and the roofs covered with tiles that reflect the light in a thousand shades, these things add to the beauty of the scenes".³⁴

I-tsing

I-tsing, who lived in Nālandā for a decade, gives a detailed account of the buildings of the monastery, their alignment and orientation, the technique of their construction and the size of the rooms occupied by the monks and the arrangements in them. He stresses the absence of privacy in these rooms, and the general impression produced by his vivid description tallies completely with that created by the earlier and more prosaic account of Hiuen Tsang, and the more lyrical descriptions of his biographer and of the composer of the Yaśovarman inscription to be cited presently :

"The configuration of this monastery is nearly that of a square, like the earth. On all the four sides, the straight and projecting

33. Cf. the description in Yaśovarman's inscription, *infra*.

34. *Life*, pp. 111-2.

edge of the roof forms long covered galleries which go all round the edifice. All the buildings are in brick; they comprise three stories, each story being more than 10 feet high. The transverse beams are joined by plates and there are neither rafters nor tiles, but with bricks they have made an esplanade; all the temples³⁵ are perfectly aligned and we can go and come at our ease. The wall of the last edifice constitutes the outer wall. The tiers of bricks rise to a height of thirty or forty feet. At the top there are representations of human heads of natural size.

"As to the residences of the monks, there are nine of them on each front; each habitation has a surface of about twenty square feet. At the farther end they have opened a window which rises up to the edge of the roof. Though the doors are high, they have made them with a single leaf in a manner that all can be seen from a distance; it is not allowed to put in any blinds there. Casting a cursory glance from outside, one sees all the four sides at a time; a mutual surveillance is thus exercised; how would it be possible to do the least thing secretly? At the top of one of the angles, they have made a suspended way which allows of going and coming over the temple. At each of the four angles there is a hall constructed of bricks; learned and venerable monks live there.

"The gate of the temple is turned towards the west; its top floor soars into the sky and makes one giddy in the open. There are marvellous sculptured images the beauty of which touches the limit in the art of ornamentation. This gate is connected to the main building which has no distinct beginning; but two steps before it they have erected four columns. Though this gate is not of a great height, the wood work they have put in there is extremely strong.

"Every time the hour for a meal comes they raise the fastening bars at all the doors. It is in fact the aim of the holy religion to preclude hidden things."

Flooring

"In the interior of the monastery, wide spaces of more than 30 paces are paved in brick. For the smaller spaces of five to ten feet, for all the spaces which cover the rooms, those which are on the roof, before the verandah or in the habitations, they have used fragments of big bricks of the size of peaches or jujubes; they

35. We shall see, a few lines later, that in the monastery of Nālandā there were no fewer than eight temples—Chavannes.

mix them together with a sticky paste and they strike on them with beaters so as to make them level. They enclose the circumference with lime. They make a mixture of the fibres of hemp to which they add oil with the remnants of hemp and the debris of old hides; they moisten it for many days after they spread this plaster on the floor filled with bricks; they cover it all with green herbs. After about three days they see if it has become dry. They rub the surface many times with polishing stones; they sprinkle it with a shower of red earth or a substance like cinnabār. Then, with a greasy plaster, they make it polished and clear like a mirror. All the halls and the steps of the staircases are finished in this manner. When these operations have come to an end, the passers-by can tread on this surface with their feet and traverse it for ten or twenty years without its ever deteriorating or cracking. This is not like lime which when it is moistened by water does not fail to scale off.

Plan of Temples

"There are no fewer than eight temples so constructed. Up above, all have a level terrace and we can walk there. Their dimensions are more or less similar. To the eastern side of each temple, they have chosen a building, sometimes simple, sometimes triple, for placing the holy images therein. Or else, at a variable distance to the front on the same side, they have erected an observatory in the form of a terrace which serves as the hall of Buddha.

"On the western side of the temple, outside the great enclosure, they have built here and there large stūpas³⁶ (tsoei-tou-po) and a large number of caityas (tche-ti). Their number is (about) a hundred. The sacred vestiges are close to one another and defy enumeration. Gold and precious stones form a brilliant ornamentation; in truth, there are few places so perfect."³⁷

Not satisfied with his verbal description, I-tsing prepared a plan of the monastery calculated to enable the reader to follow his account more easily. The plan is unfortunately lost, but here is his introduction to it where he explains its purpose, and his wistful longing for a similar institution in China :

36. According to this passage the difference between the stūpa and the caitya appears to be above all in the size of the two sorts of edifices, the first being more raised than the second. (See however *n.* 7, p. 39—"They call caitya the places consecrated by the great events of the life of Buddha. They count eight of them.")—Chavannes.

37. *Rel. Em.* pp. 85-7.

"Although I describe again the form of the temple I still fear that there is some confusion in the thing; I have therefore drawn up this design, which represents its plan, hoping thus that the eyes will catch it without difficulty. If we could propose to the Emperor the construction of a temple conforming to this model, the perfection of the Royal Residence (Kusāgārapura) and that of China would be alike.

"Sighing for this, I said: 'a crowd of good works are as formerly harmoniously disposed; all the eminent men are already old for us; one sees thus that living persons are separated from the dead; how should the heart not be afflicted by this?'"³⁸

I-tsing's observations which accompanied the missing plan are worth reproducing on account of the precise details they furnish regarding the relative position of the various buildings. A stūpa of Bālāditya is located, and more details of ornamentation and sculpture are furnished.

"When one has seen one of the temples, the seven others are identical. On the top they offer a level terrace on which people can walk.

"In examining the configuration of the monastery, it is necessary to look at it from the Western façade;³⁹ it is while going to the West, outside the entrance, that one well apprehends the true form of it.

"About twenty steps to the south of the door, on the edge of the road, there is a *tsoel-tou-po* (stūpa) more than a hundred feet high. It is there that formerly the Honoured of the World (loka-jyeṣṭha) passed in retreat the three months of summer.⁴⁰ The Sanskrit name of this edifice is *Mou-louo-kien-t'ouo-kin-ti* (Mūla-gandha-koṭi), which signifies in Chinese: the hall perfumed by the first source.⁴¹

"More than fifty steps to the north of the door-way there is another great stūpa higher still than the first. It is the king Yeou-je (Bālāditya) who raised it. Both are alike built of bricks. The ornamentation with which they are covered is of remarkable delicateness; there are found beds of gold and floors of precious stones.

38. *Ib.* p. 93.

39. As corrected in the light of Ki-ye at BEFEO iv, p. 80.

40. The retreat of summer (varṣa) lasted in India from the middle of June up to the middle of October—Chavannes. Varṣa, however, is 'rainy season.'

41. They called Koṭi or Gandhakoṭi all the places where the Buddha had stayed for a time.—Chavannes.

The offerings are of a rare beauty. At the centre there is an image of *Jou-lai* (Tathāgata) turning the wheel of the law. Further on, to the south-west, there is a small *tche-ti* (caitya) about ten feet high; it is there that a *P'ouo-louo-men* (Brahman) who held a small bird in his hand posed some questions;⁴² what they call in Chinese the pagoda of the oriole, is this same edifice.

"To the west of the 'hall of the first origin' (mūla-gandha-koṭi), there is a tree of the species that the *Fo* (Buddha) prescribed for the teeth.⁴³ It is not a willow.

"Still more to the west, on the edge of the road, is found an altar of Prohibitions.⁴⁴ It is more than ten feet, large measure, each side. It consists of a brick wall more than two feet high that they have raised on a plane area; in the interior of the enclosure is a raised seat, about five inches higher than the surrounding (area); at the centre is a small *tche-ti* (caitya). From the east of the altar to the angle of the hall, there is the emplacement of a covered walk of the Buddha; it is made of rows of bricks; it is about two cubits broad, about fourteen or fifteen long and more than two cubits high. On the promenade they have fashioned with lime which they have left white, representations of the lotus flower; they are about two cubits high and more than one foot broad; there are fourteen or fifteen of them; they mark the traces of the feet of Buddha."⁴⁵

Evidence of Seals

The village of Bargaon and its monuments and mounds were first noticed in modern times by Buchanan-Hamilton who visited the place in the first quarter of the nineteenth century. Cunning-

42. Hiuen Tsang also speaks of the stūpa where a heretic with a sparrow in his hand questioned the Buddha on the subject of death and of life.—Chavannes. See p. 158 *ante*.

43. Cf. Hiuen Tsang, p. 158, *ante*.

44. It is there that the novitiates were admitted to receive ten prohibitions and entered the order definitely. Cf. Edkins: *Chinese Buddhism*, p. 35.—Chavannes.

45. *Rel. Em.* pp. 94-6. In the *Nan-hai*. I-tsing speaks of the walks of the Buddha. There were these walks in all places that the Faithful often visited, as at the base of the Gr̥dhra-kūṭa and at the foot of the Bodhidruma, in the Mṛgadāva and in Rājagṛhapura. All these walks had the same dimensions. But, according to the text of the *Nan-hai*....., the flowers of lotus that mark the traces of the feet of the Buddha are only two inches and not more than two cubits high. There must therefore be a fault in one of the two texts. The reading 'two inches' seems to me preferable.—Chavannes.

ham was the first to identify these ruins with the ancient Nālandā, basing himself on the travel account of Hiuen Tsang, and the inscriptions on some of the images he collected there. His account of the site in his first report is still very instructive study. Some years later Broadley carried out some amateur diggings and published a monograph based on them in 1872, without earning the thanks of his successors in the field.

Excavations of a systematic nature carried on since 1915 have yielded, as noted already, a number of very interesting minor antiquities besides giving striking proof of the accuracy of the literary accounts of Nālandā which we get from the Chinese writers. The most interesting among these minor antiquities are the inscribed clay seals, one of the earliest among which has been noticed already. There are at least three seals of different dates, all belonging to the Maukharis of Kanauj; and other unpublished seals of the same line of kings are said to be preserved in the Nālandā Museum.⁴⁶ The three published seals belong to Hari-varman (475-500 A.D.), Īśānavarman (550-76) and Śarvavarman (576-79).⁴⁷ We may be fairly certain that the great University was in continuous receipt of Maukhari patronage, and one wonders if the king of Mid-India named by Hiuen Tsang after Vajra as the builder of one of the temples in Nālandā was after all a Maukhari. One other seal⁴⁸ proves the connection with Nālandā of the great Harṣavardhana whose patronage of Buddhism in general and of Nālandā in particular is amply attested in the pages of Hiuen Tsang; and yet another seal⁴⁹ shows that the contemporary and friend of Harṣa, Bhāskaravarman of Assam, was also among the patrons of the great vihāra.

Yaśovarman

We must also take note of the stone inscription of another Maukhari ruler Yaśovarmadeva (729-43 A.D.) who was known only by literary references till the discovery of this stone inscriptions.⁵⁰ The object of the inscription is to record the gifts to

46. Pires, *Maukharis*, p. 61 n. 2 and p. 92 n. 3.

47. Bhandarkar, *List Nos.* 2079-81.

48. *Ib.* No. 2086.

49. *Ib.* No. 1667.

50. Bhandarkar, *List No.* 1742 as also 2105 and n. Also Pires, *The Maukharis* pp. 144-5. I offer a fresh translation of the verses on Nālandā; Dr. Hirananda Sastri's translation is influenced by his untenable theories regarding Yaśovarman. The inscription, is definitely a record of Yaśovarman's time, and Bālāditya comes in most incidentally.

the vihāra from Mālāda, the son of a minister of Yaśovarman and guardian of his northern frontier; the gifts were made in part to the Buddha image in the temple of Bālāditya and in part to the monks of the Saṅgha. The general description of the vihāra of Nālandā, and the particular account of Bālāditya's temple contained in this inscription are worth citing here for comparison with the Chinese accounts reproduced above:

"Nālandā with her scholars famed for their learning in the sacred texts and the arts, and with the clusters of rays (issuing) from her caityas shining brightly like white clouds,—(Nālandā) seems to laugh at all the cities of monarchs, who had gained fame (wealth) by ripping the temples⁵¹ of (enemy) elephants on hotly contested battle fields (4). The row of her vihāras with the series of their finials touching the clouds appears like a pretty festoon made for the Earth by the Creator and shining in the aerial region; her palatial temples brilliant with the network of rays (issuing) from their numerous jewels bear the splendour of Sumeru—the pleasant abode of groups of good Vidyādhara (of the Saṅgha which upholds right learning)⁵² (5). Here was erected by the great king Bālāditya of irresistible valour, after he conquered all his enemies and brought the whole earth under his sway, a large and beautiful white temple (prāsāda) to Bhagavān Buddha, to indulge, I think, his desire to see the Kailāsa excelled (in splendour) (6). Moreover, spurning the lustre of the moon, surpassing the beauty of the rows of Himalayan peaks, casting into the shade the white Gaṅgā of the heavens, and silencing other disputing streams⁵³ (also streams of disputants), (this prāsāda), I believe, has discovered after wandering all over the earth that there are no more conquests to be made, and has come to think that any further wandering would be in vain, and then, come to stay here like a lofty column of great fame. (7)"

This *praśasti* was composed by two monks of Nālandā itself by command of the Saṅgha; the authors, Śīlacandra and Svāmi-datta, were conscious of the inadequacy of their powers for the great task to which they had been called, and their touching apology, echoing Kālidāsa, reads:

‘Vāñchetām kiṃ na paṅgū śikhari-taruphalāvāptimuccaiḥ
kareṇa |

51. I have not translated a cumbrous attribute to the elephants' temples.

52. The pun on *Sadvidyādharaṣaṅgha* is almost untranslatable.

53. There is a subtle and untranslatable play on the words *mūkayan vādi-sindhūn*, and *bhuvana iha vrthā bhrāntirityākalyāṇa*.

Pālas

From the middle of the eighth century almost to the day of its ruin and destruction by Muslim invaders, Nālandā enjoyed the sustained patronage of the mighty Pāla kings,⁵⁴ and excavation has brought to light much unmistakable evidence of this. An illegible copper-plate⁵⁵ which, judging from the seal soldered to its top and bearing the legend *Dharmapāladevaḥ* in one line below a dharma-cakra, must have contained a record of Dharmapāladeva, the second ruler of the Pāla dynasty, constitutes the earliest bit of evidence in this series. Of the reign of Devapāladeva in the ninth century, we have two records from Nālandā itself, besides the evidence of the Ghosrāwan inscription on the flourishing state of Buddhism at the time.⁵⁶

Abbot Viradeva

The Ghosrāwā inscription is not dated; but mentions Devapāladeva as the patron of Viradeva who was elected to the presidency of the vihāra of Nālandā to succeed Satyabodhi whose close friend and right hand man Viradeva had been for some time before his election to the succession. The inscription reads:

*Bhikṣor-ātmasamaḥ suhr̥d-bhuja iva
Śrī-Satyabodher-nijo |
Nālandā-paripālanāya niyataḥ
saṅghasthiter-yas-sthitaḥ ||*

Viradeva came from Nagarahāra in the Jelalabad valley and had studied scripture under Sarvajñaśānti of the Kaniṣka vihāra in Peshawar before he went to Bihār and gained the esteem of Devapāla and the monks of Nālandā.

One of the two Nālandā records of Devapāla's time is a short inscription in the pedestal of a metal image, the gift of the king.⁵⁷

54. The Gurjara-Pratihāras also patronised it if Page is right in ascribing some votive inscriptions of Nālandā to the time of Mahipāla of Kanauj c. A.D. 850. 'The coins found at Nālandā include those of Kumāragupta I and Narasimhagupta of the Gupta lineage, Śaśānka of Bengal (c. 600-620), Ādivarāhe or Bhoja I of the Pratihāra dynasty (c. 835-85), and of Govindacandra of the Gāhadvāla dynasty (c. 1114-55). All of these are now deposited in the Indian Museum'—A. Ghosh, *op. cit.* p. 38.

55. ASI, 1924-5, p. 86. Bhandarkar, *List No.* 2082.

56. Kielhorn, *IA*, xvii, pp. 309-11.

57. Bhandarkar, *List*, 2083.

The other⁵⁸ is a celebrated document recorded on one of the largest copper plates known, if not the largest, measuring 2' x 2½' inscribed on both sides, the first bearing 42 lines and the other 24 lines in pre-Nāgari script and in the Sanskrit language; the formula of gift, lines 21-43, is in prose and the rest in verse. The seal soldered to the top of the plate bears the inscription: 'Śrī Devapāladevasya.' The record is dated in the thirty-ninth year of Devapāla, c. A.D. 860. That Devapāla was himself a Buddhist, not merely a patron of Buddhism, is clear from his being styled in this record and in the Monghyr plate of his thirty-third year as follows:

'Paramasaugataḥ Parameśvaraḥ Paramabhātṭārako Mahārājādhirājāḥ śrīmān Devapāladevaḥ.'

Bālaputra's vihāra

The chief interest of the Nālandā plate of Devapāla lies in the fact that it records the construction, at Nālandā, of a fresh vihāra by Bālaputra deva, the Sailendra ruler of Suvarṇadvīpa (Sumatra), and the gift, with Devapāla's permission, of five villages to this new Vihāra for the purposes detailed in the following terms:

"to serve as the source of income for the temple of the worshipful Lord Buddha and of the Initiates in the entire Dharma beginning with Prajñāpāramitā; for the bali- and caru-offerings, the accommodation, clothing, alms, beds, seats, the needs of the sick like medicines, etc., of the Saṅgha of honourable monks of the four quarters, being a group of Tāntrika-Bodhisattvas in whom the eight Mahāpuruṣas are reincarnate; for the copying, etc., of the Dharma-ratna and for the repair of the building of the vihāra when it becomes dilapidated."⁵⁹

Organisation

The new monastery then is a self-contained unit, with its own arrangements for worship, study and good living, and with its own separate budget. It is possible that these features mark it off as a foreign monastery, maintained by a foreign power for the benefit of its own nationals who came to study in Nālandā. It was, so to say, the 'Suvarṇadvīpa Hall' of the University. But there is nothing to preclude the supposition that the whole place was organised from the beginning in such distinct units, each with its own distinct features; in fact some support may be found for this idea,

58. *Ib.*, 1613.

59. I have followed Bosch's interpretation of these rather involved phrases.

in the progressive increase in the number of 'temples' that we are able to trace, though not in all its stages, in the course of generations. And Bālaputra might only have followed a procedure for which there were several precedents when he made the arrangements actually detailed in the charter of his vihāra. The constitution of Nālandā then seems to have been very like that of a large modern university organised in residential colleges clustering together within a small area and maintaining constant touch with one another.

National vihāras

In establishing on a permanent footing a *vihāra* at Nālandā for the convenience of his subjects visiting that great centre of learning and religion in a distant land, Bālaputra might have been influenced by what he heard of similar institutions maintained by others elsewhere in India, and he was also setting a precedent to be followed by one of his successors more than a century later in South India. There was in existence at Nāgārjunikoṇḍa in the very early centuries of the Christian era a *sīhala-vihāra*, a monastery for Ceylonese monks who were actively engaged in spreading the light of true knowledge all over India; but this vihāra was an endowment of the members of the Ikṣvāku family ruling in the locality, and not a creation of the Kings of Ceylon for the benefit of their countrymen visiting Nāgārjunikoṇḍa. A closer analogy is furnished by Meghavarna's vihāra in Buddha Gayā which was erected by the Ceylonese king with the permission of Samudragupta to meet the felt needs of visitors from Ceylon to the holy land, and was still flourishing as a magnificent establishment when Hiuen Tsang visited it in the seventh century.⁶⁰ I-tsing mentions several other examples. He records that a king of the South Indian kingdom of Kuluka, possibly Kolkai, i.e., Pāṇḍyan kingdom according to Chavannes, had built a vihāra for the use of his subjects at a distance of two yojanas to the north-east of the Mahābodhi temple at Bodh Gayā. There were separate monasteries also for the people of Tukhāra and Kāpiśa from the North. There was again a Chinese cloister at Mṛgaśikhāvana at a distance of forty yojanas to the east of Nālandā; this establishment had been founded by Śrī Gupta and granted twenty-four villages for its maintenance; but when I-tsing came to India it had fallen into decay, so that he complained that while all other nations had facilities for their sojourn in the holy land, the Chinese alone lacked it in his

60. Smith, EHI⁴, pp. 303-4.

time. It has been suggested with great plausibility (by Bosch) that these foundations maintained by different kingdoms at a considerable expense had other purposes to serve besides serving the religious interests of pilgrims; merchants and ambassadors might have found good use for them also and they might have had a share in furthering profitable trade relations and friendly, political and secular intercourse among the different countries involved.⁶¹

Bālaputra's example in turn, was followed in the eleventh century by Cūḍāmaṇi Varman and his son Māravijayottuṅgavarman who built and endowed a splendid vihāra for the monks of the Śailendra kingdom at Negapatam, then the first port of call for all pilgrims to South India by the sea-route from China and Śrī Vijaya; and we hear again of this famous establishment at the close of the century in the inscriptions of the reign of Kulottuṅga I. Like the Bālaputra vihāra at Nālandā, it may be noted in passing, the site of the Cūḍāmaṇi-vihāra at Negapatam has yielded a sumptuous collection of Buddhist bronzes of varying sizes which are still awaiting publication.

Nālandā Art

The Bālaputra monastery and its bronzes raise the question of the relation of Nālandā art to Hindu-Javanese art. Writing in 1925, and struck by the remarkable likeness to Javanese technique exhibited by some of the Nālandā finds, particularly a bronze Akṣobhya (ASI, 1917-18, Pl. XIVa) from the Bālaputra vihāra as it turned out after the discovery of the Devapāla plate in 1921, Bosch⁶² formulated one of two possibilities for accounting for the resemblances noticed. Either Nālandā art and Hindu-Javanese art were branches of an originally common Buddhist art that flourished long before Java or Śrī Vijaya entered history, or the Nālandā bronzes were the direct productions of Javanese artists made by some of them settled in Nālandā or imported from Java in a finished form. He also pointed out that an image of a six-armed Yamāntaka from another monastery may well be considered the true prototype of the later Krodha forms so well known in Tibetan Buddhist art.⁶³

61. *Rel. Em.* pp. 80-4; Bosch, *op. cit.*, pp. 560-2.

62. *Op. cit.*, pp. 585-8.

63. *Ib.* p. 581.

The Nālandā bronzes have been studied in some greater detail more recently in a monograph by Bernet-Kempers. The long and continuous intercourse between the region of Nālandā and the archipelago is attested by the appearance in Sumatra in the late seventh century of the Vajrayāna type of Buddhism of the Yogācāra school of Nālandā, and of pre-Nāgari script a little later in Java, the evolution of the script being quite up-to-date as compared with its development in India. A verse from the *Veṇīsamhāra* of Bhaṭṭa-Nārāyaṇa, a Bengali writer of the eighth century, reappears in the old Javanese *Ādiparva*. And we have in Kumāraghoṣa of the Kelurak inscription an instance of a Buddhist priest from Gauḍa who went and settled in Java. But apparently more people came to India from Sumatra and Java as the rise of the Bālaputra vihāra shows. This vihāra was exposed early in the excavations, in 1915, and over two hundred metal objects including many fine statues and statuettes were recovered from it. Bronze finds, on the other hand, are rare in the other monasteries of Nālandā. It is believed that this large find is the result of an accident in which the monastery perished by fire and its inmates had no time to remove the bronzes. However this may be, the fact of a part of Nālandā having perished by fire early in the eleventh century, and of having been renovated thereafter is recorded in an inscription of the eleventh year of Mahipāla I⁶⁴ attesting the gift of a door-joint by a certain Bālāditya of Kosāmbi during the *agni-dagdhoddhāra*. Some of these bronzes are inscribed in Devapāla's reign and are thus definitely products of Pāla art. They are all of the same school and must be taken to represent the gradual assemblage of pious gifts extending over some time, but not long. They resemble Javanese bronzes of the period rather closely, and the question of Javanese influence on them has been much discussed; but so high an authority as Krom has declared that he would have selected only a minority of them as products of Hindu-Javanese art if their find spot had been kept away from him.

The conclusion of Bernet-Kempers on this question seems to be just: 'The art of Nālandā, developed under the influence of Java, also produced deities which were unknown or not popular in Java. From Nālandā these and similar images were brought over to Burma, Nepal, Ceylon, etc., and also to Java, as is apparent from the bronzes from that country which show Pāla features.'⁶⁵ He also suggests that the Jambhala figure and a type of

64. Bhandarkar, *List*, No. 1626.

65. p. 71.

Buddha in Vajrāsana might have been taken over by Java from Nālandā art. But Javanese bronze-casting reached its high-water mark before the end of the eighth century, while the Nālandā group falls mostly in the ninth century. Let us remember also that these are not the earliest bronzes in India of their type, and that Pāla art, again, was not the only source of Indian influences playing on Javanese culture.

Another phase of Nālandā art which has not yet been studied in detail is illustrated by numerous stucco figures discovered in 1925-26 and doubtless forming part of a relatively early period in the life of the monastery. These form part of an original corner tower that was found to be completely encased in the solid brick work of a later structure. The stucco figures modelled on a foundation of clay are set in rows of separate niches in several tiers; they mostly represent the Buddha in different conventional attitudes, and their simple and effective style suggests a really early date for them. Mr. Page who brought them to light puts them in the 7th or 8th century; they may well be earlier.⁶⁶ In the year 1933-34 was recovered a magnificent image of the Bodhisattva Avalokiteśvara in a perfect state of preservation from a small chamber on the side of a caitya (No. 12), and this figure has been hailed 'as one of the finest sculptures left to us as a precious heirloom by the master sculptors of the Gupta period.'⁶⁷ It may be noted also in passing that several monasteries with monks' cells intact have been exposed by the excavations carried out over a number of years; these confirm very closely the accuracy of I-tsing's description of the vihāra, and 'some of the cells show clearly the shape of well-built true arches; the existence of these in Bihar about the middle of the ninth century is of great interest for the history of Indian architecture.'⁶⁸

Later History

We lack the means of tracing the fortunes of Nālandā in any detail during the eleventh and twelfth centuries. A Nāgari stone inscription discovered in two fragments in 1928-30 from the latest stratum of a Monastery numbered VII in the Archaeological reports is of some interest in this connection. It is not dated, but

66. ABIA, 1928, pp. 19-20. See p. 150 *ante*.

67. ABIA, 1934, p. 5.

68. *Ib.* p. 4.

doubtless belongs to the first half of the twelfth century A.D. as stated by N. G. Majumdar.⁶⁹

Vipulaśrī's Mitra Vihāra

The inscription details the Vidyāvamśa of a certain ascetic Vipulaśrīmitra and gives an account of his sacred foundations. It does not mention Nālandā by name, but seems to record the erection of a new monastery there by him, for the benefit of the Mitras, the line of ascetics to which he himself belonged. The provenance of the inscription together with the definite statement 'this vihāra made by him and given to the Mitras shines here as an ornament of the world excelling Indra's palace in beauty' must be accepted as sufficiently satisfactory evidence of what happened.

Library

The following passage from Satishchandra Vidyabhushan on the University and Library of Nālandā will doubtless be read with great interest:⁷⁰ "According to Tibetan accounts the quarter in which the Nālandā University, with its grand library, was located, was called Dharmagañja (Piety Mart). It consisted of three grand buildings called Ratnasāgara, Ratnodadhi, and Ratnarañjaka, respectively. In Ratnodadhi, which was nine-storeyed, there were the sacred scripts called Prajñāpāramitā-sūtra, and Tāntrik works such as Samājaguhya, etc."

Destruction

When the wave of Muslim inroads swept over Bihār at the end of the twelfth century, Nālandā suffered a cruel destruction like much else; Islam, as a historic force, has been the most uncompromising enemy of Buddhism and Buddhist institutions from the heart of Central Asia to the Islands of the Southern Sea. The occurrences in Bihār are best described in the words of the leading Muslim historian of the times:⁷¹

"Muḥammad-i-Bakht-yār used to carry his depredations into those parts and that country until he organized an attack upon the fortified city of Bihār. Trustworthy persons have related on this wise, that he advanced to the gateway of the fortress of Bihār with two hundred horsemen in defensive armour, and suddenly at-

tacked the place. There were two brothers of Farḡhānah, men of learning, one Niẓām-ud-Din, the other Ṣamsām-ud-Dīn (by name) in the service of Muḥammad-i-Bakht-yār; and the author of this book met with Ṣamsām-ud-Dīn at Lakhanāwaṭī in the year 641 H., and this account is from him. These two wise brothers were soldiers among that band of holy warriors when they reached the gateway of the fortress and began the attack, at which time Muḥammad-i-Bakht-yār, by the force of his intrepidity, threw himself into the postern of the gateway of the place, and they captured the fortress, and acquired great booty. The greater number of the inhabitants of that place were Brahmans, and the whole of those Brahmans had their heads shaven; and they were all slain. There were a great number of books there; and, when all these books came under the observation of the Musalmāns, they summoned a number of Hindūs that they might give them information respecting the import of those books; but the whole of the Hindūs had been killed. On becoming acquainted [with the contents of those books], it was found that the whole of that fortress and city was a college, and in the Hindūi tongue, they call a college [*madrasa*] Bihār."

A Tibetan Tradition

But this apparently was not quite the end, for the Tibetan authorities have a tradition of their own which Vidyābhūshan recounts as follows:⁷² "After the Turuṣka raiders had made incursions in Nālandā, the temples and caityas there were repaired by a sage named Mudita Bhadra. Soon after this, Kukuṭasiddha, minister of the king of Magadha, created a temple at Nālandā, and, while a religious sermon was being delivered there, two very indigent Tīrthika mendicants appeared. Some naughty young novice-monks in disdain threw washing water on them. This made them very angry. After propitiating the sun for twelve years, they performed a *yajña*, fire-sacrifice, and threw living embers and ashes from the sacrificial pit into the Buddhist temples, etc. This produced a great conflagration which consumed Ratnodadhi. It is, however, said that many of the Buddhist scriptures were saved by water which leaked through the sacred volumes of Prajñā-pāramitā-sūtra and Tantra."

How Nālandā Rose

Such then was Nālandā for over a thousand years of its splendid history. Before proceeding to a study of the details of its organi-

69. EI., xxi, p. 97.

70. *Indian Logic*, p. 516.

71. *Tabakat-i-Nasiri*, I, pp. 551-2.

72. *Indian Logic*, p. 516.

sation and institutions, of the names and fame of its teachers and the number and eminence of the visitors who came to it, we may well ask ourselves: what were the causes of the great popularity and eminence of Nālandā?⁷³ True the patronage of monarchs, the grant of protection, lands, immunities and what not by them to organised societies of monks, alone enabled them to fulfil the high calling to which they had dedicated themselves, and to kindle the light of the true knowledge of Dharma and spread it all over the world and thereby dispel the darkness of false knowledge and ignorance and even avert sickness, drought, war and other adversities. Nevertheless the question arises why Nālandā in particular, which had no great advantage by way of sacred associations with any striking incident in the life of the Buddha, and in this respect could hardly compete with Bodh Gayā, Sārnāth or Śrāvastī for instance attained a fame which cast all the other Saṅghārāmas of India into the shade. To such a question we are perhaps not in a position to furnish a completely satisfactory answer. But surely the happy geographical situation of Nālandā had something to do with it, and I-tsing is at some pains to bring home to his readers the great advantages of this situation. He writes:

“This temple faces in the south the royal town (Kuśāgārapura) from which it is only 30 *li* distant; ‘the peak of the vulture’ (Gr̥dhrakūṭa) and the ‘garden of bambus’ (Vēṇuvana) are both by the side of the town. To the south-west, we go to the ‘temple of the Great Intelligence’ (Mahābodhi), to the due south towards the mountain of the Foot of the Venerable (Gurupāda), these two spots being both about seven relays (yojanas). To the north, we go towards Vaiśālī which is at a distance of about twenty-five relays (yojanas). To the west, we look towards the Mṛgadāva which is more than twenty relays (yojanas); to the east, for going to the state of *Tan-mouo-li-ti* (Tāmralipti), there are sixty to seventy relays (yojanas). That is the sea-port whence we embark for returning to China.”^{73a}

These observations show that pilgrims taking the sea-route from China and Malayasia found it convenient to go to Nālandā from Tāmralipti, and plan the rest of their tour from there, a course which I-tsing himself adopted. And if they came by land, after all the perils and anxieties of their hard journey, the atmosphere

of quiet and study that prevailed in Nālandā invited them to stay there as long as they could before starting on the return journey. At Nālandā many pilgrims met, and it is no wonder that there grew up a lively trade in the two classes of goods, relics and manuscripts,⁷⁴ the acquisition of which was the chief inducement to the pilgrims to face the trouble and toil of their long journeys to the holy land and back. I-tsing alone carried away at the end of his ten years' stay in Nālandā about four hundred texts, sūtras, treatises on Vinaya, and śāstras, in Sanskrit, comprising together 500,000 ślokas, besides a faithful copy of the image at the Bodhimāṇḍa and three hundred relics.⁷⁵ Nālandā again had become from of old a centre of all types of higher study, not merely of Buddhism. In the old days Takṣaśilā had been the most celebrated of such centres as we can judge from the repeated references to it in the Jātaka stories and in early Sanskrit literature. But the frontier was exposed to many inroads by foreigners, and in the general disturbance of the period between the fall of the Mauryan empire and the establishment of Kuṣān power, Takṣaśilā might have been subjected to all the vicissitudes to which many other Saṅghārāmas in that quarter had to submit. It was seldom that these disturbances reached as far as Magadha, and the distance from the disturbed frontier which gave a relative immunity from trouble to Nālandā must have favoured it quite as much as its proximity to Tāmralipti, the port of landing for the pilgrims who came by sea from the East. Nālandā was a centre not only of Buddhism in its different aspects and of Buddhist studies, but of Brahmanical practices and scholasticism as well. The mention of *bali* and *caru*, quite Vedic names for offerings,⁷⁶ among the purposes for which the Bālaputra vihāra was endowed deserves to be noticed particularly in this connection, and we shall see that Hiuen Tsang himself studied Brahmanical scripture at Nālandā.

Studies of Hiuen Tsang at Nālandā

The following account of Hwui Li of the course of studies pursued by Hiuen Tsang during the fifteen months of his stay at Nālandā amply proves the wide scope and universal character of the educational courses pursued at that great centre:⁷⁷

74. Mss. known to have been copied in Nālandā are still found in all the more important collections of Mss. in all countries.

75. *Rel. Em.*, p. 193.

76. Cf. Bosch, p. 543 n 52a.

77. *Life*, p. 121.

73. Cf. Bosch: *Een Ooorkonde*, TBG, lxxv, pp. 530-2.

73a. *Rel. Em.* p. 97.

"The Master of the Law whilst he stopped in the convent, heard the explanation of the Yoga-Śāstra, three times; the Nyāya-Anusāra-śāstra, once; the *Hin-hiang-tui fa-ming*, once; the Hetuvidyā-śāstra and the Śabdavidyā and the *tsah liang śāstras*, twice; the Prāṇyamūla śāstra-tīkā, and the Śata-śāstra, thrice. The Kośa, Vibhāṣa, and the Śaṭpadābhidharma śāstras, he had already heard explained in the different parts of Kaśmir; but when he came to this convent he wished to study them again to satisfy some doubts he had: this done, he also devoted himself to the study of the Brāhmaṇ books and the work called Vyākaraṇa on Indian letters, whose origin is from the most remote date, and whose author is unknown."

It should perhaps be stated that the Nyāya-Anusāra-śāstra was a Hinayānist work of the Sarvāstivādins,⁷⁸ and the Prāṇyamūla śāstra-tīkā, one of the leading works of the Mādhyamika school of Mahāyāna. The Śatasūtra (Śāstra) was a work of Āryadeva, translated by Hiuen Tsang later.

General

In another context the biographer of Hiuen Tsang gives a glowing account of the greatness of Nālandā as a centre of higher study, the comprehensive range of its intellectual pursuits, and the varied attainments of its teachers:

"The Saṅghārāmas of India are counted by myriads, but this is the most remarkable for grandeur and height. The priests, belonging to the convent, or strangers (*residing therein*) always reach to the number of 10,000, who all study the Great Vehicle, and also (*the works belonging to*) the eighteen sects,⁷⁹ and not only so, but even ordinary works, such as the Vedas and other books, the Hetuvidyā, Śabdavidyā, the Cikitsāvidyā, the works on Magic (Atharvaveda), the Sāṅkhya; besides these they thoroughly investigate the 'miscellaneous' works.

Teachers

"There are 1000 men who can explain twenty collections of Sūtras and Śāstras; 500 who can explain thirty collections, and perhaps ten men, including the Master of the Law, who can explain fifty collections. Śilabhadra alone has studied and understood

78. Nanjio, No. 1265.

79. i.e. of the Hinayāna.

the whole number. His eminent virtue and advanced age have caused him to be regarded as the chief member of the community. Within the Temple they arrange every day about 100 pulpits for preaching, and the students attend these discourses without any fail, even for a minute (*an inch shadow on the dial*)."⁸⁰

Hiuen Tsang himself has recorded what he saw of the academic life of the place together with the names of its prominent teachers and the causes of their celebrity in the following terms:

"In the establishment were some thousands of Brethren, all men of great ability and learning, several hundreds being highly esteemed and famous; the Brethren were very strict in observing the precepts and regulations of their order; they were looked up to as models by all India; learning and discussing they found the day too short; day and night they admonished each other, juniors and seniors mutually helping to perfection. If among them were any who did not talk of the mysteries of the Tripiṭaka such persons, being ashamed, lived aloof. Hence foreign students came to the establishment to put an end to their doubts and then became celebrated, and those who stole the name (of Nālandā Brother)⁸¹ were all treated with respect wherever they went. Of those from abroad, who wished to enter the schools of discussion the majority, beaten by the difficulties of the problems, withdrew;⁸² and those who were deeply versed in old and modern learning were admitted, only two or three out of ten succeeding.

"Among the celebrated men of Nālandā who had kept up the lustre of the establishment and continued its guiding work, there were Dharmapāla⁸³ and Candrapāla who gave a fragrance to Buddha's teachings, Guṇamati and Sthiramati⁸⁴ of excellent reputation among contemporaries, Prabhāmitra of clear argument, and Jinamitra of elevated conversation, Jñānacandra of model character and perspicacious intellect, and Śilabhadra⁸⁵ whose perfect excel-

80. *Life*, p. 112.

81. Bogus degrees then were not unknown even in those remote times!

82. Watters doubts the 'gate-keeper's part' in this; he thinks it was only a process of 'obtaining entrance' or 'admission to the schools of debate.' (168). But at Vikramaśilā, the gate-keepers' places were held by distinguished pandits. Vidyābhūṣan, *Ind. Logic*, p. 520.

83. d. c. A.D. 600. A native of Kāncī, he taught at Nālandā for thirty years and went to Suvarṇadvīpa towards the end of his life—BEFEO xxx, p. 56 n. 3.

84. Both earlier than Dharmapāla.

85. Abbot of the monastery during H. T.'s visit.

lence was buried in obscurity. All these were men of merit and learning, and authors of several treatises widely known and highly valued by contemporaries."⁸⁶

Studies described by I-tsing

I-tsing states that the number of fully ordained monks in his day was 3500; together with the novitiates, the number exceeded 5000.⁸⁷ His account of the course of education is of more general interest, but was also meant to describe what prevailed in Nālandā. It will be seen that it conforms very closely to the indications furnished in the less systematic account of Hiuen Tsang. After sketching the elementary study of the Siddham in the beginning, followed by Sūtra, Dhātu and Khila, all relating to grammar, I-tsing's account proceeds to describe the study of the *Kāśikā-vṛtti* and what followed:

"This *Vṛtti-sūtra*⁸⁸ is a work of the learned Jayāditya. He was a man of great ability; his literary power was very striking. He understood things which he had heard once, not requiring to be taught twice. He revered the Three Honourable Ones (i.e., Triratna), and constantly performed the meritorious actions. It is now nearly thirty years since his death (A.D. 661-662). After having studied this commentary, students begin to learn composition in prose and verse, and devote themselves to logic (*Hetuvidyā*) and metaphysic (*Abhidharmakośa*). In learning the *Nyāyadvāratāraka-śāstra*, they rightly draw inferences (*Anumāna*); and by studying the *Jātakamālā* their powers of comprehension increase. Thus instructed by their teachers and instructing others they pass two or three years, generally in the Nālandā monastery in Central India, or in the country of Vālabhi (Wala) in Western India. These two places are like Chin-ma, Shih-ch'u, Lungmen, and Ch'ue-li⁸⁹ in China, and there eminent and accomplished men assemble in crowds, discuss possible and impossible doctrines, and after having been assured of the excellence of their opinions by wise men, become far-famed for their wisdom. To try the sharpness of their wit (*lit.* 'sharp point of the sword'), they proceed to the king's court to lay down before it the sharp weapon (of their abilities); there they present their schemes and show their (*political*) talent, seeking to be appointed in the practical government.

86. Watters: *Yüan Chwang*, Vol. II, pp. 164-5.

87. *Rel. Em.*, p. 97 and n. 1.

88. *Kāśikā-vṛtti*.

89. Seats of learning in China.

When they are present in the House of Debate, they in a grave demeanour, sit in the *āsanas*⁹⁰ and seek to prove their wonderful cleverness.

"When they are refuting heretic doctrines all their opponents become tongue-tied and acknowledge themselves undone. Then the sound of their fame makes the five mountains (of India) vibrate, and their renown flows, as it were, over the four borders. They receive grants of land, and are advanced to high rank. They give dissertations upon the great system.⁹¹ After this they can follow whatever occupation they like".⁹²

Disputation

It will not escape the attention of the reader what a large part oral disputation played in the educational programme of those days. Scholars of established reputation all the world over, and young aspirants to academic knowledge and fame flocked to Nālandā to take part in, or at least be witnesses to, the open disputations in which theses on points of controversy were stated, defended and attacked, reputations made or lost. It was indeed a proud day in a scholar's life when he won his spurs in controversy, together with a title and other insignia of academic distinction, which gained him a sure place in public esteem as I-tsing states, and as we may surmise, opened out to the lay pupils the road to material prosperity in some secular office in the service of the State.

Endowments

The economic basis of this good life of the spirit was well secured by the pious devotion of the rulers of the land. The endowments recorded in the stone inscriptions of Yaśovarman and the copperplate of Devapāla's reign are only typical of a large class of benefactions, the cumulative result of which is very clearly indicated to us by the invaluable accounts of the Chinese pilgrims. And the inmates of these richly endowed institutions merited the support they got not only by their scholarship, but by the modesty and

90. The italicised translation is that of Jayaswal, JASB vii (1911) p. 312 for 'raise their seat' of Takakusu.

91. Jayaswal, JASB vii (1911) p. 312, referring also to digvijaya of Paṇḍitas. Takakusu has here: their famous names are, as a reward, written in white on their lofty gates.

92. *Record*, pp. 176-178.

well-regulated discipline of their personal conduct. Thus says Hwui Li :⁹³

"The priests dwelling here, are, as a body, naturally (or spontaneously) dignified and grave, so that during the 700 years since the foundation of the establishment, there has been no single case of guilty rebellion against the rules.

"The king of the country respects and honours the priests, and has remitted the revenues of about 100 villages for the endowment of the convent. Two hundred householders in these villages, day by day, contribute several hundred piculs of ordinary rice, and several hundred catties in weight of butter and milk.^{93a} Hence the students here, being so abundantly supplied, do not require to ask for the four requisities. This is the source of the perfection of their studies, to which they have arrived."

I-tsing puts the number of villages set apart for the support of the monastery as 200 in one place and 201 in another. In the Record he says :

"The rites of the monastery of Nālandā are still more strict. Consequently the number of the residents is great and exceeds 3,000. The lands in its possession contain more than 200 villages. They have been bestowed (upon the monastery) by kings of many generations. Thus the prosperity of the religion continues ever, owing to nothing but (the fact that) the Vinaya (is being strictly carried out)."⁹⁴

And elsewhere:⁹⁵ "There are 201 villages which are under them; the sovereigns have, from generation to generation, given them these men and these lands for their perpetual upkeep'.

Financial Administration

Some account is given by I-tsing of the economic administration of the vihāra and its properties ; we do not get much on the income side with which the monk perhaps did not concern himself; but on the method of regulating expenditure, and the sanctions behind it we get something of importance and interest:

"Those who have charge of guarding the granaries and supervision of the lands, though they be two or three, must also send a servant for the administration of the granaries. This (servant)

93. *Life*, pp. 112-3.

93a. 1 picul=133½ lbs. 1 catty=160 lbs.—Beal.

94. *Record* p. 65.

95. *Rel. Em.* p. 97.

joins hands and makes his declaration; if every body is agreed, then it may be done. For the expenses, in truth the defect that some one may arbitrarily dispose of it does not exist. If any one does not make public declaration and employs something arbitrarily, be it only a twentieth of a bushel of grain, he is forthwith expelled by his colleagues. If a person considers himself so powerful, that he uses as he pleases the goods of the community, that he decides important affairs on his own private authority and without declaring to the assembly, they call him *Kiu-louo-po-ti* (*Kulapati*),⁹⁶ which signifies 'chief of the family'; that is a grave defect in the eyes of the Law of Buddha; that is what men and gods hate altogether; however useful to the monastery this same person might be later on, a very great fault has been definitely committed by him. Those who are wise certainly do not act thus."⁹⁷

Hospitality

The material life of the monastery stood at a fairly high level of comfort, and may be said to compare by no means unfavourably with similar institutions maintained in our own day by the Jesuits all the world over. The biographer of Hiuen Tsang gives a magnificent account of the reception accorded to the Master of the Law, and the supplies that were granted to him during the period of his stay in the vihāra. This account is interspersed with the story of Hiuen Tsang's meeting with Śīlabhadra, of a former dream of Śīlabhadra that had prepared him well in advance for the arrival of the Chinese monk, and of his acceptance of the foreigner as his disciple. I reproduce Hwui Li's account of all this without any change in his sequence:

Reception to Hiuen Tsang

"On the tenth day he went to the Nālandā temple; the congregation there had selected four of their number, of distinguished position, to go and meet him; journeying in their company about seven yojanas he reached the farm-house belonging to the temple. It was in (the village, where) this house (stands), that the honourable Maudgalyāyana was born. Halting here for short refreshment, then, with two hundred priests and some thousand lay patrons, who

96. We see that the term *Kulapati* when it is applied to a monk is far from being an honorific as was thought at one time (Burnouf—*Introd. à l'hist. du Bouddhisme Indien*, p. 216, n. 2).—Chavannes,

97. *Rel. Em.* p. 90.

surrounded him as he went, recounting his praises, and carrying standards, umbrellas, flowers and perfumes, he entered Nālandā.

"Having arrived there he was joined by the whole body of the community, who exchanged friendly greetings with the Master, and then placing a special seat by the side of the Sthavira (*presiding priest*), they requested the Master to be seated. The others then also sat down.

Supplies ordered

"After this the Karmadāna was directed to sound the Ghaṇṭā and proclaim: 'Whilst the Master of the Law dwells in the convent, all the commodities used by the priests and all the appliances of religion are for his convenience, in common with the rest.'

Escorted to Śīlabhadra

"Then selecting twenty men of middle age, skilful in explaining the religious books and of dignified carriage, they deputed them to conduct the Master to the presence of *Ching-fa-tsong* (treasure of the good law). This is the same as Śīlabhadra.

"The congregation, from the excessive respect they have to him, do not venture to call him by his name, but give him the appellation of *Ching-fa-tsong*.

Hiuen Tsang meets Śīlabhadra

"Whereupon, following the rest, he entered to salute this eminent person. Having seen him, then the chief almoner presented him (i.e. Śīlabhadra) with all things necessary without stint, paying his respects according to the proper ceremonial, approaching him on his knees and kissing his foot, and bowing his head to the ground. The usual greetings and compliments being finished *Fa-tsong* ordered seats to be brought and spread out, and desired the Master of the Law and the rest to be seated. When seated he asked the Master of the Law from what part he came; in reply he said: 'I am come from the country of China, desiring to learn from your instruction the principles of the Yoga-Śāstra.'

Story of the dream

"Hearing this, he called for his disciple Buddhābhaddra, whilst tears filled his eyes; now Buddhābhaddra was the nephew of *Fa-tsong*, and upwards of seventy years of age, thoroughly versed in the Sūtras and Śāstras, and excellent in discourse. *Fa-tsong*

addressing him said: 'You may recount for the sake of the company present, the history of my sickness and sufferings three years ago.'

"Buddhābhaddra having heard the request sobbed aloud and wept—but then restraining his tears he declared the past history and said: 'My Master (Upādhyāya) some time ago was painfully afflicted with colic. On each occasion when the attack came on, his hands and feet were cramped with pain, and he would suddenly cry out with agony as if he had been burned with fire, or pierced with a knife; the attack would subside as suddenly as it came on; and this went on for twenty years and more. But three years ago the severity of his suffering was so hard to bear, that he loathed his very life and desired to starve himself to death. In the middle of the night he had a dream in which he saw three Devas (*heavenly men*), one of the colour of gold, another of the colour of bright crystal, another as white as silver, their appearance and form commanding, of dignified presence, and clad in light shining garments; approaching the Master they asked him, saying; 'Are you anxious to get free from this body of yours? The Scriptures speak, saying, the body is born to suffering; they do not say we should hate and cast away the body. You in one of your past births were the king of a certain country, and you caused much suffering among living creatures, and now you have this suffering as your recompense. Search out therefore and examine your past faults, and repent of them sincerely; take your affliction quietly and patiently; labour diligently in explaining the Sūtras and Śāstras; you will thus get rid of your pain yourself; but if you loathe your body, there will be no cessation to your sufferings'.

"The Master having heard these words, paid his adorations with the utmost sincerity.

"Then the golden-coloured one, pointing to the one that shone like crystal, said to the Master: 'Dost thou know or not that this one is Avalokiteśvara Bodhisattva?' and then pointing to the silver-coloured one he added: 'and this is Maitreya Bodhisattva'.

"The Master immediately paid worship to Maitreya and asked him, saying: 'Your servant Śīlabhadra has ever prayed that he may be born in your exalted palace courts, but he knows not whether he will gain his wish or not.' In reply, he said, 'You must widely disseminate the true law, and then you shall be born there.'

"The golden-coloured one said: 'And I am Mañjuśrī Bôdhisattva. Seeing that you desired to get rid of your life, contrary to

your true interest, we are come to exhort you to the contrary; you should rely on our words, and exhibit abroad the true law, the *Yoga śāstra* and the rest, for the benefit of those who have not yet heard it. Your body will thus by degrees become easy and you will suffer no further pain. Do not overlook that there is a priest of the country of China who delights in examining the great Law and is desirous to study with you: you ought to instruct him carefully.'

"*Fa-tsong* having heard these words worshipped and answered: 'I shall obey, according to your honourable instructions.' Having said this, they disappeared.

"From that time the sufferings of the Master from his disease came to an end.

"The company present hearing this history were all filled with wonder at the miraculous event.

Its Effect on Hiuen Tsang

"The Master of the Law having heard for himself this narrative was unable to control his feelings of sympathy and joy. He again paid his respects and said: 'If it be so, as you say, then Hiuen Tsang ought with his utmost strength to listen to and practise (*your religious advice*). Would that your reverence, of his great compassion, would receive me for the purpose of instruction.'

Accepted as disciple

"Then *Fa-tsong* asked him further, 'For how many years have you been on your journey?' He answered, 'During three years;' and so, as the particulars of his directions, received in his dream, were completely fulfilled, he caused the Master of the Law to rejoice in their relationship as Master and disciple.

His Residence

"After these words he retired and went to the college of Bālāditya-rāja and took up his residence in the dwelling of Buddhābhadrā, having four storeys (or, *the fourth storey*), who entertained for seven days. After this he went to reside in a dwelling to the north of the abode of Dharmapāla Bodhisattva, where he was provided with every sort of charitable offering. Each day he received 120 Jambiras, 20 *Pin-long-tseu* (pūga, *areca nut*), 20 *tau-k'au* (*nutmegs*), an ounce (*tael*) of Camphor, and a *ching* (peck) of Mahāśāli rice. This rice is as large as the black bean, and when

cooked is aromatic and shining, like no other rice at all. It grows only in Magadha, and nowhere else. It is offered only to the king or to religious persons of great distinction, and hence the name kung-ta-jin-mai (i.e., *rice offered to the great householder*).

"Every month he was presented with three measures of oil, and daily a supply of butter and other things according to his need.

"A pure brother (*a Upāsaka*) and a Brahman, relieved from all religious duties, accompanied him with a riding elephant."⁹⁸

Guests

The biographer winds up this interesting account of the hospitality enjoyed by Hiuen Tsang during his stay at Nālandā with a general remark which implies that the honours done to the Master of the Law formed more or less the norm which prevailed in the great vihāra for the reception and entertainment of guests.

"In the Nālandā convent the abbot entertains a myriad priests after this fashion, for besides the Master of the Law there were men from every quarter; and where in all their wanderings have they met with such courteous treatment as this?"⁹⁹ Well might a modern commentator ask: "Who would not be the guest of the abbot of the Nālandā monastery with its six wings, each built by a king, all enclosed in the privacy of solid brick?"¹⁰⁰

Daily Routine

Of the general administrative arrangement in the monastery and the details of daily life and discipline observed by its inmates, we get some very interesting and concrete details in the observations recorded by I-tsing. The officers of the vihāra and their duties are explained in the following passage, which is unfortunately not as full as we should like:

Officials

"All those who have charge of the bolts of the doors take each night the seals with which they seal them and return them to the president; they should not on any account deposit them in the houses of the masters of the temple (*vihārasvāmin*) or the directors

98. *Life*, pp. 105-10.

99. *Life*, p. 110.

100. Cranmer Byng in *Life*, p. ix.



(*karmadāna*). Only those who constitute the monastery are called masters of the temple; their Sanskrit name is *pi-ho-louo-souo-mi* (*vihārasvāmin*). As to those who, in their turn, enforce the rules, guard the doors of the temple, and go to announce the affairs to the assembly of the monks, they are called *pi-ho-louo-po-luo* (*vihārapāla*); the translation of this word is 'guardian of the temple.' As to those who sound the *kienti* (*ghaṇṭā*) and supervise the repasts, their name is *kie-mouo-t'ouo-na* (*karmadāna*); the translation of this word is 'those who assign occupations;' those whom they call *wei-na* speak only in parables."¹⁰¹

Seal

The mention by I-tsing of seals with which the bolts of doors were sealed at night, reminds one of the many sealings of Nālandā vihāra recovered in the excavations and bearing the inscription: '*Śrī Nālandā-mahāvihārīyāryabhikṣu-saṅghasya*' below a wheel flanked by two gazelles, recumbent with head upraised and turned to the wheel.¹⁰² It has remained a puzzle why the wheel and gazelles symbol which represents Sārnāth, the Deer-park where the Buddha first 'turned the wheel of Law' i.e. delivered the first sermon, should make its appearance on a Nālandā seal. The suggestion may be offered that the saṅgha of Nālandā had different seals which were employed for different purposes, and that different sacred symbols were engraved on them to distinguish them from one another, while the inscription which was common to them all identified the seals as those of the particular vihāra. This is only a surmise, to be confirmed or contradicted by the progress of further exploration.¹⁰³ We have to remember that the same symbol is figured in the Pāla royal seal also.

101. *Rel. Em.* pp. 88-9.

102. ASR, EC. 1916-17, p. 43. Also ASR 1916-17, p. 21.

103. Hirananda Sastri's explanation that the idea was to suggest a relation between the Buddha preaching at Sāranāth and the hundreds of bhikṣus preaching at Nālandā is, I think rightly, characterised as far-fetched by Bosch, who also points out that the Buddha images in Nālandā are more often in the Bhūmisparśa mudrā which suggests Bodh-Gayā, rather than Sārnāth (p. 582, n. 128).

Bloch has noticed, however, a large image of Buddha (4ft high) preaching the first sermon attended on the sides by Bodhisattvas Maitreya-nātha and Vasumitra and above by the flying figures of Śāriputra and Maudgalyāyana.

JRAS 1909, pp. 441-2.

Ordination

Regarding the rules of ordination and discipline at Nālandā, I-tsing says that they conformed generally to what he has described in two other works of his, and adds that the superior of the vihāra was appointed solely on considerations of age, irrespective of merit:

"The rules concerning the monks and the novitiates of this temple, the statutes on the subject of the renunciation of the world and admission into the order, all conform to what is expounded in the *Tchong-fang-lou* and the *Ki-koei-tchoan*.¹⁰⁴ In the interior of the monastery they are content to take the oldest to give him the presidentship and to make him the venerable superior (*sthavira*); they do not trouble themselves about his merit."¹⁰⁵

We may also notice in this connection, one detail relating to ordination which I-tsing notes as a special feature of Nālandā in his *Record*, one of the works alluded to by him above:

"But in the Nālandā monastery the priests often receive the Upasampadā ordination (i.e. full ordination) in the early morning, on the *first day* of the 'long season' (17th of the 6th moon, see above) when the day has just begun to dawn. They mean to claim seniority among those who are ordained in the same manner."¹⁰⁶

Seniority

The order of seniority so established among the monks was no empty form, but it governed the order in the annual allotment of residential rooms, and was possibly also otherwise important.

104. I have not been able to find particulars on the *Tchong-fang-lou* of which the name signifies "written on the country of the middle," that is to say on India. As for *Ki-koei-tchoan* it is the abridged title of the *Nan-hai-ki-koei-nei-fa-tchoan* which signifies "Treatise on the inner law (i.e. Buddhism) sent from the seas of the south." This work was composed by I-tsing at the same time as the essay we translate, when he was in the country of Śrī Vijaya; he sent it by the monk *Ta-tsin* (§ 56) who returned from the southern seas to Canton and he sent it thus to China; the treatise on the inner law...expounds many points of discipline of the school of Sarvāstivāda; it comprises four chapters divided into forty sections; sections xxxii and xxxiv have been translated into French by M. Ryauon Fujishima (JA 1888).—Chavannes (1894). The whole work is now available as '*A Record of Buddhist Religion*' in Takakusu's translation, Oxford, 1896.

105. *Rel. Em.* p. 88.

106. *Record*, p. 103.

This is what I-tsing says on the allotment of accommodation every year :

"Before the Varṣa (Rainy-season) rooms are assigned to each member; to the elders (i.e. Sthavira) better rooms are given, and thus gradually to the lowest. In the monastery of Nālandā such rules are practised at present; the great assembly of priests assigns rooms every year. This is what the World-honoured taught us himself, and it is very beneficial. Firstly, it removes one's selfish intention; secondly, the rooms for priests are *properly* protected."¹⁰⁷

Meetings

The occasions for summoning general meetings of the monks, the manner of summoning them, and the procedure followed at such meetings where evidently votes were not taken but the greatest measure of general agreement was aimed at, are detailed by I-tsing thus :

"When the community of monks has a business they convene a meeting for regulating it; the guardians of the temple (vihāra-pāla) have orders to go over the lines (of residences) for announcing it before each person successively; all should join the palms of the hands and each one express his sentiment. If only one person refuses his consent the business cannot be concluded. They do not have by any means the custom of striking a hammer before a meeting for ascertaining the opinion by a show of hands. If they see that some one refuses his consent, they persuade him by argument; they should not use intimidation or violence in order that under the constraint which is inflicted on him he might submit."¹⁰⁸

Autonomy in Discipline

I-tsing also makes it clear that the inmates of the monastery were autonomous in the mutual enforcement of their own rules of discipline, and not subject to any interference from the State :

"The spirit of the rules of this temple is very severe and very high. Every fortnight, those who regulate the occupations (karmadāna ?) and the assistant scribes have orders to go round the habitations reading the rules.

"The names of the members of the community are not inscribed in the royal registers. Those who violate the laws are

punished for their faults by the assembly itself. In this manner the monks and the novitiates are all afraid of one another."¹⁰⁹

Worship

The forms and modes of worship observed in this large establishment may be gathered from the following description of I-tsing :

"In the Nālandā monastery the number of priests is immense, and exceeds three thousand; it is difficult to assemble so many together in one place. There are eight halls and three hundred apartments in this monastery. The worship can only take place separately, as most convenient to each member. Thus, it is customary to send out, every day, one precentor to go round from place to place chanting hymns, being preceded by monastic lay servants and children carrying with them incense and flowers. He goes from one hall to another, and in each he chants the service, every time three or five ślokas in a high tone, and the sound is heard all round. At twilight he finishes this duty. The precentor generally is presented by the monastery with some special gift (Pūjā). In addition there are some who, sitting alone, facing the shrine (Gandhakuṭi), praise the Buddha in their heart. There are others who, going to the temple, (in a small party) kneel side by side with their bodies upright, and, putting their hands on the ground, touch it with their heads, and thus perform the Threefold Salutation. These are the ceremonies of worship adopted in the West (i.e. in India). Old and infirm priests are allowed to use small mats whilst worshipping. Though, (in China), the hymns in praise of the Buddha have long existed, yet the manner of using them for a practical purpose is somewhat different from that adopted in India (lit. 'Brahma-rāṣṭra'). The words which begin with 'Praise be to the signs of the Buddha,' and are used when worshipping the Buddha (in China) should be intoned in a long monotonous note, and the rule is to proceed thus for ten or twenty ślokas at one time. Further, Gāthas such as the one beginning with, 'O Tathāgata !' are really hymns in praise of the Buddha."¹¹⁰

Water Clocks : Time-keeping

The whole of the daily routine of the vihāra was regulated by the regular announcement of the hours of the day, by means of

107. *Record*, p. 86.

108. *Rel. Em.* pp. 89-90.

109. *Rel. Em.* p. 91.

110. *Record*, pp. 154-56.

a *ghaṇṭā* and the system of measuring time by means of water-clocks is described in considerable detail by I-tsing more than once. Thus in the *Record* he says :

"Besides, clepsydrae are much used in great monasteries in India. These together with some boys who watch them are gifts from kings of many generations, for the purpose of announcing hours to the monastics. Water is filled in a copper vessel, in which a copper bowl floats. This bowl is thin and delicate, and holds two Shang (prasthas) of water (about two pints). In its bottom a hole is pierced as small as a pin-hole, through which the water springs up; this hole is to be made larger or smaller according to the time of the year. This must be well set, measuring (the length of) hours.

"Commencing from the morning, at the first immersion of the bowl, one stroke of a drum is announced, and at the second immersion, two strokes; at the third immersion, three strokes. But, at the fourth immersion besides four strokes of a drum, two blasts of a conch-shell and one more beat of a drum are added. This is called the first hour, that is when the sun is at the east (between the zenith and the horizon). When the second turn of four immersions of the bowl is done, four strokes (of a drum) are sounded as before, and a conch-shell is also blown, which is followed by two more strokes (of a drum). This is called the second hour, that is the exact (beginning of the) horse-hour (i.e. noon). If the last two strokes are already sounded, priests do not eat, and if any one is found eating, he is to be expelled according to the monastic rites. There are also two hours in the afternoon which are announced in the same way as in the forenoon. There are four hours at night which are similar to those of day. Thus division of one day and one night together makes eight hours. When the first hour at night ends, the sub-director (Karmadāna) announces it to all, by striking the drum in a loft of the monastery. This is the regulation of the clepsydra in the Nālandā monastery. At sunset and at dawn, a drum is beaten ('one round') at the outside of the gate. These unimportant affairs are done by the servants ('pure men') and porters. After sunset till dawn, the priests never have the service of striking the Ghaṇṭā, nor is it the business of those servants ('pure men') but of the Karmadāna. There is a difference of four and five (strokes of the Ghaṇṭā), which is fully mentioned elsewhere."¹¹¹

111. *Record*, pp. 144-5.

And more briefly elsewhere¹¹² he writes :

"In the region of the five Indias, there are only great temples; the sovereigns have all directed the establishment therein of water-clocks; thanks to this instrument, when the different periods of day or night arrive, it is not difficult to comply with what discipline enjoins. The night divides itself into three parts; during the first and the last, the rules ordain giving oneself up to contemplation (dhyāna) while singing psalms; in the intervening part they do what they like. The explanation of the system of the water-clock conforms to what is expounded in the *Ki-koei-tchoan*."¹¹³

Bathing

One of the uses of the *ghaṇṭā* was to announce the bathing hour to the monks, and what I-tsing says of the manner of their bathing is as follows :¹¹⁴

"There are more than ten great pools near the Nālandā monastery, and there every morning a *ghaṇṭi* is sounded to remind the priests of the bathing-hour. Every one brings a bathing-sheet with him. Sometimes a hundred, sometimes a thousand (priests) leave the monastery together, and proceed in all directions towards these pools, where all of them take a bath."

Foreign Visitors

Of the numberless pilgrims and students that visited Nālandā besides the two best known, I-tsing has preserved some names of his contemporaries, and it may not be without interest to reproduce them here with the main facts relating to them as recorded by him :

1. Sramaṇa Hiuen-tchao (Prakāśamati)—spent 3 years at Nālandā (c. A.D. 660) studying under Jinaprabha the Madhyamaka śāstra and the Śata-śāstra.¹¹⁵ Then under Ratnasimha he learned the 17 points of yoga. Met by I-tsing at Nālandā¹¹⁶ where he came again after much travelling in India. He died in Mid-India when he was sixty odd years.

112. *Rel. Em.*, p. 92.

113. The *Ki-koei-tchoan* is no other than the *Record*.

114. *Record*, pp. 108-9. See Cunningham's plan for the pools near Nālandā.

115. *Rel. Em.* pp. 17-18.

116. *Ib.*, pp. 25-26.

2. Tao-hi (Śrīdeva). Dwelt some years in Nālandā studying Mahāyāna. He engraved a tablet in Chinese at Mahābodhi, and wrote (copied?) more than 400 chapters while at Nālandā. Died in India aged over 50.¹¹⁷

3. Ngo-li-yé-po-mouo (Āryavarman), native of Korea. Studied śāstras of discipline and copied sūtras in Nālandā where he died aged 70.¹¹⁸

4. Hoei-yi, of Korea (c. A.D. 638). Lived long in Nālandā for listening to the 'explications' there. I-tsing heard of his death there from the monks of Nālandā. The Sanskrit works he had written (copied?) were all in Nālandā.¹¹⁹

5. Fo-t'ouo-ta-mouo (Buddhadharma) of Tokharestan. I-tsing met him at Nālandā.¹²⁰

6. Tao-cheng (Candradeva), A.D. 649. Studied in Nālandā and was held in great esteem by the prince royal.¹²¹

7. Ta-ch'eng-teng (Mahāyāna Pradīpa). Spent some time in Dvāravatī and Ceylon. Travelled in South India and lived for twelve years in Tāmralipti learning Sanskrit before he arrived at Nālandā with I-tsing. Died at Kuśinagara in the Parinirvāṇa temple, aged over sixty.¹²²

8. Tao-lin (Śīlaprabha). He reached Nālandā by the sea-route and examined the Sūtras and the Śāstras of the Mahāyāna and the Kośas and spent many years there.¹²³ He travelled in Southern and Western India.

9. I-tsing himself. Also read Mahāyāna at Nālandā.¹²⁴ Stayed a year and studied śabda-vidyā-śāstra.¹²⁵ Returned and worshipped the Mūla-gandha koṭi; climbed up the Ḡḍhrakūṭa.¹²⁶ Lived ten years at Nālandā and studied the lives of the Saints.¹²⁷ Took with him Sanskrit texts comprising more than 500,000 stanzas.

10. Ling-yun (Prajñādeva). Painted at Nālandā the Maitreya and the Bodhidruma.¹²⁸

11. Tche-hong, nephew of Wang Hiuen-tsé, the Chinese ambassador. In Nālandā he perused and surveyed the texts of the Mahāyāna.¹²⁹

117. *Ib.*, pp. 29-30.

118. *Ib.*, pp. 32-33.

119. *Ib.*, p. 34.

120. *Ib.*, p. 38.

121. *Ib.*, p. 39.

122. *Ib.*, pp. 71-73.

123. *Ib.*, p. 101.

124. *Ib.*, p. 104.

125. *Ib.*, pp. 121-2.

126. *Ib.*, p. 123.

127. *Ib.*, p. 125.

128. *Ib.*, pp. 126-27.

129. *Ib.*, pp. 133, 136-7.

12. Ou-hing (Prajñādeva) (another). Listened to yoga in Nālandā; studied the Kośas and rules of discipline and practised the central contemplation (vipaśyana).¹³⁰ Companion of I-tsing. Died in India.

Besides the dozen names of his time (including his own) thus recorded by I-tsing, there are a few more names of Chinese visitors that may be noted. Ou-Kong, a Chinese monk spent three years at Nālandā (c. A.D. 765-8), and his memoirs, though not as interesting as those of Hiuen Tsang or even Fa-hien, still form a valuable supplement to them.¹³¹ Ki-ye, who travelled in India c. 970 A.D. and has left a compendious description of the state of Buddhism in India in his time, visited Nālandā among other monasteries and noted that all of them had entrances facing West.¹³² During the years A.D. 984-87. T'se-hoan, a monk of the division of Wei, seems to have visited Nālandā, though there is some uncertainty about this, due to the confusion introduced in the names in the text by its Song redactor.¹³³

Influence of Nālandā Abroad

Many doubtless went out from Nālandā to different countries, and particularly to China to assist in the great work of translation of Scriptures from Sanskrit that went on for several generations there. Some of them are mentioned elsewhere in this paper; but our knowledge of them is bound to be relatively meagre.¹³⁴

We have, with the aid of the Chinese pilgrims and the results of archaeological research, tried to gain some idea of what Nālandā was like in the heyday of its splendour, how it grew to be what it became; we have seen that wanton destruction by a ruthless invader extinguished its great light for ever. There are many gaps in our knowledge, some of which one hopes may yet be filled by the further progress of research. Of all the centres of learning in Ancient and Mediaeval India, and these were many scattered all over the land, we have most data about Nālandā, which was the greatest of such centres, not only for the study and spread of Bud-

130. *Ib.*, p. 145.

131. JA : 1895, Sep.-Oct. p. 358.

132. BEFEO, ii, p. 259.

133. Chavannes : *Les Inscriptions Chinoises de Bodh Gayā*, App. xiv.

134. See Nos. 7, 16, 51 of Appendix I, and 154 and 159 of Appendix II of Nanjio, *Catalogue*, Also *Journal of the Madras University*, xii, pp. 187-92.

dhism in its various phases, but for the pursuit of all Indian religious and philosophical systems. The history of the University of Nālandā practically spans a whole millennium, a period of wonderful and sustained endeavour and achievement in the realm of the spirit.

Buddhism in Nālandā

But when all is said, Nālandā is important more as a centre of Buddhism and for the tremendous influence it exerted on the thought and religion of the Eastern countries than for anything else. It is therefore necessary before we close this study to seek to determine with some precision the role of Nālandā in the evolution of Buddhist thought and practice in the four or five centuries during which it held the position of the most renowned world-centre of Buddhism. For Tibet during the middle ages Nālandā was enveloped in a mysterious haze of holiness; it was the source of all knowledge. Tāranāth traces all that is good in Mahāyāna in his estimation, its famous teachers, sacred texts and doctrines, its most celebrated reformers, all to Nālandā without any hesitation. This seems to be borne out also by the data furnished by Hiuen Tsang who says that all the bhikṣus studied the Mahāyāna at Nālandā, and counts Dharmapāla, the pupil of Dignāga and famous divine of the Yogācārya school of Asaṅga, and his own teacher Śīlabhadra from whom he heard an exposition of the Yogācārabhūmiśāstra, among the holders of the highest place in Nālandā. Again, of the texts collected by him and translated under his supervision, the bulk must have been doubtless obtained at Nālandā; and among them we find only seventeen titles belonging to the Hīnayāna while not less than fifty-eight books are Mahāyānist texts, some of which fall to be classed among Tantric texts like *Vajrapracchedika Prajñāpāramitā*—the chief scripture of mantra-Buddhistic Shin-gon-shu in Japan, the *Amoghapāśahṛdaya*, and so on.¹³⁵

Mahāyāna and Hīnayāna

I-tsing, however, who belonged himself to the Hīnayāna school of Mūlasarvāstivādins, makes the categorical statement: "In Northern India and the islands of the Southern Sea, they generally belong to the Hīnayāna,"¹³⁶ and Takakusu in his summary of I-tsing's introduction has noted that according to him the Ārya-mūlasarvāsti-

vāda-nikāya was most flourishing in Magadha i.e. the region of Nālandā.¹³⁷ And we have seen above that I-tsing devotes particular attention to the rules of discipline prevailing in the Nālandā Vihāra, and there is no reason for us to think that the ten years he spent at Nālandā were anything but a very pleasant period of his life spent among most acceptable spiritual companions who had the same outlook as himself in matters of religion.

I-tsing surely knew what he was speaking about and made no mistake; and it is unlikely that in the short interval between Hiuen Tsang's departure and the arrival of I-tsing there was any wholesale change over from Mahāyāna to Hīnayāna; in fact, the whole trend in Buddhist history is the other way about. The truth of the matter is that it is wrong to postulate any sharp difference between the two main yānas of early Buddhism which were closely bound together by many subtle bonds from the beginning;¹³⁸ and apparently it was quite possible for the same set of facts to be described in such different words as Hiuen Tsang and I-tsing adopt about Nālandā, each naturally selecting and stressing the features that struck him as the most significant. Krom has pointed out admirably how, with the development of the eclectic and idealist philosophy of the Yogācāra school under the leadership of Asaṅga, even such distinction as was once recognised between Hīnayāna and Mahāyāna steadily lost its significance. He says:¹³⁹ "The masters of the Yogācārya had already given the example; not following *one* system but drawn from all creeds, was the doctrine expounded by Asaṅga, so that the śrāvakas (Hīnayānist monks) became believers, and it is expressly related of Vasubandhu that he had studied the śāstras of the eighteen sects, the points of difference between sūtras and vinaya of the various schools and even the chief works of the Tīrthyas. We have already seen above, that according to I-tsing the same sect belonged in one place to the Hīnayāna and in another to the Mahāyāna, while the same author further mentions as the only systems of the Mahāyāna the two great schools of philosophy, Mādhyamika and Yogācārya. It is thus clearly proved how much the distinctions between the sects had been pushed aside by the schools of philosophy in the Church. The particular tenets of the sects lost their meaning except in so far as they found a place as fundamental principles in one of the systems of philosophy."

137. *Ib.* p. xxiv.

138. JA 11:8 (1916) p. 28 cited by Krom and Bosch.

139. *Barabudur* ii, pp. 327-8.

135. Bosch, p. 537 and Nanjio, *Catalogue*, p. 435.

136. *Record* p. 14.

We have seen already that Hiuen Tsang's own studies were not confined to Yogācārya texts but included some Hīnayāna texts, and even Brahminical śāstras. We can well understand, as Bosch has observed,¹⁴⁰ that in the midst of men who did not despise the study of Hīnayānist texts though they professed Mahāyāna as their creed, I-tsing might have felt quite at home, and when he recorded his impression that the Sarvāstivādins counted the largest number of followers in Magadha, he might have had in mind considerable numbers of sects which nominally belonged to the Hīnayāna but studied Asaṅga's system quite as much as the declared Mahāyānists. I-tsing himself was far from being a narrow Hīnayānist, and among the books he took with him from India to China, nearly one half were Mahāyāna texts, and some were definitely Tantric in character and included a number of Dhāraṇīs.¹⁴¹

Tantrayāna

In fact, a new Tantrayāna was growing out of the Yogācārya system at this period in Nālandā, and this new development did not take place without opposition. Discussing this very problem of the relation of the Tantrayāna to Yogācārya system in the Buddhism of Barabodur, Krom has rightly observed:¹⁴² "The evolution of religion and philosophy does not take place in such a way that at some given moment we can draw a line at the point where an old opinion is unanimously dropped and a new one taken up. The one glides unperceived into the other and gradually the believer's mind becomes ripe for new ideas, accepted first by a few, then by more and finally by the majority." We have many indications besides those already noted that Buddhism in Nālandā was passing through this type of transition in the seventh and eighth centuries A.D.¹⁴³ We have a curious and significant incident narrated by the biographer

140. p. 540.

141. *Rel. Em.*, pp. 194-6.

142. ii. p. 331.

143. P. Mus (BEFEO xxxii p. 328 and n. 1) citing A. K. Coomaraswami expresses the opinion that Nālandā's role in the history of Buddhist thought and practice was not so great as Bosch and Stutterheim would make it, and that Nālandā only relayed the developments that took place in Kashmir and transmitted them to the countries of the Far East. I am unable to share this belief in the face of the volume of evidence relating to Nālandā, and the relative paucity of our knowledge regarding Kashmir Buddhism. Viradēva went from Peshawar to Nālandā to attain the crown of his career. See *Ante* p. 166.

of Hiuen Tsang which deserves attention here:¹⁴⁴ "Silāditya-rāja had constructed a Vihāra covered with brass plates by the side of the Nālandā monastery, about a hundred feet in height. It was renowned through all countries.

'Sky-flower' Doctrine

"The king after returning from the subjugation of Konyodha (Ganjam?) came to Orissa. The priests of this country all study the Little Vehicle, and do not believe in the Great Vehicle. They say it is a system of the "sky-flower" heretics, and was not delivered by Buddha.

"When they saw the king after his arrival, they entered into conversation and said: 'We hear that the king has built by the side of the Nālandā convent a Vihāra of brass, a work magnificent and admirable. But why did not your majesty construct a Kāpālika temple, or some other building of that sort'?

'The king answered: 'What mean you by these words of reproach'?

In reply they said: 'The Monastery of Nālandā and its 'sky flower'¹⁴⁵ doctrine is not different from the Kāpālika sect: this is our meaning." We seem to have a clear indication here that Mahāyāna at Nālandā was moving in the direction of Tantrayāna, not unmixed with Śaivism.

Tibet: Origin of Lamaism

Tāranātha attributes to Nālandā, as we have seen, the greatest influence on the growth and spread of Buddhism in many lands. In the first half of the eighth century Śānta-rakṣita, Padmasambhava, and Kamala-śīla, famous teachers of Nālandā, the two latter being teachers of Tantras, were invited to Tibet by king Kri-sring-deutsan (A.D. 728-786): they are said to have succeeded in founding the Lamaist church there and thus displaced the older state religion.¹⁴⁶ This Tibetan tradition is a further unmistakable proof of the Tantric direction taken by Buddhism at Nālandā after the seventh

144. pp. 158-59.

145. The *sky-flower* doctrine is fully explained in the Suraṅgama Sūtra. It was evidently a doctrine developed in the Nālandā monastery, as this Sūtra was framed there. The doctrine is simply that all objective phenomena are only, like *sky-flowers*, unreal and vanishing—Beal.

146. Vidyabhusan, *Indian Logic*, pp. 323 and 327; Bosch p. 543. Sankalia, pp. 117-20.

century. We must also note the remarkable expressions in the Nālandā copper-plate of Devapāladeva by which all the ārya bhikṣus are held to be a group of Tāntrika-bodhisattvas: *tāntrika-bodhisattvagaṇasya... caturddiśāryabhikṣusaṅghasya*. "From this it is clear," says Bosch, "not only that the bhikṣus had become Tantrists, but Mahāyānist Bodhisattvas, once held in great honour, had served their purpose, and a new generation of Tantric deities had been elevated to the throne."¹⁴⁷ The same writer draws attention to the evidence from the Chinese translations of Buddhist texts pointing in the same direction, and confirming the conclusions indicated so far. In the seventh century Hīnayāna texts still formed a considerable part of the books brought by pilgrims from Nālandā to China; but all the texts translated in the eighth century by Śubhakarasiṃha (716-35 A.D.), a śramaṇa who went to China from the Nālandā monastery,¹⁴⁸ were Mahāyānist texts; finally, in the tenth century, of the 118 books translated by Dharmadeva *alias* Fa-hien (973-1001), also an arrival from Nālandā in China, about a hundred were productions of the Tantrayāna.¹⁴⁹

Kāla-cakra-yāna

There was one more step taken by Nālandā Buddhism before its final disappearance. This seems to have occurred towards the end of the tenth century when Kāla-cakra Buddhism was received into Nālandā. This creed of mysterious origin was suffused with Vaiṣṇavism, and the story of its introduction into Nālandā is described in a Tibetan work of the sixteenth century. In the rendering of Cṣoma de Koros, the story reads as follows:¹⁵⁰ "He (a certain pandit called Tsilu or Chilu) then came to Nālandā in Central India, (S. Madhya). Having designed over the door of the Bihar the ten guardians (of the world), he wrote below them thus:

'He that does not know the chief first Buddha, (*Ādi-Buddha*), knows not the circle of time (*Kāla-Chakra*).

'He, that does not know the circle of time, knows not the exact enumeration of the divine attributes.

'He, that does not know the exact enumeration of the divine attributes, knows not the supreme intelligence (S. *Vajra dhara jñāna*).

147. pp. 543-4.

148. Nanjio Catalogue, p. 444.

149. *Ib.*, p. 450.

150. JASB ii (1833) pp. 57-8.

'He, that does not know the supreme intelligence, knows not the Tantrika principles (*Tantra Yānam*).

'He that does not know the Tantrika principles, and all such, are wanderers in the orb of transmigrations, and are out of the way (or path) of the supreme triumphator (S. *Bhagavān Vajra dhara*).

'Therefore, *Ādi-Buddha* must be taught by every true b-Lama (S. *Guru*, a superior teacher, religious guide), and every true disciple who aspires to liberation (or emancipation) must hear them.' Thus wrote he:

"The venerable (the Lord) Narotapa (Narottama?) being at that time the principal (S. *Upādhyāya*) of the Bihar; he together with five hundred pandits, disputed with him, but when they saw that he excelled them all in disputing, they fell down at his feet, and heard of him *Ādi-Buddha*; then this doctrine was much propagated."

Thus Nālandā accepted a creed which had nothing in common with Buddhism of old except the name. This change over to forms of belief and practice which differed little from the surrounding Śaivism and Vaiṣṇavism of the land, and these in some of their most degenerate forms, must have contributed not a little to the weakening of the distinct position that belonged to Buddhism before this change. Henceforth Buddhism loses its identity and mingles with the incoherent mass of popular beliefs and superstitions characteristic of the vulgar side of Hinduism.

Influence in the Islands

The chief stages in the transformation of Buddhism at Nālandā were reflected in 'the kingdoms of the Southern Seas' as the Chinese called them, which, as we have seen, maintained a constant intercourse with Nālandā. In the splendid article on the Nālandā copper-plate of Devapāla, to which we have referred so frequently before, Bosch has gone into this question at some length, and we could do no better than present his main conclusions in his own words:¹⁵¹ "putting side by side the important moments in the History of the monastery of Nālandā and those in the history of Buddhism in the Archipelago, we see that the path followed by religion at Śrīvijaya, and later in Java, runs parallel with the line of development that Buddhism takes at Nālandā.Buddhism enters

151. Pp. 553-5 (Translated from the Dutch original).

ri Vijaya after the rise of the great monastery. The period of the finest bloom of Nālandā (seventh century) is also the time when the University of Palembang attains great lustre. The gradual changes of opinion regarding the true doctrine, starting from the Hinayāna and proceeding along the Mahāyānist Yogācārya to a further stage of Tantrism already highly coloured by Śaivism, and ending in a fully degenerate Bhairava-cult, these shiftings we see repeated at Śrī Vijaya, and later in Java, in the same order and with the same tempo.¹⁵² Only on one point is there a difference to be noted; while the role of Nālandā is irrevocably played out after the end of the twelfth century, Buddhism in Java has still before it some centuries of comparative prosperity."

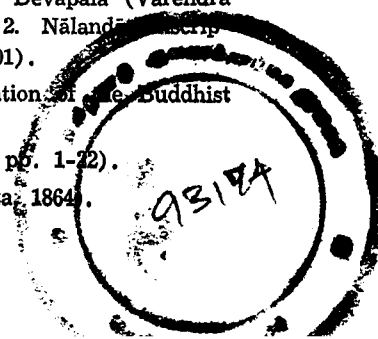
In one respect perhaps these observations of Bosch, made in 1925, need a slight amendment in the light of more recent researches; the large stone Buddha of Bukit Seguntang in Palembang raises a strong presumption that the introduction of Buddhism here must have occurred much earlier than Bosch suggests, and most probably from the region of the Kṛṣṇā delta. But the later influence of Nālandā on the Archipelago is undeniable, and Bosch's estimate of it may well be accepted as substantially correct.

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152. I have gone into this question in some detail in a forthcoming paper on Śrī Vijaya.

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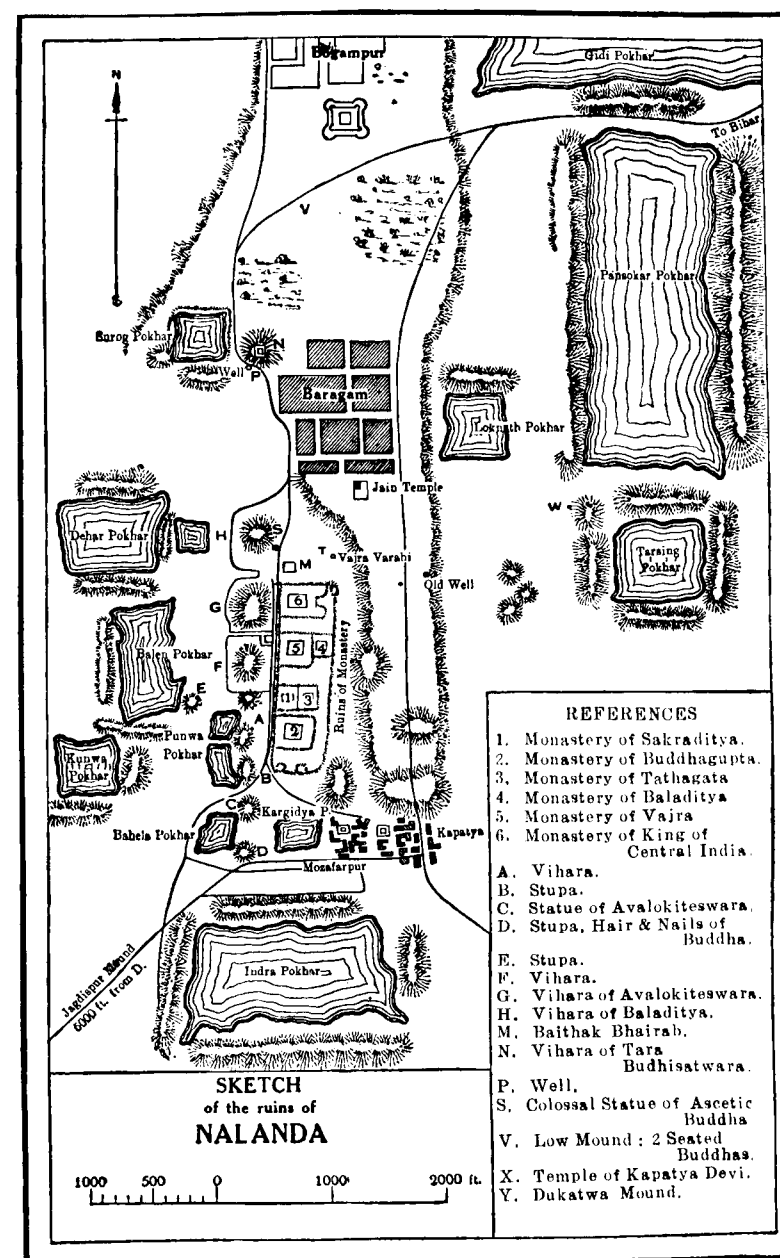


Fig. 1.—Plan of Site, after Cunningham.



Fig. 2.—Bronze image of Buddha
(ASI 1917-18, Pl. XIV-a).



Fig. 3.—Bronze Yamāntaka (p. 169) (ASI. CC. 1:20-21. Pl. 1).

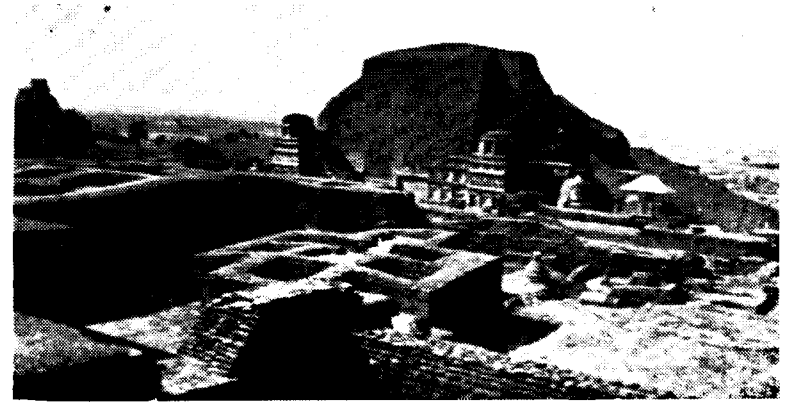


Fig. 4.—Excavations—General View.

—Photo by Dr. S. Paramasivan



Fig. 5.—An early stucco figure
(p. 171)

—Photo by Dr. S. Paramasivan

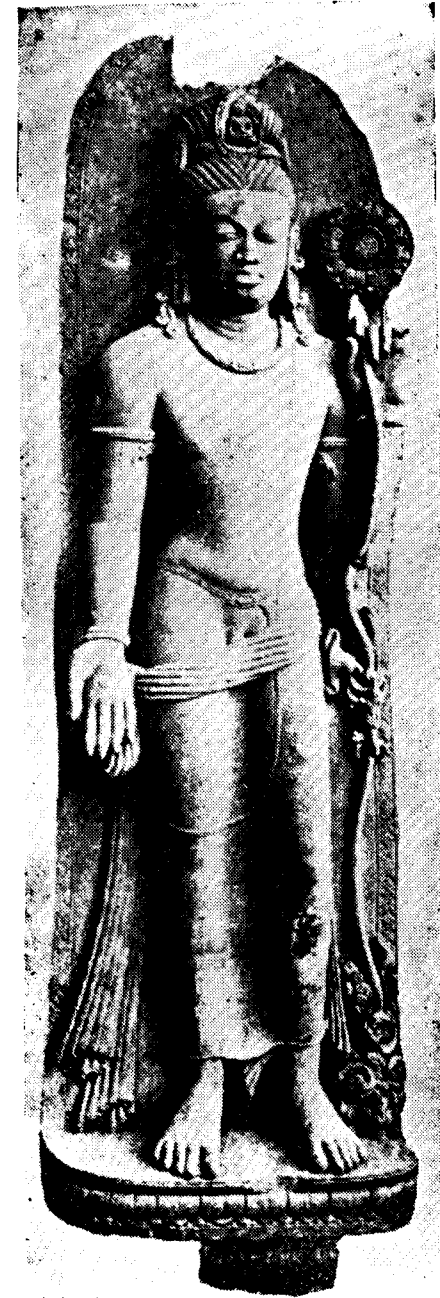


Fig. 6.—Avalokiteśvara—p. 171
(ABIA 1934, Pl. II-a)



Fig. 7.—Inscribed stone Buddha in Dharmacakia mudrā—JRAS 1909 p. 441. (ASI. CC. No. 4309)

***SOME PROBLEMS IN PĀṆINI**

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I. Itāḥ

Macdonell's¹ view that 'it' is an abbreviation of 'iti' (meaning 'thus', i.e. an indicatory letter) does not seem to be correct; for, though a Pratyāhāra formed with an It indicates certain letters, an It by itself cannot do so; otherwise the other member of a Pratyāhāra would also on that score be called an It. Further, the contraction does not save anything and Pāṇini would not have resorted to it: 'उपदेशेऽजनुनासिक इति' is not much longer than 'उपदेशे-जनुनासिक इत् ।'

The important difference between the two members of a Pratyāhāra is that while the first stands, the second disappears. It is to emphasize this difference that the second member has been given by Pāṇini the name It which means 'that which goes' or 'that which disappears'. This is the traditional view which is given in the Śabdaratna as follows:

²न च लोपाभावे इदिति महासंज्ञाकरणात् संज्ञापि नेति वाच्यम् । महासंज्ञयैव लोपसिद्ध्या तस्य लोप इत्यस्य वैयर्थ्यापत्तेः ॥

Bhairavi: इदिति त्वेतीतीतिदित्यर्थकमिति लोपो भविष्यतीत्याशयः ।

According to the traditional view, It is thus a Mahāsamjñā. If Pāṇini intends it to be only a Laghusamjñā, i.e. a monosyllabic symbol, we may attempt to give some explanation. Here is a suggestion.³

*Extract from my thesis approved for the M.O.L. degree by the Madras University.

1. A Sanskrit Grammar, Introduction, p. 9.
2. Part I, p. 26 (Kāśī Sanskrit Series).
3. For many points contained in this I am much indebted to my revered Professor Dr. C. Kunhan Raja.

As Pāṇini uses both vowels and consonants as Its, he wants to adopt a symbol consisting of both. He takes इ and not अ because, as is revealed on a close examination, the latter, i.e. अ nowhere occurs as an It having a technical purpose. We have आदित् (P. 7.2.16), इदित् (7.1.58), ईदित् (7.2.14), उदित् (1.1.69), ऊदित् (7.2.44), ऋदित् (7.4.2), ॠदित् (3.1.55), एदित् (7.2.5) and ओदित् (8.2.45); but not अदित् anywhere.

Among consonants he selects त् probably for the following reasons. He does not take क् because इक् occurs as a Pratyāhāra in P. 1.1.3 etc. He rejects ख and घ because he does not usually give the Mahāprāṇas as Its. Even in a few instances like खमुच् (P. 3.4.25), खश् (3.2.28), घञ् (3.3.16), घुरच् (3.2.161), etc., where they are given as Anubandhas, they occur only at the beginning of the grammatical elements and not at the end. It must also be noted that none of the Pratyāhārasūtras have Mahāprāṇas as Its; and this is probably because a Mahāprāṇa is more difficult than an Alpaprāṇa to pronounce at the end of a word. There is also the fear that a Mahāprāṇa may not remain there as such, but may be changed to the corresponding Alpaprāṇa (Cf. P. 8.2.39 etc.). For similar reasons Pāṇini does not give Trītyas as Its except इ. Even in the case of इ it may be noted that like the Mahāprāṇa Anubandhas noted above, it never occurs at the end of a grammatical element as an It. इ occurs as an It in the following instances:—

डच्, डट्, डण्, डतमच्, डतरच्, डति, डा, डाच्, डाप्, डु, डुपच्, डमुप्, ड्य, ड्यण्, ड्यत्, ड्या, ड्रल्, ड्रुन्।

He rejects ड् because इड् occurs as a root and is likely to create confusion in instances like इड् धार्योः सन्नकृच्छिणि (P. 3.2.130). च् is not selected because इच् occurs as a Pratyāhāra (P. 6.1.104, etc.). छ, ज् and झ are rejected for the reasons already stated above. इञ् occurs as a termination in 4.1.95, etc. इट् occurs as an Āgama in P. 7.2.36 etc. ठ, ड and ढ are not taken for the reasons already stated. इण् occurs as a Pratyāhāra in P. 8.3.39. It is त् which thus remains in this process of elimination and which appropriately forms the symbol इत्।

*Its and their various technical purposes.*⁴

आ	P. 7.2.16
इ	7.1.58
ई	7.2.14
उ	7.2.56
ऊ	7.2.44
ऋ	7.4.2
ॠ	7.2.5
ओ	8.2.45
क्	1.1.46; 1.1.5; 6.1.15ff.; 6.1.39; 6.1.15; 6.4.19ff; 6.4.24; 6.4.34; 6.4.37; 6.4.42ff; 6.4.63; 6.4.66; 6.4.98; 6.4.109ff; 6.4.120ff; 7.4.22ff; 7.4.40ff; 7.4.69ff 2.4.36; 7.2.11ff; 6.1.165; 7.2.118
ख्	6.3.66
घ्	7.3.52
ङ्	1.3.12; 6.1.186; 1.2.1ff; 3.4.103; 7.2.81; 1.1.5; 6.1.16; 6.4.15; 6.4.19ff; 6.4.24; 6.4.34; 6.4.37; 6.4.42ff; 6.4.63ff; 6.4.66ff 6.4.98ff; 6.4.109ff; 7.4.32ff; 3.4.99ff; 1.4.6
च्	6.1.163ff.
च्	1.3.72; 1.2.1; 7.2.115ff; 7.3.32; 7.3.54; 6.1.197; 4.3.155; 2.4.58.
ट्	1.1.46; 3.4.79; 4.1.15;
ड्	6.4.143; 6.4.142;
ण्	1.2.1; 7.2.115ff; 7.3.34ff; 7.1.91; 3.32.54; 3.32.33; 7.2.117; 7.1.90; 7.1.92.
त्	6.1.185.
न्	6.1.197; 6.2.50.
प्	3.1.4; 3.4.87; 3.4.86; 3.4.93; 1.2.4; 7.3.89ff; 7.3.87; 7.3.93ff; 7.3.99ff; 6.1.192; 6.1.71.
म्	6.4.92; 6.4.93; 1.1.47.
र्	6.1.217.

4. Where there are more than one reference, each relates to a separate purpose.

- ल 6.1.193.
 श 1.1.153; 3.4.113; 3.3.60ff; 6.1.45; 7.3.75ff; 3.3.104; 4.1.4.
 ष 3.3.104; 4.1.4.
 स 1.4.16.

Its have been defined by Pāṇini in the following Sūtras :—

उपदेशेऽजनुनासिक इत् ।
 हलन्त्यम् ।
 न विभक्तौ तु स्माः ।
 आदिर्जितुडवः ।
 षः प्रत्ययस्य ।
 चुट् ।
 लशक्तद्विते । (1.3.2-8)

The Its can be divided broadly into four classes :—

1. Its as explanatory elements.
2. Its as phonetic elements, i.e. those of which the purpose is only to aid enunciation. This is according to Nāgeśa. According to other commentators, Mukhasukhārthas are not Its. Perhaps Pāṇini also does not intend to include them among Its; for we have seen that in adopting a symbol for Anubandhas, he does not take अ because it is nowhere used by him as an It having a technical purpose: according to him only those which are employed for technical purposes are Its.
3. Its which serve a double purpose.
4. Its which serve to distinguish one grammatical element from another.

Those which have technical meanings may be called explanatory, e.g., ण् in the Pratyaya अण् which indicates the Vṛddhi of its base. Instances of this class are numerous.

Those which do not imply any technical meanings, but only help enunciation may be called phonetic elements, most of them

being vowels inserted between consonants. Bhaṭṭoji Dikṣita gives the following instances :—

⁵औतस्तकार उच्चारणार्थः। ⁶इकारस्तूच्चारणार्थः। ⁷पकारोप्यकार उच्चारणार्थः।

In his commentary on P. 7 l. 86 Haradatta says: स्थान्यादेशे च तपरकरणं मुखसुखार्थम् ।

The अ between the consonants in अकङ् (4.1.97), अनङ् (7.1.75), अयङ् (7.4.22), आनङ् (6.3.25) इनङ् (4.1.126), etc., इ in अनिच् (5.4.124), असिच् (5.4.122), इमनिच् (6.4.154), तसिल् (5.3.7) etc., and उ in अतसृच् (5.3.28), इणुक् (5.2.53) इणुण् (3.3.44), कृत्वसृच् (2.3.64), कसृन् (3.4.17), etc., are all Mukhasukhārthas.

*Its which serve a double purpose :—*In the terminations matup (5.2.94), ḍmatup (4.2.87), atṛn (3.2.104), iyasun (5.3.57), tṛ (6.4.127), tṛc (3.3.169), tṛn (3.2.135), vatup (5.2.39), etc., अ and कृ not only help enunciation, but by being Anubandhas, also promote the operation of such Sūtras as उगितश्च (4.1.6), उगिदचां सर्वनामस्थानेऽधातोः । (7.1.70), etc.

*The अ in ण् of the Akṣarasamāmnāya :—*Whether the अ in the Sūtra ण् of the Akṣarasamāmnāya is a simple Mukhasukhārtha vowel or an anunāsika vowel (i.e. according to the rule उपदेशेऽजनुनासिक इत्, an Anubandha by which a Pratyāhāra, namely ra [standing for r and l] can be formed) is a question which receives much controversial attention in later commentaries. There is in fact nothing of an evidence in the Munitraya texts to regard this as anything more than an ordinary Mukhasukhārtha vowel. The idea of having a Pratyāhāra of 'r' with this 'a' seems to have suggested itself first to Bhartṛhari who commenting on the Mahābhāṣya

⁸लृकारस्य लपरत्वं वक्ष्यामि तच्चावश्यं वक्तव्यम् ।

5. Prauḍhamanoramā, p. 366 (Kāśī Sanskrit Series).
6. Ibid, p. 400.
7. Ibid, p. 165
8. 1.1.9, V. 5.

says :

⁹व्याख्यास्यामोत्यर्थः । कथम् ? प्रत्याहारे रट् लण् इति लकारे योऽकार असावनुनासिकः प्रतिज्ञास्यते ।

From the expression प्रतिज्ञास्यते it must be obvious to discerning minds that Pāṇini does not give it as a nasal. Kaiyaṭa takes for granted that it is an Anunāsika, and in his explanation of the above Mahābhāṣya he goes one step forward—from Pratijñā to Vyākhyāna. Says he:

¹⁰व्याख्यास्यामोत्यर्थः । रपर इत्यत्र र इति लणिति लकाराकारेण प्रत्याहार आश्रीयते । तत्रान्तरतम्यादकारस्याण् रपरः । लृकारस्य लकारः ॥

¹¹Bhaṭṭoji rows in the same boat with Bhartṛhari and Kaiyaṭa.

Nāgeśa's criticism :—¹²At Nāgeśa's hands the above view meets with the refutation which it deserves. His criticism may be summarized as follows :—

In the first place, if the अ in लण् is an Anunāsika which can form a Pratyāhāra, Pāṇini who always wants to secure economy in expression, would certainly have the Pratyāhāra 'ra' in lieu of र in 7.2.2. and 'ya' in lieu of यण् in 6.1.77, etc. Secondly, the Ślokavārtika,

¹³प्रत्याहारेऽनुबन्धानां कथमजग्रहेषु न ।

raises and answers the question why such augments as ण, क, etc., which are read among vowels, i.e. Acs are not taken as such (as Svaras); but neither Kātyāyana nor Patañjali raises a similar question regarding the 'a' in the aphorism लण्, which is read among the consonants. If it is an Anubandha like क or न, such a question must have been raised and answered. The third point against it is this : A probans pointed out by Patañjali to infer the

non-denotation of the consonant Anubandhas by the Pratyāhāra Ac is ¹⁴ लोपश्च बलवत्तरः, i.e. the obligatoriness of the elision of these. If the 'a' in लण् is taken as an Anunāsika, i.e. an Anubandha, there would be partial non-establishment of the pervasion of the subjects by the probans which would vitiate the inference. The proposition is this:

अनुबन्धव्यवहारयोग्याः प्रत्याहारजन्यबोधाविषयाः बलवत्तरलोपप्रतियोगित्वात् ॥

We cannot have the Ac-Pratyāhāra before having the Hal-Pratyāhāra; for it is only after interpreting the rule हलन्त्यम् (1.3.3), that we are able to interpret the rules आदिरन्त्येन संहता (1.1.70) and तस्य लोपः (1.3.9) on which depends the formation of the Pratyāhāra Ac: the term It in the latter rules cannot be understood without the former. So much so, when we are at a stage of deciding what is meant by Hal, the 'a' in the aphorism लण् cannot be elided as an Anubandha, the elision being known only by the rule तस्य लोपः which has yet to be interpreted. Thus the 'a', one of the subjects of our proposition, is not pervaded by the Hetu बलवत्तरलोपप्रतियोगित्वम् । Consequently (when not elided) it becomes a consonant; and the undesirable result of this would be the elision of 's' in such instances as सोऽस्ति etc., according to

एतत्तदोः सुलोपोऽकोरनञ्समासेऽहल् । (6.1.134)

etc. Hence Nāgeśa thinks that this 'a' in the aphorism लण् is only a Mukhasukhārtha.

The inclusion of Mukhasukhārthas among Its :—We have here included Mukhasukhārthas among Its; but it may be noted that there is a difference of opinion regarding this among later commentators. All of them except Nāgeśa do not accept them as Its. According to Nāgeśa,¹⁵ they cannot be dropped if they are not Its. He has the following Vārtika and Mahābhāṣya to support him.

9. Bhāṣyapradīpikā, Adyar Library Transcript, No. 39 G. 17, p. 402.

10. Vol. I, p. 226 (Nirṇayasagar ed.).

11. See the S. Kaumudī on P. 1.3.2.

12. Laghuśabdenduśekhara, Part I, pp. 9 sq. (Kāśī Sanskrit Series).

13. See the Mahābhāṣya on हयवरट्

14. See the Mahābhāṣya on हयवरट्

15. Op. cit., Part I, pp. 407-408, and the Mahābhāṣya on 6.1.185.

तिस्वरितम् । (P. 6.1.185)

Kātyāyana :

तितिप्रत्ययग्रहणम् ।

Patañjali :

तिति प्रत्ययग्रहणं कर्तव्यम् । इह मा भूत्—ऋत इद्धातोः
(7-1-100) किरति । गिरति । तत्तर्हि वक्तव्यम् । न
वक्तव्यम् । नैष तकारः । कस्तर्हि ? दकारः ॥
अद्धतरादिभ्यः पञ्चभ्यः । (P. 7.1.25)

Kātyāyana :

अद्भावे पूर्वसवर्णप्रतिषेधः ।

Patañjali :

अद्भावे पूर्वसवर्णस्य प्रतिषेधो वक्तव्यः । कतरत्तिष्ठति ।
कतरत्पश्यति ।

Kātyāyana :

सिद्धमनुनासिकोपधत्वात् ।

Patañjali :

सिद्धमेतत् । कथम् । अनुनासिकोपधोऽच्छब्दः करिष्यते ।

If the Mukhasukhārtha 't' of 'it' in P. 7.1.100 is not an It, there is no possibility of P. 6.1.185 applying to such instances as किरति गिरति, etc., and Kātyāyana's emendation तिति प्रत्ययग्रहणम् thus becomes unnecessary; we have therefore to infer that both Kātyāyana and Patañjali regard even Mukhasukhārthas as Its; otherwise the operation of P. 6.1.185 could have been prevented in these instances simply by saying that the 't' is only a Mukhasukhārtha and not an It.

In the second instance Kātyāyana and Patañjali take the 'a' of 'ad' as an Anunāsika in order to drop it as an It. The Savarna-dīrgha is thus prevented in katarad (katara+ad). If Mukhasukhārthas can be dropped without being Its, there is no need to regard this as an Anunāsika, i.e. an It. Here it must be remembered that even Nāgeśa includes the Mukhasukhārthas among Its only when they (Mukhasukhārthas) are Vidheyas and not Anuvādyas because it is only in the former case that one of the conditions to be called Its, namely व्यवसितान्तर is obtainable.¹⁶

16. For further information on this subject see the L. S. Śekhara, Part I, pp. 408 sq. cf. the Mahābhāṣya on 1.3.3:

व्यवसितान्तो हलिसंज्ञो भवतीति वक्तव्यम् ।

Its which distinguish one grammatical element from another:— In a few instances Its serve to distinguish one grammatical element from another. For instance, the 'i' of 'nāsi' (4.1.2) differentiates the suffix from 'nas' (4.1.2); the Anubandha 'i' of 'ini' (3.2.93) differentiates the termination from 'in' (3.2.24); 't' differentiates 'ant' from 'an' (4.1.2).

'g' as an It:— It may be noted here in passing that neither Pāṇini nor Kātyāyana gives 'g' as an It. A Śloka-vārtika quoted and commented upon by Patañjali in the Mahābhāṣya on 3.2.139 gives it. It is accepted by Patañjali. Apart from this we do not have any remarkable addition to the list of Its by Patañjali.

* * * * *

II. The authorship of the Akṣarasamāmnāya

The next problem in Pāṇini that deserves to engage our attention here is the one relating to the authorship of the Akṣarasamāmnāya. We cannot entertain any reasonable doubt regarding the authorship of this Ānupūrvī, i.e. Samāmnāya, which displaying amply the resourcefulness of the master genius Pāṇini, itself places this beyond doubt; yet some evidence has to be adduced here in order to make it clear that the legend which says that this Samāmnāya is a revelation to Pāṇini from Śiva is not a very old one and that neither Kātyāyana, Patañjali, nor Bhartṛhari knows it. It would further interest us to know the source of this legend and to see how later commentators in their enthusiasm for making the Samāmnāya a Śruti tamper with certain texts.

Pāṇini's authorship of the Akṣarasamāmnāya is clearly borne out by the following evidence.

1. Explaining the Vārtika व्याख्यानञ्च द्विरुक्तिः (Vol. I, p. 130 N. S. ed). Patañjali says:—

एतज्ज्ञापयत्याचार्यो भवत्येषा परिभाषा—व्याख्यानतो विशेषप्रतिपत्तिर्न हि सन्देहादलक्षणम् ।

By the term Ācārya he should, as in various other places, here also mean Pāṇini. It may be pointed out that he always refers to Pāṇini by this term.

2. Towards the end of Paspasā both Kātyāyana and Patañjali make it plain that the object of this Samāmnāya is to have the

Pratyāhāras which Pāṇini uses in writing his grammar; in other words, Pāṇini arranged the Varnas in this order and added the Anubandhas to them in order to have Pratyāhāras. We have there the following :

Kātyāyana :	वृत्तिसमवायार्थ उपदेशः ।
Patañjali :	का पुनर्वृत्तिः । शास्त्रप्रवृत्तिः । समवायो वर्णानामानु- पूर्व्येण सन्निवेशः ।
Kātyāyana :	अनुबन्धकरणार्थश्च ।
Patañjali :	अनुबन्धकरणार्थश्च वर्णानामुपदेशः । अनुबन्धानासंक्षयामिति । वृत्तिसमवायश्चानुबन्धकरणं च प्रत्याहारार्थम् ॥

3. After a long and important prolegomenon, Patañjali introduces us to the texts of his commentary with the words :—

कथं पुनरिदं भगवतः पाणिनेराचार्यस्य लक्षणं प्रवृत्तम् ।

His commentary on the Akṣarasamāmnāya comes after this and should form part of the text.

4. From Bhartṛhari also we know that this Samāmnāya or Sanniveśa (arrangement of the Varnas in this particular order) was not current before Pāṇini's time. He rightly calls it Pāṇini's Svānupūrvī. Says he :

¹⁷न स्वेष्टां स्वरूपावधारणार्थ उपदेशः ।

किं तु स्वानुपूर्व्यार्थान्नानुपूर्व्येण शास्त्रे किञ्चित्कुर्युरिति ॥

On each of the Sūtras of the Samāmnāya Kāśikā says :

इतं करोति प्रत्याहारार्थम् ।

A good deal of evidence of this kind can be adduced; but since the above is sufficient for our purpose, we may proceed to investigate the source of the legend which says that the Sūtras of the Akṣarasamāmnāya were vouchsafed to Pāṇini by Śiva at the end of the penance done by the former on Himalayas.

17. Adyar Library Transcript, p. 117.

The Source of the Legend :—

In the beginning of his Kāśikā in which he gives a symbolic interpretation of the Sūtras of the Akṣarasamāmnāya Nandikeśvara says :

नृत्तावसाने नटराजराजो ननाद दक्कां नवपञ्चवारम् ।

उद्धर्तुकामः सनकादिसिद्धानेतद्विमर्शे शिवसूत्रजालम् ॥

From the evidence adduced above we know that this legend is not known to Bhartṛhari and is therefore of a much later invention. We have now to answer the question 'How did it arise?'

Its probable source :—

A careful study of the Kāśikā of Nandikeśvara and its commentary by Upamanyu in comparison with works on Kāśmir Śaivism reveals the fact that Nandikeśvara is indebted for this legend to the latter which record a similar one with regard to the origin of the Śiva Sūtras which laid the foundation of that school of philosophy. ¹⁸The Śiva Sūtras are said to have been revealed to Vasugupta by Śiva. In his Spandavṛtti Kallaṭa says :

लब्धं महादेवगिरौ महेशस्त्रोपदिष्टाच्छिवसूत्रसिन्धोः ।

स्पन्दामृतं यद्वसुगुप्तपादैः श्रोकल्लटस्तत्प्रकटीचकार ॥

Mystic¹⁹ interpretation of the Varnas is a common feature of some Tantra works relating to this school of philosophy. Both Nandikeśvara and his commentator Upamanyu flourished in Kāśmir in the golden days of the Advaita Śaivism.

The following verse in the Kāśikā of Nandikeśvara clearly expounds the Śakti Tattva of that school:²⁰

अकारो ब्रह्मरूपः स्यान्निर्गुणः सर्ववस्तुषु ।

चित्कलामिं समाश्रित्य जगद्रूप उणोश्चरः ॥

18. See J. C. Chatterji, Kāśmir Śaivism, pp. 22ff. The different versions of this legend have been examined in this excellent work.

19. See the Mālinīvijayottara Tantra, Adhi. 3-4, etc.

20. Cf. the other verses also. See Chatterji, Ibid, pp. 63ff.

The commentator Abhimanyu is quite frank about it. He begins his work²¹ thus :

नमः शिवाय देवाय सर्वाय परमात्मने ।
यस्योन्मेषनिमेषाभ्यां व्यक्ताव्यक्तमिदं जगत् ॥
गुरुं शिवं कुमारं च शिवतत्त्वविशारदम् ।
प्रणम्य नन्दिकेशादीञ्छिवभक्तान्मुहुर्मुहुः ॥

And ends it thus :

हकारः शिववर्णः स्यादिति शैवागमस्थितिः । इति शिवम् ।

This commentary is named Vimarśinī. It is very interesting to note that Kṣemarāja's commentary on the Śiva Sūtras, too, has the same title.

²²The doctrine of the Logos, i.e. the Parāvāk is common to both the Vyākaraṇa philosophy and Kāśmir Śaivism.²³ But it is not our object to enter here into any comparison or to find out which one borrows it from the other. Suffice it to say that the source of the legend which makes the Samāmnāya a revelation is the one pointed out above.

How later Commentators tamper with texts :—

1. The Sūtras of the Akṣarasamāmnāya were originally called Pratyāhārasūtras. This original name is found in some old manuscripts²⁴ of the Aṣṭādhyāyī. The Vārtika²⁵

प्रत्याहारेऽनुबन्धानां कथमज्ग्रहणेषु न ।

21. Printed in the N. S. edition of the Mahābhāṣya (pp. 132ff).

22. See Chatterji, *ibid.*, p. 6 (extract from the Tantrāloka); Kaul, Introduction to the Mālinīvijayottara Tantra, pp. 6ff.

23. But there is this important difference between the two. While Bhartṛhari, the greatest exponent of the Sphoṭa philosophy recognizes only three states of Vāk, viz. Paśyantī, Madhyamā and Vaikhari, Parā being identical with Paśyantī to him, the Tantra school has four, Parā being accepted as distinct from Paśyantī. Upādhyāya was influenced by the latter. I shall deal with this subject in extenso elsewhere.

24. Adyar 9 D. 10; 9 D. 60. etc.

25. See the Mahābhāṣya on हयवरट्

refers to these by this name. Explaining this Vārtika the Śābdika-cintāmaṇi says :²⁶

प्रत्याहारोऽत्राक्षरसमाम्नाय इति हरदत्तः ।

But in such later works as the Siddhāntakaumudī, etc., we find at the end of the Samāmnāya the remark इति माहेश्वराणि सूत्राणि ।

2. The third verse of the Pāṇinīyaśikṣā originally read :

त्रिषष्टिश्च चतुःषष्टिर्वर्णाः संभवतो मताः ।

This reading is found in an old Ms. of the Adyar Library, bearing the shelf number 21. N. 4. But the reading that we now have as mostly current is वर्णाः शंभुमते मताः । The former reading is usually relegated to footnotes by modern editors.

3. At the end of the Pratyāhārāhnikā Bhartṛhari says :²⁷

एवमस्य वाग्व्यवहारस्य न कश्चित्कर्तास्ति ।

Bhartṛhari does not refer here to the Akṣarasamāmnāya ; but Nāgeśa quotes and interprets this as follows²⁸ :—

हरिणा अस्याक्षरसमाम्नायस्य वाग्व्यवहारजनकस्य न कश्चित्कर्तास्त्येवमेव वेदे पारम्पर्येण स्मर्यमाणमिति व्याख्यातम् ।

According to this interpretation, the Samāmnāya is not only a revelation to Pāṇini from Śiva, but also an eternal Śruti !

The legend recorded in the verse²⁹

यान्युज्जहार माहेशाद्व्यासो व्याकरणार्णवात् ।
तानि किं पदरत्नानि भान्ति पाणिनिगोष्पदे ॥

by Dhanarāja is too baseless and absurd to deserve any consideration.

26. Adyar Library Transcript, Vol. I, p. 220.

27. *Ibid.*, p. 111.

28. Udyota, Vol. I, p. 132 (Nirnayasagar, ed.).

29. Pranavavāda of Gārgyayana, Bhagavan Das, pp. 78-79, Theosophical Publishing House.

III. The Rationale of the Akṣarasamāmnāya

The following analysis will also make it clear that Pāṇini arranges the Varnas into this Samāmnāya for the purpose of having the various Pratyāhāras on which he bases his work.

Up to ए Pāṇini follows the usual order of the vowels which is seen also in Prātiśākhya. He reads ओ after ए and औ after ऐ. Giving them in this order, Pāṇini is able to have the Pratyāhāras एङ् (P. 1.1.2, 1.1.75, 6.1.69, 6.1.94, 6.1.109) and ऐच् (P. 1.1.1, 7.3.3, 8.2.106) respectively. The Rk-Prātiśākhya also gives the latter in the same order. Compare अकार्करावि उ ए ओ ऐ औ³⁰. Either one borrows from the other or both follow some ancient school of phonetics which reads them in this order. Uvvaṭa explains this Rk-Prātiśākhya as follows:³¹

अकारस्य इकारेण उकारेण एकारेण ओकारेण च सह सन्धौ यान्यक्षराणि निष्पद्यन्ते तानि तथोच्यन्ते ।

क् and ऌ have to form a separate Sūtra because they cannot be included in एच् (P. 1.1.48; 6.1.45; 6.1.78; 8.2.107) or in अण् (P. 6.3.111; 7.4.13, etc.). Cf.³²

पूर्वेणाण्यहणाः सर्वे परेणेण ग्रहणा मताः ।

ऋतेऽणुदित्सवर्णस्येत्येतदेकं परेण तु ॥

But they have to be included in अक् (P. 6.1.101, 6.1.128). Hence क and ऌ occupy this position.

Next comes ह which has to be included in अट् (P. 8.4.2). In order to maintain Yathāsamkhyā between इक् and यण् (P. 6.1.77 and 1.1.45) Pāṇini does not read it after य । The repetition of this letter at the end has the advantage of its inclusion in शल् (P. 3.1.45).

30. P. 13, Benares Sanskrit Series. By placing क after अ this Prātiśākhya is perhaps attempting to give the original pronunciation of the vowel.

31. P. 20.

32. See the Mahābhāṣya, Vol. I, p. 130 (N. S. ed.).

Cf.³³

हकारो द्विरूपात्तोऽयमटि शल्यपि वाञ्छता ।

अर्हेणाधुक्षदित्यत्र द्वयं सिद्धं भविष्यति ॥

य, व, र and ऌ are read in the order of their corresponding vowels इ, उ, ऋ and ॠ. The other two advantages which Pāṇini gains by giving the semi-vowels in this order are these: (1) य and व are not denoted by रट् (P. 1.2.26); (2) य is not denoted by वट् (P. 6.1.66 and 7.2.35).

ॠ has to stand separate from the other semi-vowels, since it cannot be included in अट् (P. 8.4.2).

अण्, the Pratyāhāra formed by अ with the ण् of लण्, is used in P. 1.1.69.

As regards the nasals, i.e. ञ, म, ङ, ण and न Pāṇini follows the order in which he has to give the respective Tṛtīyas and Caturthas.

Cf. झमवू । घढधण् । जवगडदश् ।

Why Pāṇini gives the latter (Tṛtīyas and Caturthas) in this order is explained below. ञ, म, ङ, ण and न have to be placed here in order to be denoted by the Pratyāhāra यण् (P. 8.4.64).

Next come the Vargacaturthas. Only म, व, ङ and घ have to be denoted by मण् (P. 8.2.37). Being placed before म, ङ is thus excluded from मण् । By this arrangement Pāṇini gains another advantage also, namely the inclusion of ङ along with the other Caturthas in the Pratyāhāra ङण् (P. 8.2.37 and 40).

The semi-vowels, nasals झ and ञ have to be denoted by यण् (P. 7.3.101). Hence झ and ञ are given separately before other Caturthas. As between झ and म, झ deserves to be placed first, having regard to their established order which he follows also in the arrangement of the rest, namely व, ङ and घ. From

33. See the Prasāda, Part I, p. 14, Bombay Sanskrit Series edition.

this it would be clear that he gives the Varṇas in the usual order wherever the exigencies of his grammar do not require their arrangement otherwise.

Next comes the Vargaṭṭīyas which are excluded from झष् (P. 8.2.37 and 40) and झष् (P. 8.2.37), but included in हश् (P. 6.1.114) and अश् (P. 8.3.17). Pāṇini gives the Ṭṭīyas in the order in which he has given the Caturthas in the previous Sūtras.

Now he has to arrange the Dvitiyas. The first among these, ख is mentioned first. क which has to be excluded from छ् (P. 8.3.7) is given next. The rest are arranged in their usual order.

In order that the Prathamās may not be mixed up with the Dvitiyas, he does not read the Sūtra कपयू between जवगडदश् and खफ्छठथदटत्. This position of क and प has also two other advantages, namely the denotation and non-denotation of these two by खर् (P. 8.3.15 and 8.4.55) and छर् (P. 8.3.7) respectively.

After the Varyas we have ळ, ळ and स read in their usual order and at the right place. The purpose of the repetition of ह has been stated above.

A question may be asked as to whether Pāṇini has, while arranging the Varṇas as demanded by his Pratyāhāras, been able to maintain any phonological order? A further examination enables us to answer this question as follows:—

He gives the vowels except ओ and ऐ in their usual order. As regards ओ and ऐ we have already noted that the Rk-Prātiśākhya also gives these vowels in this order. We have also noted the phonological reasons given by Uvvaṭa for this. Perhaps the same reasons have weighed with Pāṇini also. In the arrangement of consonants Pāṇini is guided more by the Bāhyaprayatnas than by the Ābhyantaraprayatnas or Sthānas. Thus the consonants which he reads from ह to द are those which are produced by the Bāhyaprayatnas Saṁvāra, Nāda and Ghoṣa. From त to च are those produced by Vivāra, Śvāsa and Aghoṣa.

Cf.³⁴

खयां यमाः खयःकःपौ विसर्गः शर एव च ।
एते श्वासानुप्रदाना अघोषाश्च विवृण्वते ॥
कण्ठमन्ये तु घोषाः स्युः संवृता नादभागिनः ।

There is also another point to be noted. Pāṇini arranges the consonants according to their respective places in the Vargas. Instead of beginning with the Prathamās and going up to the Pañcamās, he begins with the Pañcamās and comes down to the Prathamās. Perhaps this is warranted by the various Pratyāhāras which he has adopted for his work. First he gives all the Vargapañcamās; then the Caturthas; then the Ṭṭīyas; then the Dvitiyas; then the Prathamās. The Varṇas in the Pratyāhārasūtras are thus very thoughtfully arranged by Pāṇini. A better arrangement on which a work like the Aṣṭādhyāyī with its intricate system of Pratyāhāras could be based cannot be thought of.

That in spite of the demands of the various Pratyāhāras that are absolutely necessary for his work, Pāṇini has been able to give the Varṇas in the Pratyāhārasūtras in a certain order is really one of his greatest achievements.

IV. Its and Pratyāhāras are Pāṇinyupajñās

From our study on Its and the Akṣarasamāmnāya it follows that Pāṇini was the first grammarian to use Its and Pratyāhāras; for it has been pointed out above that both these devices depend on the Akṣarasamāmnāya of which Pāṇini is undoubtedly the author. Of course monosyllabic symbols are known to have been used by pre-Pāṇinian grammarians.

Cf. आङि चापः (P. 7.3.105).

Kāśikā: आङिति पूर्वाचार्यनिर्देशेन तृतीयैकवचनं गृह्यते ।

³⁵बहुलं ताणि (P. 2.4.54, V. 11).

Patañjali: किमिदं तणीति । संज्ञाछन्दसोर्ग्रहणम् ।

Praudhamanoramā (P. 6.4.84) षणीति पुल्लिङ्गस्य प्राचां संज्ञा ।

34. See the Siddhāntakamudī with the Tattvabodhinī, p. 5 (N. S. ed.).

35. See also Kātyāyana on P. 3.2.8. and 4.1.52.

But it must be noted that these symbols are used by them only as Samjñās and not either as Pratyāhāras or Its.

V. The Dhātupāṭha.

One important fact emerges from the foregoing, namely that Pāṇini is also the author of the Dhātupāṭha. Most of the Dhātus in the Dhātupāṭha are arranged according to their Anubandhas.

Cf. कथ्यन्ताः षट्त्रिंशदनुदात्तैः (S. Kamudi on P. 8.4.18).

The addition of the Anubandhas to the roots in the Dhātupāṭha has no other purpose than to bring in the operation of Pāṇinisūtras like

आदितश्च (7.2.16)

इदितो नुम्धातोः (7.1.58)

स्वरतिसतिसूर्यतिध्रुजुदितो वा (7.2.44)

पूषादिद्युताद्यलृदितः (3.1.55)

ह्रस्वन्तक्षणश्चसजागृणिश्च्येदिताम् (7.2.5)

Thus it is reasonable that the author of the Dhātupāṭha should be identified with Pāṇini. Pāṇini's authorship of the Dhātupāṭha is made plain also by the Mahābhāṣya on P. 1.3.72. On this Sūtra Patañjali says :

तथाजातीयकाः खल्वचारेण स्वरितजितः पठिता य उभयवन्तो येषां कर्त्र-
भिप्रायं चाकर्त्रभिप्रायं च क्रियाफलमस्ति ।

Ācārya is a term which Patañjali always uses when referring to Pāṇini.

VI. The Gaṇapāṭha

That Pāṇini is also the author of the Gaṇapāṭha is apparent from the following Mahābhāṣya which finds solution for a difficulty which arises if Ākṛtipakṣa is accepted, namely, the denotation by a vowel of such incorrectly pronounced ones of its kind as Samvṛta, Kala, etc., in the reading of Gaṇasābdas which consist of vowels pronounced

correctly, that is to say, devoid of all Doṣas. If the Gaṇapāṭha is non-Pāṇinian, Patañjali would not resort to this explanation; for at the same place we see Patañjali fearing that the Śāstra would turn out non-Pāṇinian if Samvṛta, etc., are used instead of Anubandhas. It is thus evident that he thinks that the Gaṇapāṭha is also Pāṇinian. The Mahābhāṣya under reference is as follows :—

३६ आकृत्युपदेशात् सिद्धमिति चेत्संवृतादीनां प्रतिषेधो वक्तव्यः । के पुनः
संवृतादयः । संवृतः कलो ध्मात् एणी कृतोऽम्बूकृतोऽर्धको ग्रस्तो निरस्तः प्रगीत उपगीतः
क्षिण्णो रोमश इति । अपर आह—

ग्रस्तं निरस्तमविलम्बितं निर्हृतमम्बूकृतं ध्मातमथो विकम्पितम् ।

सन्दष्टमेणीकृतमर्धकं द्रुतं विकर्णमेताः स्वरदोषभावना इति ॥

अतोऽन्ये व्यञ्जनदोषाः । नैष दोषः । गर्गादिबिदादिपाठात् संवृतादीनां
निवृत्तिर्भविष्यति । अस्त्यन्यद्गर्गादिबिदादिपाठे प्रयोजनम् । किम् । समुदायानां
साधुत्वं यथा स्यादिति । एवं तर्ह्यष्टादशधा भिन्नां निवृत्तकलादिकामवर्णस्य प्रत्यापत्तिं
वक्ष्यामि । सा तर्हि वक्तव्या ।

लिङ्गार्था तु प्रत्यापत्तिः ।

लिङ्गार्था सा तर्हि भविष्यति । तत्तर्हि वक्तव्यम् । यद्यप्येतदुच्यतेऽथवैतर्ह्य-
नेकमनुबन्धशतं नोच्चार्यमित्संज्ञा च न वक्तव्या । लोपश्च न वक्तव्यः । यदनुबन्धैः
क्रियते तत्कलादिभिः करिष्यते । सिद्धयत्येवमपाणिनीयं तु भवति । यथान्यासमेवास्तु ।
ननु चोक्तमाकृत्युपदेशात्सिद्धमिति चेत्संवृतादीनां प्रतिषेध इति । परिहृतमेतद्गर्गादि-
बिदादिपाठात्संवृतादीनां निवृत्तिर्भविष्यति ॥

VII. The *Phit Sūtra*, the *Lingānuśāsana* and the *Unādi Sūtra*

As regards such later works as the *Phitsūtra* and the *Lingānuśāsana*, no one has reasons to accept them as Pāṇini's works. I have dealt with the authorship of the *Unādisūtra* elsewhere (*Festschrift Prof. P. V. Kane*).

* * * * *

36. See the concluding portion of *Paspaśā*, Vol. I, pp. 13-14, Kielhorn's ed.

VIII. ³⁷The General Scheme of the *Aṣṭādhyāyī*

Chapter I: Samjñās and Paribhāṣās; Anubandhas bearing on mutation of roots; Ekaśeṣa; active and middle verbal terminations; Kāraka; Gatis and Karmapracanīyas.

Chapter II: Compounds; Upapada; Ādeśas of stems; Ādeśas of roots or heteroclitic conjugation; Luk with reference to composition, derivation, etc.

Chapter III: Derivative roots; formation of tense-stems; Kṛts; conjugational Vibhaktis.

Chapter IV—V: Strīpratyayas; Taddhitas; Samāsāntapratyayas.

Chapter VI—VII: Articulative-phonological and morphological processes; word-accent and compound-accent; processes in the Pūrvapada; vocalic changes.

Chapter VIII: Doubling of words; sentence-accent; Samhitā processes; consonantal changes.

IX. *Pāṇini's defects*

A study on Pāṇini would be incomplete if we do not notice here his three main defects.

1. Pāṇini's treatment of the Vedic language is not satisfactory; in no way does it help us to decide in what relation to his grammar does the Samhitā literature exactly stand. He leaves out of account a large number of Vedic words including those occurring in the Ṛk and Sāma Vedas. Probably his indifference to the Vedic language is deliberate, for (as I have shown in my paper 'Kātyāyana' which is in the course of publication in the Poona Orientalist) he writes his grammar only for the Bhāṣā and does not intend it to be a Vedāṅga text.

2. Though he is undoubtedly the greatest Sanskrit grammarian, Pāṇini, strangely enough, uses a few ungrammatical expressions. Patañjali gives the following instances.

तिर्यच्यपवर्गे (P. 3.4.60)

37. For a more detailed account of this see Barend Faddegon, *Studies on Pāṇini's Grammar*, pp. 49 sq.

Patañjali :

अयुक्तोऽयं निर्देशः । तिरश्चीति भवितव्यम् । सौत्रो निर्देशः ।
अव्यानुलोम्ये (P. 3.4.64)

Patañjali :

अयुक्तोऽयं निर्देशः । अनूचीति भवितव्यम् । सौत्रोऽयं निर्देशः ।
प्रोक्ताल्लुक् (P. 4.2.64)

Patañjali :

अयुक्तोऽयं निर्देशः । प्रोक्तादिति भवितव्यम् । सौत्रो निर्देशः ।

In the Vyākaraṇādhikaraṇa³⁸ of the Tantravārtika Kumārila says :

सूत्रे तावत् जनिकर्तुः प्रकृतिः (1-4-30) इत्यत्र हि द्वावपशब्दौ । जनि-
शब्देन हि इक्ष्तिपौ धातुनिर्देश इत्यनेन लक्षणेनान्वितो धातुरेव निर्दिश्यते ।
न च तस्य कर्तुः प्रकृतेरपादानसंज्ञेयते । जायमानस्य पुनरर्थस्य जनिशब्दो वाचक-
तया नैव लक्षणेनानुगतः । तेनायं दरिद्र इवाश्वशब्दो जनिमात्रवाचित्वात् तदर्थ-
प्रत्यसाधुरेव विज्ञायते । तथा तृजकाभ्यां कर्तरि (2-2-15) इति प्रतिषिद्धषष्ठीसमास-
प्रयोगाद्व्याकरणफलपरित्यागः । एवं तत्प्रयोजक (1-7-55) इति प्रतिषिद्ध एव
समासः ॥

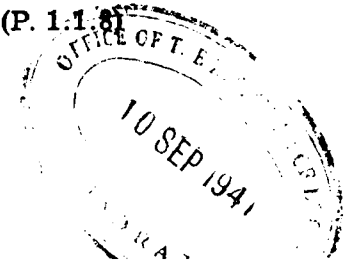
3. Pāṇini's main intention in adopting such various devices as Its, Pratyāhāras, etc., is to secure economy in expression. We have also the Paribhāṣā

अर्धमात्रालाघवं पुत्रोत्सवं मन्यन्ते वैयाकरणाः ।

But the Mahābhāṣya on the following Sūtras says that in their case he has not been able to adhere to this maxim; according to Patañjali, each of these is either partly or wholly superfluous. Here is one instance.

मुखनासिकावचनोऽनुनासिकः । (P. 1.1.8)

38. Adhikaraṇa, 1.3.8.



Patañjali :

मुखग्रहणं शक्यमर्तुम् । केनेदानीमुभयवचनानां भविष्यति । प्रासादवासिन्यायेन । तद्यथा केचित्प्रासादवासिनः । केचिद्भूमिवासिनः । केचिदुभयवासिनः । ये प्रासादवासिनो गृह्यन्ते ते प्रासादवासिग्रहणेन भूमिवासिग्रहणेन च । एवमिहापि केचिन्मुखवचनाः । केचिन्नासिकावचनाः । केचिदुभयवचनाः । तत्र ये मुखवचना गृह्यन्ते ते मुखग्रहणेन । तत्र ये नासिकावचना गृह्यन्ते ते नासिकाग्रहणेन । य उभयवचना गृह्यन्त एव ते मुखग्रहणेन नासिकाग्रहणेन च ॥

See also the Mahābhāṣya on—

P. 1.1.23; 1.1.25; 1.1.44; 1.1.48; 1.1.50; 1.2.45; 1.2.59-60; 1.2.69; 1.2.73; 1.3.72; 1.4.108; 2.1.13; 2.3.30; 2.3.46; 3.1.58; 3.1.71; 3.1.93 3.3.119; 3.4.32; 4.1.22; 4.2.11; 4.2.59 (see 4.2.67-70); 4.2.62; 4.2.96; 4.4.23; 5.1.3; 5.1.16; 5.4.70; 5.4.73; 6.1.2; 6.1.18; 6.1.39; 6.1.70; 6.1.72; 6.4.45; 6.4.127-128; 7.1.10; 7.1.11; 7.1.56; 7.1.62; 7.2.89; 7.2.90; 7.3.31; 7.3.70; 8.1.74; 8.2.6; 8.2.38; 8.2.40; 8.2.46.

It must, however, be noted that in most instances this defect appears to us only when we judge the Aṣṭādhyāyī in accordance with the rules of interpretation laid down by Patañjali. It may not appear in so many cases if Pāṇini is studied independently of Patañjali.

Occasional digressions:—Introduction of a foreign matter into a different context has been mentioned by some scholars as one of Pāṇini's defects. "39He wanders in an intricate maze, and the key of the labyrinth is continually slipping from his hand" says Colebrooke. 40Wackernagel also cannot "see anything in Pāṇini save the dim light of a rational plan and the deep night of historical chance, miserliness in words, love of ease, a breaking down of natural connections, the whole a whirlpool of caprice." But Faddegon points out that all digressions are associative digressions and that they cannot thus be said to be one of Pāṇini's defects. Under the caption "Main principles of Pāṇini's forms of literary composition" this learned scholar says:

39. See Herebert H. Gowen, A History of Indian Literature, p. 151; Vide also Vaidya, History of Sanskrit Literature, section III, p. 122; Macdonell, A Sanskrit Grammar for beginners, Introduction, p. 9.

40. Altindische Grammatik, p. 62.

"The associative digression, which often interferes with the logic of division, can be either due to what precedes or to what follows, or it arises from the wish to link together two logically divided subjects. Sometimes, moreover, a section is not limited to the subject expected by the reader according to the context, but at the same time deals with subjects which in the author's mind are coherent with it.

As an example of preceding digression may be mentioned sū. 2.1.2. for whilst adhy. 2 pā. 1 and 2 treat in general of the compound, the sūtra mentioned gives the rule that a noun-case dependent on a following vocative is considered with reference to accent to be as it were one word with this vocative.

As an example of following digression may be quoted 8.4.57, where unexpectedly a rule is given for final vowel in a context dealing with final consonants, mainly because of the anuvṛtti of vāvasāne which thus could be used.

The instances of concatenative digression are very numerous; see for instance passage 4.1.77-81, which forms part both of the section on denominative noun-derivation.

As an example of too wide discussion may be quoted 1, 3, 2-9, for, whilst the introductory sū. 1, 3, 1 dhātavaḥ and the total discussion of 1,3,12-fin, show that the main subject of the pāda is the verb and its active and middle voice, yet the sūtras 2-9 do not only give rules for the anubandhas of the Dhātupāṭha, but treat the anubandhas in general."



THE SPERMATOGENESIS OF CHILOSCYLLIUM GRISEUM (MÜLLER & HENLE).

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(COMMUNICATED BY PROF. R. GOPALA AIYAR)

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INTRODUCTION

On reviewing the prevalent literature on Elasmobranch fishes, it is observed that no work has yet been done on the spermatogenesis of any of the forms so common in our Indian seas. A few of the French workers have contributed to the study of Elasmobranch sex cells, among the foremost of whom may be mentioned Ant de Martino (1846, 1848), Lallemand (1841), Sabatier (1882, 1895, 1896), Stephan (1902, 1903) and others. The German scientists, among whom may be mentioned Ballowitz (1890), Hermann, F (1897, 1898), Hermann, G. (1882), Rawitz (1899), Retzius (1902, 1909), Suzuki (1899) and others have greatly added to our knowledge of spermatogenesis in Elasmobranchs. Much work has also been done by such English scientists as Moore (1895) and others. There seems to be a void in the literature of this subject when we begin to realise that allied forms existing in our Indian waters have been so profoundly neglected and this has been one of the main reasons for my taking up this subject for investigation.

MATERIAL AND TECHNIQUE

The genus *Chiloscyllium* includes four species of which the species *griseum* occurs largely on the Madras Coast. It is characterized by its greyish brown colour with transverse bands of white spots. This colouration however varies with age, the bands disappearing in older specimens. Though the species occurs in large numbers on the Madras Coast, collections made periodically between the months of October 1938 and December 1939 showed only three specimens out of the forty obtained, to be sexually mature.

Due to the immense numbers of forms obtainable of the species, I proposed to make a thorough study of the nuclear and cytoplasmic contents of the different generations of germ cells occurring in the spermatogenetic cycle of the Elasmobranch. Considerable difficulty has been previously experienced by numerous workers regarding the study of the chromosomes of Elasmobranch fishes, as the chromosomes of these forms always exhibit the tendency to a close approximation with each other on fixation by any of the ordinary known fixatives. I must admit that the chromosomes of *Chiloscyllium griseum* did give me much trouble in the

initial stages of my attempts, and though repeated attempts were made at procuring good preparations of the nuclear contents of the sex cells, it seemed at first that they were destined to be futile. All the various nuclear fixatives such as Corrosive-sublimate-acetic, Carnoy, 50% Formic, Schaudin, Bouin and its modification by Ezra Allen, Rabl's picro-sublimate and the like were commonly employed for the fixation of the nuclear elements. Ultimately Sansom's modification of Carnoy proved to be the most suitable for the study of the chromosomes. The addition of 2% Urea to Bouin was seen to give very sharp pictures of the chromosomes and incidentally it aided in the minute study of the distinctive stages undergone by the chromatin in its course through the spermatogenetic cycle. Ezra Allen's Chromic-bouin and Urea was also found to be remarkably helpful in the study of the chromosomes as also in the study of the centrosome. The centrosome was mainly studied under the action of Flemming with acetic and this afforded very good results.

Examination of the cytoplasmic components mainly depended upon preparations made after fixation in the following fluids:—Zenker without acetic, Regaud, Champy, Flemming without acetic, Schridde, MannKopsch, Ludford, Nassanow and Da Fano. Mitochondria was easily detected after fixation in the above fluids, especially in Schridde's, and Golgi bodies were particularly prominent in preparations made by the methods of MannKopsch, Ludford, Nassanow and Da Fano. Immersion in turpentine, after the osmication methods, showed the distinction between the Golgi apparatus on the one hand and mitochondria on the other, for the blackening from the former was extracted less rapidly than from the latter by turpentine. Fat was studied under the action of formaline while fresh material soaked in saturated solution of Sudan III in alcohol for eighteen hours distinctly depicted its presence between the cysts.

Paraffin method of embedding was employed in all cases and sections were cut ranging from three to ten microns in thickness. The thinner sections were found to be more useful for the study of the cytoplasmic elements while for an accurate counting of the chromosomes, Agar's method of mounting thicker sections between two coverslips was employed with success.

Iron haematoxylin was exclusively used after all nuclear fixatives, eosin being sometimes used as a counterstain. Very rarely sections were stained in Delafield's and Ehrlich's haematoxylin and

Mann's methyl-blue-eosin. For the detection of mitochondria Altmann's acid-fuchsin was employed as the stain after fixation in MannKopsch, in which case the mitochondria appeared red while the Golgi remained black.

Smears proved very helpful for the study of mature sperms as sections hardly ever revealed isolated sperms distinctly, the sperms, by the time they attained maturity, being found clumped together in bundles and attached to sertoli cells bordering the testis tubules.

Intra-vitam staining was attempted to check the results obtained after treatment with the above-mentioned fixatives and found to be extremely helpful.

STRUCTURE OF THE TESTIS

The testes of forty individuals were examined and it was observed that the fish reached a minimum length of 45 cm. before it attained sexual maturity. It was therefore not possible for me to study the different stages of development of the sex cells by examining any one fish only, but a careful and systematic study of the testes of individuals of all sizes had to be made. To outward appearance the testes are in the form of two compact, elongated bodies, narrow at the anterior end and broader posteriorly, situated at the hinder end of the abdominal cavity and attached to the dorsal body wall by the mesorchia, while they are free ventrally. In the youngest form examined, which measured 27 cm. in length and 4 cm. in width, the gonads present a very undeveloped condition. In a transverse section of the same it is observed that the germinal epithelium (Ph. M. 1) consists of a row of cubical cells which are tightly packed against each other. Under this epithelium there is a very thin layer of fibrous tissue which, in older specimens, occupies a broad region at the periphery. This fibrous tissue encloses a dense mass of cells within, and it is in this region that the different generations of sex cells are later differentiated. These centrally located cells are evidently derived from the germinal epithelium and may be distinguished into two types, one in which the cells are small and polymorphically nucleated and the other in which they are comparatively large and spherically nucleated. The germinal epithelium frequently presents stages of amitotic division and this fact suggests that the germinal epithelial cells probably multiply by this method of division. Besides this

activity on the part of the germinal epithelium it exhibits constant modification of certain of its cells into particularly large cells which get transported wholly into the central region of the testis so that clear empty spaces are visible in certain regions of the germinal epithelium in between the existing cells (Ph. M. 1). In addition to this a certain number of cells produced as a result of amitosis in the germinal epithelium migrates towards the centre before passing through the preliminary stage of enlargement like those that have been just described. The passage of these two kinds of cells, the large and the small, towards the central region of the testis has been clearly observed (Ph. M. 1) and it is only reasonable to suppose that this passage of cells from the periphery of the gonad to its interior through the fibrous layer involves a change of shape in the nuclei so that by the time the cells reach the interior their nuclei have become polymorphic in appearance. When they are within this central region they present various shapes, some being lobed, crescentic, reniform or U-shaped, others spindle-shaped and still others elongated in form. In fact there is a marked polymorphism in the nuclei of the cells present in the immature gonad. There now ensues a gradual differentiation of these variously shaped cells so that we now come to a stage where, as a result of transformation we get the initial generation of sex cells constituted. This takes place in two different ways. Some of the cells that did not undergo a precocious enlargement prior to the migration through the fibrous layer now enlarge and their nuclei become spherical and thus convert themselves into primary spermatogonia, while a great majority remain small, retain their polymorphic nuclei and give rise to a set of cells which is destined to perform totally diverse functions within the testis. Many of them get transformed into follicle and interstitial cells while others contribute to the formation of the cells of sertoli all of which subserve a mechanical function. While this is so, those cells that had migrated to the interior only after previous enlargement within the germinal epithelium, now get directly converted into primary spermatogonia. When we examine the testis at this stage a wide range of difference is seen to exist between the frequency of occurrence of those cells with polymorphic nuclei and those with spherical nuclei, the former being found to largely preponderate over the latter. The chromatic nature of the nuclei of these cells varies according to whether they are irregular or spherical, the former consistently staining much darker with chromatic dyes than the latter. The polymorphic nuclei usually

present within themselves large blocks of chromatin (Fig. 1), while the more spherical nuclei present a distinct nucleolus in the centre with strands of chromatin at their periphery (Fig. 2). When we consider the size of these two different types of cells—that with polymorphic nuclei and that with rounded nuclei—we observe that there is always a marked difference between the two, the former being always very much smaller than the latter. The testes of very young forms examined showed the very great preponderance in numbers of those cells with polymorphic nuclei over those with spherical nuclei though it was observed that a minor portion atleast of the less frequently occurring spherically nucleated cells are the later transformation products of the existing numerous polymorphically nucleated cells, this transformation proceeding very slowly.

In this connection I may briefly mention the formation of cysts or follicles in the testis of *Chiloscyllium*. Soon after the differentiation of the two types of cells in the testis some of the polymorphically nucleated cells destined to become follicle cells approach a fully developed spherically nucleated cell, become spindle-shaped or elongated, and ultimately surround it enveloping the cell in a clear circular space (Ph. M. 2). This is the initial stage of formation of cysts in the young gonad, and these, as growth advances, develop into the large cysts to be described later. The spherically nucleated cell, as it lies perfectly protected within the encasement of follicle cells, is nurtured and nourished by the latter so that when it has reached its maximum growth begins to divide and give rise to fresh cells. Meanwhile an interesting phenomenon may be observed in certain cysts. Some of the follicle cells of certain cysts, originally intended to serve a protective and nutrient function, become active, grow profusely, attain a spherical form and ultimately slip into the lumen of the cyst and there develop further. These cells enclosed within the follicle cells are the earliest generations of primary spermatogonia.

In an older testis due to the increase of cells within, the germinal epithelium gets stretched to such an extent that the component cells which in a younger testis were cubical in shape now appear elongated. Beneath this germinal epithelium the fibrous layer with its elongated, spindle-shaped nuclei so characteristic of connective tissue cells, lies. With the formation of cysts within the testis, the cells which originally filled the testis and did not take any share in the formation of the

cysts, get shifted to the periphery and occupy the region just below the fibrous layer. Both the fibrous layer and the layer of cells below it together constitute the stroma of the testis. The cells of the stroma exhibit the presence of two kinds of inclusions one of which is spherical while the other is elongated (Ph. M. 3). They occupy the cytoplasm of the cells, the latter type of inclusion usually crowding together at one pole of the nucleus, while the former appears scattered. Both the forms never occur together in the same cell. These inclusions disappear before the cells lose their indifferent nature and take on the character of special types of cells. They also occur in cells of very young testes where differentiation into cysts has not yet commenced as well as in the germinal epithelium, and make their appearance even in material fixed with such strong nuclear fixatives as Carnoy, Bouin and Corrosive-sublimate-acetic. I am unable to decide on the exact nature of these inclusions.

The stroma occupies a broad peripheral region of the testis while it is fairly young, but as it grows older some of its cells stream into the interior of the testis and contribute to the formation of new cysts; some of the cells transform themselves into sex cells while others elongate, their nuclei becoming spindle-shaped and contribute to the formation of follicle cells which surround the sex cells and form a complete envelope to them, while still others transform themselves into fairly large interstitial cells which remain outside and between the cysts. Cells of the fibrous layer also stream in with the above mentioned cells and form a thin layer around individual cysts. The streaming in of the stromal cells takes place from the postero-ventral border of the testis (Ph. M. 4) and it is in this region that most of the younger cysts are found, while at the antero-dorsal border the cysts are always found to be mature. A regular displacement of cysts from the postero-ventral region in the antero-dorsal direction takes place continuously as the cysts get mature and in this process the cysts undergo a rotating motion with the result that the tails of sperms present within the cysts exhibit a spiral arrangement among themselves. By the time the mature cysts have arrived at the antero-dorsal end of the testis the sperms are fully mature and now a collapse of the cysts takes place and the sperms are carried to the adjoining ducts present in this region. With the collapse of the cysts the follicle cells and the supporting or sertoli cells aggregate together and form a conspicuous tissue

of large cells in this region (Ph. M. 5). This is especially abundant in old testes. With the streaming in of the stromal cells from the postero-ventral border and the consequent thinning out of the stroma in this region, the cells forming the tissue in the antero-dorsal region of the testis replace this loss by transforming themselves into stromal cells and then shifting down to the postero-ventral border of the testis. They thus return to the function of serving as follicle or sertoli cells once again, and though the possibility of their functioning also as germ cells suggests itself I cannot at present give direct evidence to prove that such a process does take place.

On examining a fresh testis which is fairly developed, the individual cysts may easily be separated by means of a needle. The mature cysts may be readily distinguished from the immature ones, as the former are white in appearance while the latter are yellow, the intermediate ones grading from yellow to white. The occurrence of fat in the intervening spaces among the cysts along with groups of interstitial cells may here be mentioned. When sections of interstitial cells are examined, fat in the form of droplets is seen in the cytoplasm and it therefore stands to reason that the fat present in between the cysts in the testis, is formed as a secretion of the interstitial cells of the testis. The presence of blood vessels in the testis may also be mentioned, a greater number of them traversing the region of the stroma which therefore is very well vascularised (Ph. M. 4).

THE PRIMARY SPERMATOGONIA

I have thus far described the occurrence of two kinds of cells in the immature gonad, one with polymorphic nuclei and the other with spherical nuclei, and have also shown the former as being partly the source of the latter. Those with polymorphic nuclei I describe as indifferent cells some of which later, as a result of transformation, give rise to primary spermatogonia while others give rise to various other kinds of cells. The spherically nucleated cells, as already described, develop into primary spermatogonia by a gradual enlargement in their dimensions and the development of the coarse reticulum so characteristic of primary spermatogonia.

The primary spermatogonia (Fig 3) on account of their large size and weakly-staining character stand out in distinct contrast to the surrounding elements. The nucleus is almost always excen-

trically placed. The nuclear membrane in all cases is distinct and takes the plasma stains deeply. Within the nucleus is present a distinct nucleolus situated more towards the periphery than the centre, it being held in place by a number of chromatin threads which cross each other at irregular intervals. These threads are made up of a number of deeply-staining chromatin granules embedded in linin, the whole threadwork lying in a thin sap within the nucleus. The nucleolus is of the nature of a plasmosome. The centrosome is a single, small, homogeneous structure, unlike what has been described by Moore (1895) in other Elasmobranchs where the presence of a double centrosome or diplosome has been depicted and its position within the cell is constant being invariably situated close to the nuclear membrane. The centrosome is represented only by a centriole, the astral rays in this case being indistinct. The action of different fixatives does not seem to affect the appearance of the centrosome though Champy (1913) seems to emphasize the fact that the variety of form presented by the centrosome is the result of the action of different kinds of fixatives, mentioning that the astral rays are unreal making their appearance only on the employment of such fixatives as Flemming or Bouin and so on and disappearing in material fixed in Benda or trichloroacetic-formol etc. While I can neither corroborate nor contradict his statement, I should wish to say that these radiations or astral rays have never been observed to be present in any of my preparations, however varied the fixatives employed have been.

In *Chiloscyllium*, the mitochondria in the initial stages lie in the form of a crescentic cap closely apposed to the nuclear membrane at one of the poles of the nucleus (Fig. 4). This mitochondrial cap presents a finely granular appearance and conceals the granular centrosome within its interior. As development proceeds the cap disintegrates with the result that a gradual extension of the elements to all parts of the cytoplasm occurs (Figs. 5 & 6). A fairly uniform distribution of mitochondria is therefore established in a well developed primary spermatogonial cell and thereby the chances of an approximate distribution of these elements to the daughter cells during the ensuing process of division, well ensured. The mitochondria are well preserved in Schridde's fluid as also in Zenker's without acetic and Regaud's, and take a deep stain with iron-alum-haematoxylin.

The Golgi elements consist of deeply stained rings or crescents lying in close proximity with the mitochondrial cap and almost

completely investing it. As the cell progresses in growth the Golgi bodies gradually desert the vicinity of the mitochondrial cap and migrate out into the clearer cytoplasmic area presenting a scattered appearance (Figs. 7 & 8). This scattered condition of the Golgi bodies is very common and marks the later stages of spermatogonial activity.

Oguma and Kakino (1932) in their "Revised check-list of chromosome numbers in vertebrata," have recorded the numbers only in a very few Elasmobranchs. It was my intention therefore to study the number and nature of the chromosomes in *Chiloscyllium griseum*, and thereby add to the existing knowledge of chromosomes in the group. The chromosomes of *Chiloscyllium*, as in other Elasmobranchs do not lend themselves to easy observation, when prepared by the ordinary methods of fixation. As mentioned already in a previous section, all the ordinary fixatives were tried for the fixation of chromosomes but the best fitted for use were found to be Bouin's fluid with the addition of Urea, Corrosive-sublimite-acetic and Sansom's modification of Carnoy, the last being found to be exceedingly useful for chromosome counts. The earlier stages of chromosomes however were better studied under the action of Bouin and Corrosive-sublimite-acetic.

With the assumption of the spherical form by the polymorphic nucleus of the indifferent cell, the irregular blocks of chromatin present within its interior transform themselves into elongated threads, one or more blocks contributing to the formation of each thread. At this stage the presence of a nucleolus is unobserved within the nucleus of any of these cells (Fig. 9), but with their encasement within the follicle cells the chromatin threads become much finer and there appears to view a distinct, deeply-staining, large nucleolus (Fig. 10). This nucleolus however soon fragments and disappears and the nucleus is now observed to be crowded with a number of granules arranged along a thin linin reticulum. Condensation of this structure takes place immediately after and with the segmentation of the same the chromosomes are constituted (Fig. 11). Concomitant with these changes the centrosome divides and the products of division separating from one another quickly travel to the two opposite poles of the nucleus.

As soon as this cytoplasmic condition has been established the cell plunges into the metaphase stage (Fig. 12). This phase wherein the chromosomes assume the form of short bent rods and lie

on the equatorial plane of the spindle is a very transitory one for I have experienced great difficulty in tracing such stages in my preparations, though the closely following anaphase stage (Fig. 13) occurs in fair abundance as also the telophase (Fig. 14). The chromosomes, very extraordinarily, preserve their distinct identity in the late anaphase stage, but due to the crowding of the same at the two poles it was impossible for me to determine their exact number, though I can say with certainty that my chromosome counts vary between the numbers twenty four and twenty six. Within the telophase the chromosomes are still more or less distinct, though at the close of this stage, they fuse to form a chromosomal ring in each daughter nucleus (Fig. 15). Very soon the daughter nuclei are constituted. The Golgi bodies which in the prophase of division were observed to exist as scattered rings and crescents, occur in the anaphase stage at the two poles of the spindle while the mitochondrial granules, lacking this polar orientation, surround the spindle in the form of a loose mantle (Fig. 16). Within the telophase they are distributed almost equally to the two daughter cells.

THE SECONDARY SPERMATOGONIA.

These cells are smaller than the primary spermatogonia and their nuclei are always rounded or oval. The nucleus consists of large blocks of chromatin connected by coarse threads all of which stain deeply. Within the cytoplasm are observed the single, granular centrosome, crescentic and ring-like Golgi bodies, and granular mitochondria, the Golgi bodies loosely investing the centrosome while the granular mitochondria lie evenly distributed in the cytoplasm (Figs. 17 & 18). With the onset of the prophase, the spireme takes its origin from the large chromatic blocks already described, a process similar to what occurred in the primary spermatogonia, and synchronous with these changes the granular centrosome which so far was observed to occupy one of the poles of the cell, divides into two, and the products of division travelling apart from each other constitute a fine spindle between them. The immediate formation of the chromosome is now observed and the cell enters into the metaphase of division. The chromosomes at this stage are not very distinct though in the succeeding anaphase they are observed to be arranged in the form of a ring not unlike those present on the anaphase spindles of the primary spermatogonia, except for the fact, that, in this case, the chromosomes are

considerably smaller in size and more crowded together. This ring-like arrangement of the chromosomes is clearly evident in cross sections of the anaphase stages, the central spindle fibres here also, as in the primary spermatogonial spindles, being of the nature of mantle fibres only. With the close of the telophase stage the daughter nuclei are constituted.

As these nuclear changes are in progress the Golgi bodies which in the initial stages were concentrated at the centrosomal pole get dispersed throughout the cell, and the mitochondria which, however, from the earliest stages of their existence in the secondary spermatogonial cells, did not show this concentration so characteristic of the Golgi elements, and occurred uniformly distributed throughout the cell, with the initiation of the anaphase stage get approximately distributed to the resulting daughter cells in division. These division products of the secondary spermatogonial cell give rise to the next generation of germ cells—the primary spermatocytes.

THE PRIMARY SPERMATOCYTE.

Before the growth of the primary spermatocyte is initiated the cell undergoes a period of rest, during which the chromatin within the nucleus appears in the form of a very coarse network. At this stage the cells are arranged along the walls of the cyst in rows of two or three forming a compact mass, but when the nuclear changes are initiated a re-arrangement of the cells takes place with the result that a space originates in the centre of the cyst (Ph. M. 6). The metamorphosis of this resting nucleus into the active condition is marked by the dissolution of the chromatin blocks with the consequent evolution of a fine reticulum which holds within its meshes a distinct large nucleolus. Soon however, a secondary nucleolus makes its appearance, and the presence of two distinct nucleoli is observed to be very characteristic of spermatocytes at this stage of development (Fig. 19 & Ph. M. 7). The centrosome is very distinct at this stage. In a short time the chromatic threadwork gets coarser and thicker, at the same time exhibiting a tendency to contract towards one side of the nucleus, leaving a clear space at the opposite side (Fig. 20). This space is perfectly clear except for a few linin filaments which extend across it, and this contraction of the nuclear contents to one side seems to be characteristic of this particular stage of spermatocytic growth.

With the first indication of approaching mitosis the dense reticulum gradually resolves into a number of principal threads, and

this condition of the nucleus gradually merges into the leptotene stage in which all the chromatic material takes the form of very long thin threads which build a complicated pattern within the nucleus (Fig. 21). The secondary nucleolus has made its disappearance meanwhile. The disappearance of the secondary nucleolus at this stage of the primary spermatocyte prophase, is a phenomenon which, so far as I am aware, is not recorded in other Elasmobranchs. Moore (1895) records the persistent occurrence of both the primary and secondary nucleoli throughout both the generations of the secondary spermatogenetic period, in his account of "The structural changes in the reproductive cells during the spermatogenesis of Elasmobranchs." In *Chiloscyllium* however, the presence of the secondary nucleolus from this stage onwards is unknown; only the primary nucleolus persists through the stage, until in a slightly later stage it also makes its complete disappearance. The leptotene threads soon become arranged in a parallel manner and thereby merge into the zygotene stage, wherein a gradual side-by-side fusion between pairs of leptotene threads is effected (Fig. 22). At times the nucleus of the zygotene stage shows the free ends of the conjugating pairs of leptotene filaments, embedded in the primary nucleolus (Fig. 22). In such cases the fusion is clearly observed to commence from the nucleolar ends of the zygotene pairs and proceed towards the free outer ends of the same. The result of this parallel fusion of the leptotene threads in the zygotene stage is the production of the pachytene threads (Fig. 23 & Ph. M. 8). These pachytene threads are much thicker than the leptotene threads evidently due to their bivalent character and are remarkable in that they present a moniliform appearance. This particular stage of prophase is of much longer duration than the rest, for whole cysts of cells may be very frequently observed to be in this condition of activity. Another characteristic of this stage is the complete loss of orientation of the threads, which so far have been observed to lie directed towards the nucleolus situated on the periphery of the nuclear wall. This haphazard disposition of the pachytene threads is, therefore, evidently due to the sudden disappearance of the nucleolus, the function of which is obviously to initiate the side-by-side fusion of the leptotene threads, and also to serve as a starting point wherefrom this parallel fusion of the leptotene threads could conveniently commence. Immediately following the pachytene stage is the diplotene stage in which the temporary conjugation between the components of the pachytene threads is severed except at their extreme ends

(Fig. 24). The parallel threads thus reformed next undergo a process of very pronounced synizesis, the threads getting clumped together at one side of the nucleus (Ph. M. 9). Due to this onset of synizesis the diplotene stage does not present very clear pictures of its activity. It appears that the separation of the conjugants along their lengths takes place so very quickly that the pachytene threads are as though abruptly transformed into elongated rings. These rings assume a peripheral position for a long period of time leaving the centre of the nuclear space empty. This condition of a peripheral distribution of the chromosomes prior to the dissolution of the nuclear wall, is a phenomenon which occurs widely in spermatogenesis. A remarkable change now occurs and the chromatic loops undergo great contraction along with which the formation of the spindle is observed.

The cytoplasmic elements of the primary spermatocyte may now be considered before a study of the later stages of division is made. The Golgi bodies in the primary spermatocyte occur as a crescentic mass closely applied to the nuclear wall (Fig. 25 & Ph. M. 10) while the mitochondria appear as fairly large granules scattered all over in the cytoplasm, and showing a greater concentration in the region of the Golgi mass (Fig. 25). The centrosome also lies in close proximity with this region.

With the onset of metaphasic activity, the Golgi bodies spread haphazardly over the whole of the cytoplasmic area as do the mitochondria, though the accumulation of the Golgi bodies in the vicinity of the mitotic poles very soon becomes broadly apparent. With the onset of the anaphase and the completion of the succeeding telophase the two cytoplasmic constituents are approximately distributed to the two daughter cells (Fig. 26).

The metaphase stage of the primary spermatocyte is, like that of the spermatogonium, a very transitory one, though occasionally such a stage wherein the tetrads lie on the equatorial plane may be discovered. However, the chromosomes at this stage lie too crowded together to afford easy observation of their form and number. The onset of anaphase heralds the division of the tetrads into their component dyads which are thirteen in number, and as these dyads pass to the two poles they are observed, in cross section, to lie at the periphery of the spindle, the central region of the spindle being free from chromosomes. We thus get a ringlike arrangement of chromosomes in the early anaphase of the primary spermatocyte as well (Fig. 27 & Ph. M. 11). Within the telophase

the chromosomes get massed together, and with a vacuolation of this chromatic mass the formation of the daughter cell commences.

THE SECONDARY SPERMATOCYTE

The secondary spermatocytes are arranged within the cysts so as to present an appearance such as is shown in Ph. M. 12. The cells lie within the cavity of the cyst arranged closely together in 5 or 6 tiers towards the periphery, so that a distinct circular space is left within the interior of the cyst.

The nucleus of the secondary spermatocyte is characterized by a coarse network and from this network is constituted a number of separate filaments which show a peripheral distribution within the nucleus. With the formation of the chromosomes the nuclear membrane disappears, following which the spindle is constituted. As in the metaphase stages of the previous generations, the chromosomes are not distinguishable in the corresponding stage of the secondary spermatocyte. During the early anaphase however, when the dyads are separating into their constituent monads the number of chromosomes may be distinguished as 13 and again the ringlike arrangement of the chromosomes may be observed (Ph. M. 13). Soon after the telophase the contents fuse, before a branching of the same takes place to give rise to the network characteristic of the early spermatid.

The distribution of the cytoplasmic constituents follows the same course as that in the primary spermatocytes, the Golgi and the mitochondria getting distributed to the two daughter nuclei in almost equal amounts (Fig. 28).

THE SPERMATID

With the close of the telophasic activity of the secondary spermatocyte, the spermatid is constituted. It has an almost spherical nucleus with a chromatic network within, and enclosing a minute, faintly-staining nucleolus. At one pole of the spermatid may be observed the centrosome (Fig. 29).

The Golgi elements occur as a darkly-staining mass closely apposed to the nuclear wall though the individual bodies may occasionally be clearly distinguished, while the granular mitochondria occur loosely scattered in the cytoplasm. Whole cysts of spermatids at this stage of development may be seen on a cursory examination of a fairly ripe testis, situated more towards the antero-dorsal region of the testis. The occurrence of large num-

bers of cysts of such spermatids leads me to believe that a fairly long period of time elapses before the transformation of the spermatid into the spermatozoon commences.

THE TRANSFORMATION OF THE SPERMATID INTO THE SPERMATOZOON

With the initiation of the period of transformation of the spermatid into the spermatozoon, the chromatin network observed within the nucleus of the spermatid disintegrates and ultimately forms a number of large and small masses of chromatin, which arrange themselves in a most irregular fashion. They however, soon fuse with each other giving the nucleus a homogeneous, deeply-staining appearance. The nuclear wall at this stage is not distinct but in the ensuing one it becomes very prominent for a marked contraction of the nuclear contents takes place at this time. However, the contraction does not take place uniformly, for at that pole of the spermatid which is destined to become the anterior end of the sperm, the chromatin remains in connection with the nuclear wall and shows a lesser affinity for the stain while the rest of the chromatin exhibits a deeply-staining character. The chromatin within the nucleus soon assumes the shape of a flask, the mouth of which abuts against the nuclear membrane, while the sides of the neck are occupied by two great empty spaces or vacuoles (Fig. 30 & Ph. M. 14).

By this time the centrosome which was originally placed near the Golgi mass at one pole of the spermatid gradually travels round the nucleus and finally stations itself close against that portion of the nuclear wall which is destined to become its posterior end. This position of the centrosome is very distinct in preparations made after nuclear fixatives like Bouin and Corrosive-sublimat-acetic and stained by Iron haematoxylin. Immediately after this stage a very peculiar phenomenon occurs—the phenomenon of the cataclysmic disruption of the centrosome, entailing the abnormal formation of the axial filament in between the two products of centrosomal division. In this process the single centrosome observed at the posterior end of the spermatid nucleus abruptly fragments into two halves of which one—that destined to become the distal centrosome of the adult sperm travels so rapidly from the other and with such blinding force that when it meets the cell wall after its outward passage through the cytoplasm, bursts through the boundary and passes beyond, being however still connected

with its distinctive cell by means of the axial filament that has meanwhile been formed in an equally rapid manner and exists stretched in between the two centrosomal products, these products being henceforth designated as the proximal and distal centrosomes. This sudden bursting forth as it were of the axial filament from the centrosome, and the existence of the distal centrosome outside the boundary of the spermatid, strung to it however by means of the slender axial filament, are very unique in their character; in fact appear momentous when we consider the incipient formation of flagella in the spermatocytes of such Elasmobranchs as *Scyllium*, *Pristiurus*, *Torpedo* and *Raja* studied by Moore in 1895. Such incipient formation of flagella has not been observed in *Chiloscyllium*, though the precocious and extraordinarily hurried development of the axial filament in the spermatid approximates to a certain degree the condition described in the spermatocytes of the Elasmobranchs studied by Moore (1895). The distal centrosome in its rapid transport through the cytoplasm of the spermatid transforms itself quickly into a funnel-shaped structure, so that with the abrupt formation of the axial filament we also observe the simultaneous development of the funnel-like structure of the distal centrosome (Ph. M. 15). This phenomenal disruption of the centrosome and the consequent evolution of the axial filament, though a remarkable process, is of so momentary a nature that it was impossible for me to trace the intermediate stages of migration of the distal centrosome through the cytoplasm and beyond it. The earliest stage that I could distinguish in this process of tail-formation on the part of the spermatid, is shown in Fig. 30 and Ph. M. 15.

During the differentiation of the above mentioned structures the nucleus, which in its initial stages of transformation had moulded its chromatin within into the form of a flask, changes its shape and becomes pyriform, its narrower region destined to become the anterior end of the spermatid (Fig. 31 & Ph. M. 16). A little later it becomes pistol-shaped (Fig. 32) and with still further elongation assumes the shape of an elongated f. Further changes in the shape of the nucleus will be described later.

While the above nuclear changes are in progress the Golgi bodies of the spermatid fuse together in such a manner that an almost homogeneous mass of Golgi substance is obtained which may now be designated as the acroblast. This structure always occupies that pole of the spermatid which is destined to become the anterior end of the sperm and is diametrically opposed to that

region of the cell where the centrosome has settled down. The acroblast very soon elaborates within its substance a single small vesicle, which however, soon enlarges and becomes prominent (Fig. 33 & Ph. M. 17). When it reaches its maximum dimensions it is gradually pushed out of the acroblast and deposited close against the nuclear wall, the acroblast still maintaining its connection with the vesicle for a longer or shorter time. Soon it is filled with a dense substance so that the transparent appearance of the vesicle is lost, and when this change of appearance is effected the acroblast which up to now has been observed clinging to the wall of the vesicle like a lump, gradually separates itself and proceeds in a posterior direction to be later expelled from the substance of the spermatid. The vesicle together with the dense substance that it encloses comes to be known as the acrosome. This structure presently assumes a conical appearance (Figs. 34 & 35) and persists through the later stages of sperm formation as a thin short apical filament (Fig. 36), until in the metamorphosed spermatozoon it presents the appearance of a spirally twisted filament as depicted in Fig. 37.

Thus far the shallow, funnel-shaped distal centrosome has remained inactive, but with the elongation of the transforming spermatid the border of the funnel gets thickened until it presents the appearance of a ring (Fig. 35). I do not believe that this thickened rim of the funnel ever gets separated from the axial filament, but I do believe that it only persists as a thickened border while the axial filament proper continues its growth backwards and contributes towards the formation of the tail (Fig. 35).

A general flowing of the cytoplasm towards the posterior pole of the cell meanwhile occurs, and with this process the spermatid completes the formation of the middle piece towards which the mitochondria very largely contribute. The mitochondria which exist in the form of small granules scattered within the cytoplasm, travel towards the hinder end of the nucleus and there arrange themselves at the sides of the axial filament forming a sort of sheath. When these mitochondrial granules have attained this position they fuse with each other in such a manner that this region of the sperm presents a homogeneous appearance (Fig. 35). This region of the sperm with the axial filament enveloped by the mitochondrial sheath limited at its either ends by the proximal and distal centrosomes, and surrounded by a very delicate protoplasmic sheath, is designated as the middle piece of the sperm.

As these changes are in progress the nucleus is in a continuous stage of elongation during which process it assumes very curious shapes, the nuclear wall getting progressively separated from the chromatin within until finally it forms a sort of loose jacket on the outside.

Concomitant with the elongation of the nucleus and close upon the development of the middle piece and the formation of the ring-like border to the distal centrosome, the tail of the spermatozoon begins to be moulded. The cytoplasm, as has already been mentioned, having begun its retreat from the anterior pole of the cell travels towards the posterior limit, and on its way encloses a part of the axial filament that projects beyond the middle piece forming a sort of mantle. This region of the sperm consisting of the axial filament with only the enveloping cytoplasmic mantle constitutes the main piece of the adult spermatozoon (Fig. 36), while the naked distal part of the axial filament becomes its end piece.

The nucleus elongates considerably, the anterior portion being thin and tapering while the posterior region is comparatively thick, and stains a deeper blue with haematoxylin. The proximal centrosome at this stage, and possibly a little earlier, loses its distinct identity probably due to its very close apposition to the posterior end of the nucleus. The chromatin within the nucleus soon stains a homogeneous colour and directly after, the nucleus presents a wave-like appearance (Fig. 36).

During the earlier stages of transformation of the spermatids they were arranged in a most haphazard manner, but with the elongation of their nuclei they exhibit a tendency to be placed with their anterior extremities directed towards the cyst wall. However, with the assumption of the wave-like form by the elongated nuclei they get directed towards the periphery of the cysts, and also show a tendency to clump together in groups (Ph. M. 18). With the assumption of the wave-like form by the nuclei the spermatids may be said to have reached the culmination of their period of transformation, and we may now safely designate them mature sperms. By this time the cysts have enlarged considerably the basement layer of the cysts being reduced to a very fine limiting membrane lined here and there by comparatively large cells which may be called the sertoli cells. The nuclei of these sertoli cells are relatively poor in chromatin, and usually possess a single large nucleolus which stains intensely. These sertoli cells, at this stage of sperm development, become extra-

ordinarily prominent and project inwardly into the cyst, so that clumps of sperms presently get affixed to these cells by their anterior ends. The wave-like appearance of the nuclear heads soon changes to a spiral, the immediate result of which is the deeper penetration of the sperm heads into the protoplasm of the sertoli cell. The middle piece and acrosome also exhibit this feature of spiral winding (Fig. 37), and in this observation I agree with Hermann (1897) who describes a spiral winding of the middle piece and disagree with Rawitz (1899) who asserts that this appearance of the middle piece, as described by Hermann, is a mere optical illusion. That the object of the spiral winding of the nuclear heads is to effect the deeper penetration of the sperms into the supporting cells is obvious, and as such I do not see why the middle piece and the acrosome which are just as, if not more, important parts of the sperm as the nuclear head, should not contribute towards bringing this object into effect.

The clumps of sperms attached to the sertoli cells soon get compacted to form barrel-shaped structures, and with this the identity of each individual sperm is lost. At this time or a little later the sudden appearance of very curious, elongated, homogeneous bodies is observed (Ph. M. 18). On a cursory examination they are seen to lie at the sides of the sperm bundles more closely approximated to the sides of the nuclear heads. Careful observation however reveals the fact that these bodies escape from within the space enclosed by the nuclear regions of the maturing sperms making their exit by pushing their way through the interspaces of the nuclear heads. From their appearance they occur to me to be the remains of cell substance enclosed between the nuclear heads which while getting compacted into bundles mould this substance within into the elongated body that I have mentioned and ultimately extrudes it to the region between the sperm bundles. The occurrence of these elongated, homogeneous bodies has been mentioned by Rawitz (1899) in his description of the germ cells of *Scyllium* but he does not explain either its origin or significance.

With the extrusion of this strange body there is observed a curious bulging out of those regions of the sperm bundles which are occupied by the anterior portions of the middle pieces, though I cannot account for this strange appearance of the sperm bundles (Ph. M. 18). The bundles of sperms get further compacted and now they are in a condition preparatory to the process of expulsion from the cyst. The attachment of the

sertoli cells at this time get loosened and they migrate to one side of the respective sperm bundles which now sink into the cavity of the cyst thereafter to be conveyed to the exterior. With the collapse of the cysts and the passage of their contents to the exterior the cyst walls with their contained sertoli cells disintegrate and form a loose spongy tissue of large cells at the antero-dorsal region of the testis. This tissue is very prominent in a ripe testis and its elements later contribute to the formation of other cells which subserve a mechanical function within the testis.

Chiloscyllium reaches a minimum length of 40—45 cm. before it attains this mature condition.

DISCUSSION.

The axial filament and the centrosome :

The behaviour of the centrosome in the spermatid and its later division into the proximal and distal centrosomes together with the mode of formation of the axial filament have been described in many animals by various authors. In *Chiloscyllium* I have observed the very peculiar formation of the axial filament from the centrosome as a sudden bursting forth of the latter from the former, as a consequence of the sudden fragmentation of the original single centrosome into the proximal and distal ones, the former remaining granular in structure while the latter immediately attains a funnel-shaped appearance. This phenomenon occurs very abruptly.

In this connection I may mention the view of such a distinguished author as Hermann (1897) who believes that the mid body (Zwischenkorper) of the spindle of the secondary spermatocyte gives rise to the ring of the spermatid, a view which Benda (1893) advanced four years previously. Hermann (1897) also asserts that the axial filaments represent coalesced spindle fibres of the last division, thus explaining its fibrillar structure as already described by Ballowitz (1890). Though Hermann's observations have been greatly criticized by later authors such as Meves (1899) and Mac Gregor (1899) my observations on the spermatid cells of *Chiloscyllium* induce me to suspect that there is a certain amount of truth in Hermann's statements. That in every cell, the centrosome in the initial stages of division fragments into two and ultimately occupies the two polar ends of the spindle is certain; so is it also certain that these centrosomes are directly or indirectly responsible for the equal distribution of chromosomes as also the

Golgi and mitochondrial elements to the two daughter cells, the contractility of the spindle fibres being believed to be partly responsible for this equal distribution of nuclear and cytoplasmic elements. The activity of the centrosomes together with the formation and character of the spindle fibres drawn in between them are hence the principal factors that influence the distribution of both the nuclear and cytoplasmic elements of the cells. This mode of division and distribution of the cell components we observe from the early generation of primary spermatogonia down to the formation of the spermatid within which we ultimately find that all the original components—the centrosome, Golgi and mitochondrial elements are represented. It is this ultimate cell—the spermatid—that transforms itself into the mature sperm, and in this transformation we meet with a series of processes all working concomitantly towards the formation of the mature sperm, within which we observe what each nuclear and cytoplasmic unit has contributed towards its formation.

Taking the Golgi elements to begin with we observe that the acrosome is developed in relation with it, after the formation of which the Golgi remnant is expelled from the cytoplasm of the spermatid. As for the mitochondria, they contribute towards the formation of the middle piece of the sperm, coming to occupy the immediate vicinity of the axial filament and finally forming a sort of sheath to it, the filament itself being of centrosomatic origin and forming the axis of the middle piece and tail of the mature spermatozoon. The nucleus as we all know, gives rise to the head of the sperm.

We thus observe that the cell components—the Golgi, mitochondria and centrosome—all travel through the different generations of germ cells and ultimately, when they do reach the spermatid, give origin to special sets of structures which contribute towards the formation of the mature sperm. By the time the nucleus, Golgi and mitochondria have arrived at the spermatid stage they have almost expended all their potential energy so that within the spermatid they only perform the function of elaborating their ultimate products which finally collaborate in the building up of the mature sperm. In the centrosome however, we find a slight deviation. This structure, after it has attained its position in the spermatid has been observed to divide into the proximal and distal centrosomes in almost all animal spermatids, the one or the other or the division products of either giving rise to the axial

filament. In *Chiloscyllium* I have observed that the centrosome, when it has attained that position in the spermatid where it lies at the posterior extremity of the nucleus, is very clearly single for a considerable time during which the contraction of the nuclear chromatin takes place and finally assumes a flask-shaped appearance. At this stage however, when we should expect a gradual division of the centrosome into the proximal and distal ones entailing the growth of the axial filament from either of the two products, we here encounter a very curious phenomenon wherein a sudden fragmentation of the centrosome and the rapid bursting apart of its products is observed as also the concurrent formation of the axial filament which here exists stretched in between the two centrosomal products. This happens so abruptly and with such blinding force that the distal centrosome tears its course through the cytoplasm and finally bursts through the cell wall, though in this process, rapid as it is, a transformation of the distal centrosome into a funnel-shaped structure evidently seems to have occurred. And now, when we consider this division of the centrosome and the simultaneous rapid development of the axial filament in between its two division products, does it not remind us of the process of spindle formation so commonly met with in all the earlier generations of germ cells, though in this latter process the difference only lies in that all the activities proceed so slowly that we are in a better position to trace the course of division of the centrosomes and the formation of the spindle closely? The observations of Hermann (1897) come home to us when we reflect on this process of formation of the axial filament in the transforming spermatid, though certain minor differences may suggest themselves. That the spindle is indirectly if not directly responsible for the distribution of both the nuclear and cytoplasmic elements to the daughter cells is perfectly known, and if we should liken this sudden formation of the axial filament in the spermatid to the process of spindle formation in earlier generations of cells we should be able to say in what way this distribution of cell components is effected in the spermatid as well. The elements of the cell, as I have already said, have by the time they have passed through the spermatid stage, exhausted almost all their potential energy, so that within the transforming spermatid we see a culmination of the various processes with the striking result that almost every cell component has contributed in some way or the other towards the formation of the developing sperm. The nucleus hence gives rise to the head, the Golgi elaborates the acrosome,

the centrosome gives rise to the axial filament, and the mitochondria to the sheath of the middle piece. In fact considering every element within the spermatid cell we observe that all of them contribute in some way or the other towards the building up of the mature sperm. This ultimate product of spermatogenesis—the sperm—is however, intended to perform its own vital function in the process of fertilization—a process in the accomplishment of which every part of the sperm contributes its particular share. The acrosome functions in its own distinctive manner, so also the nucleus. It is in considering the centrosomal elements that we come to the problem of distribution of cell elements, for here we observe that immediately after the disruption of the original single centrosome and the formation of the axial filament the mitochondrial granules travel down to the posterior end of the cell and there arrange themselves at the sides of the axial filament to form a sheath, a process very similar to which we have followed in the earlier divisions of germ cells. Within the metaphase and anaphase stages of both the spermatogonial and spermatocytic divisions, we find that the mitochondrial elements form a sort of mantle surrounding the spindle; and now when we consider the arrangement of the mitochondrial elements around the axial filament in the spermatid, would we be far from right if we should liken this appearance to the metaphase stages of the earlier generations, and assume that this attenuated spindle within the sperm is intended only to effect a distribution of the mitochondrial elements within the cytoplasm of the egg and that it indicates a stage fore-running a division that is to soon follow? The nuclear and Golgi elements, having attained their ultimate objects in constructing the head and its attached apical body or acrosome, withdraw from the sphere of this attenuated spindle whereas the mitochondria depending for its distribution in the cytoplasm of the egg on the attenuated spindle (axial filament) of the sperm arrange themselves around it in the form of a mantle restricted at either ends by the proximal and distal centrosomes, the latter on account of its distinctive shape serving as a definite plug at the distal end of the middle piece and thereby limiting the mitochondrial extent within the sperm. It therefore becomes obvious that the centrosomes and the axial filament of the sperm are greatly modified in structure primarily to subserve the purpose of distribution of the mitochondrial elements in the egg cytoplasm during the process of fertilization, and that these modifications are perhaps only preliminary approaches to the succeeding stage wherein with the divi-

sion of the attenuated spindle the distribution of the mitochondria is effectively accomplished. In reconsidering Hermann's statement that the axial filament is formed by the coalescence and elongation of the spindle fibres of the last division, we may perceive that there is some truth in his interpretations though my observations differ from those of Hermann (1897) in that they tend to make me believe that the axial filament is formed not by the coalescence of the spindle fibres of the previous division but by the formation of an extraordinarily elongated spindle newly built within the spermatid. Probably this activity of the centrosome and the consequent formation of the axial filament in the spermatid represent only an incipient stage of division which arrives at its maturity only in the process of fertilization wherein the process is completed. The natural result of this completion of division in the initial stages of the process of fertilization would be the distribution of the mitochondria in the cytoplasm of the egg. According to Wilson (1928), in many animals "almost immediately after its entrance the sperm head rotates through an angle of 180° , so that the middle piece or basal region of the nucleus is directed inwards; and at the same time, or a little later, a single sperm aster appears in the region of the middle piece or actually centering in it". Would not this description of the formation of a sperm aster in the egg tally with the assumption that I have made that it is during the early stages of fertilization that the process of division already initiated in the sperm is completed, the consequent results being the transformation of one of the centrosomes of the spindle into the sperm aster and the disintegration and disappearance of the other, along with the distribution of the mitochondria enveloping the attenuated spindle (axial filament) of the spermatid into the cytoplasm of the egg? The explanation of Ballowitz (1889) regarding the fibrillar nature of the axial filament probably also justifies my assumption that the centrosomes and axial filament of the sperm form the incipient but attenuated spindle of a forthcoming division, though I must leave it to a later date to prove the validity of the statement that I have here advanced.

SUMMARY.

1. The structure of the testis and the origin of the polymorphically nucleated and spherically nucleated cells are described.
2. The primary spermatogonia, their nuclear and cytoplasmic elements and the behaviour of these elements during mitosis are all dealt with. Golgi bodies are described to occur as rings and

crescents and mitochondria as minute granules in the cytoplasm. The centrosome is distinct. All the activities of the secondary spermatogonia are also described.

3. The nuclear and cytoplasmic activities of the primary spermatocyte are discussed in full detail. The reduced number of chromosomes is 13. The distribution of the cytoplasmic elements and the activities of the centrosome during the prophase, metaphase and anaphase stages are traced through the generation. The secondary spermatocytes are also dealt with in full detail.

4. The spermatids and their transformation into the mature sperms are described. The nucleus constitutes the head at the anterior end of which the acrosome elaborated by the Golgi is attached, the mitochondria contribute to the formation of the middle piece while the centrosomes display a striking phenomenon wherein the axial filament is formed the major portion of which contributes to the formation of the tail of the spermatozoon.

5. The phenomenal formation of the axial filament consequent upon the fragmentation of the centrosome into its proximal and distal parts as also the significance of the axial filament and centrosomes are discussed.

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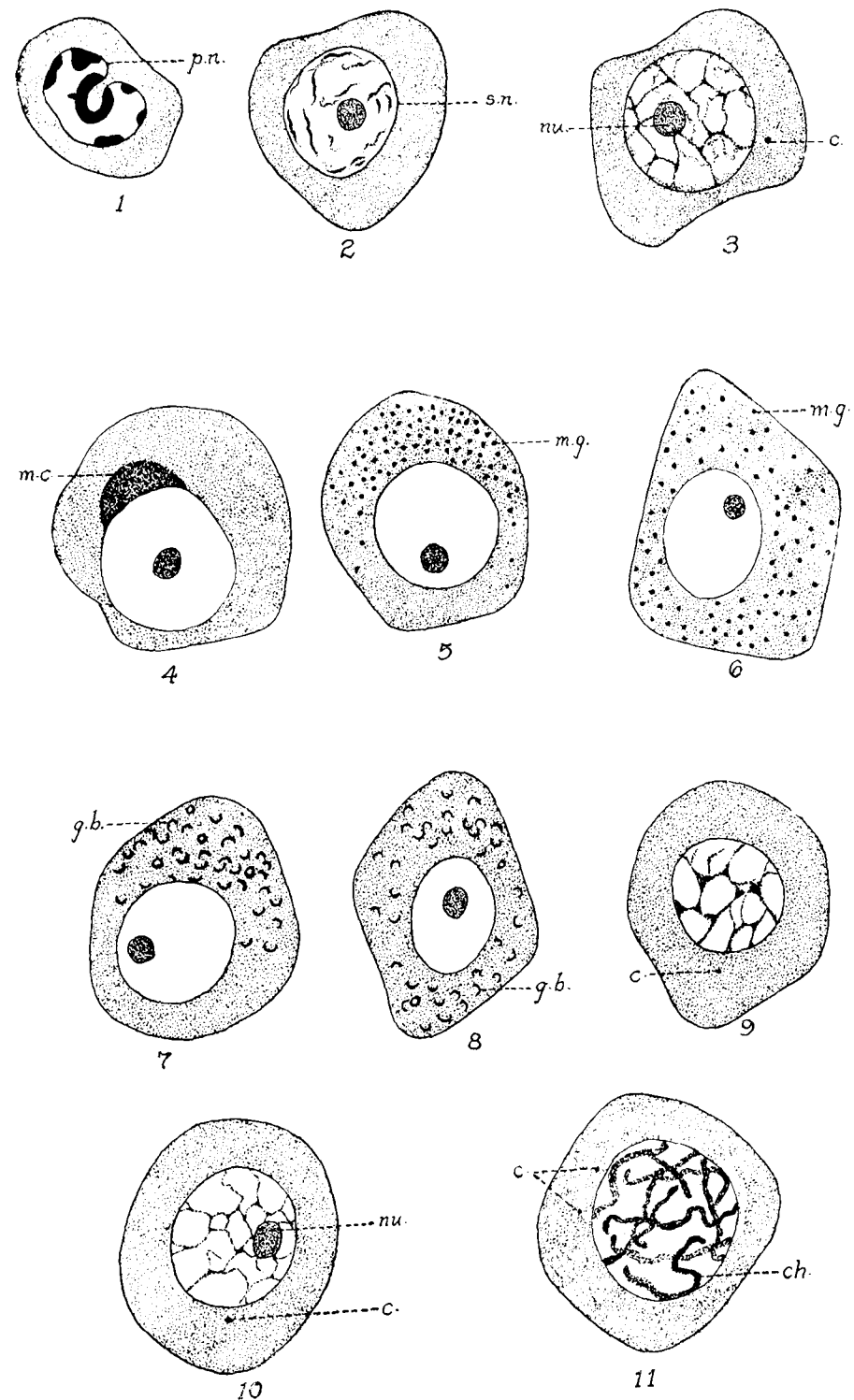
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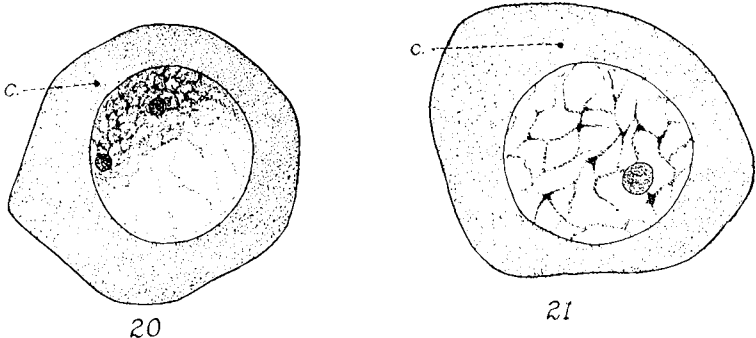
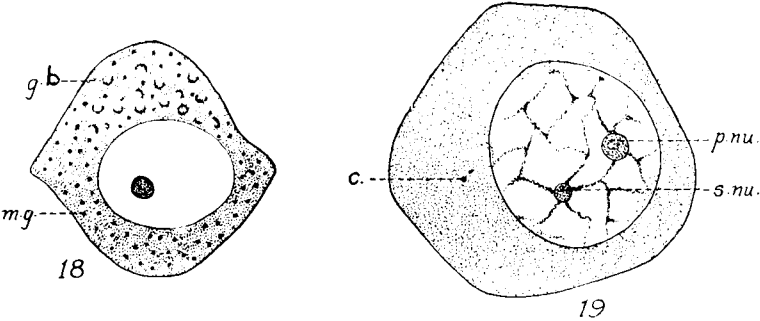
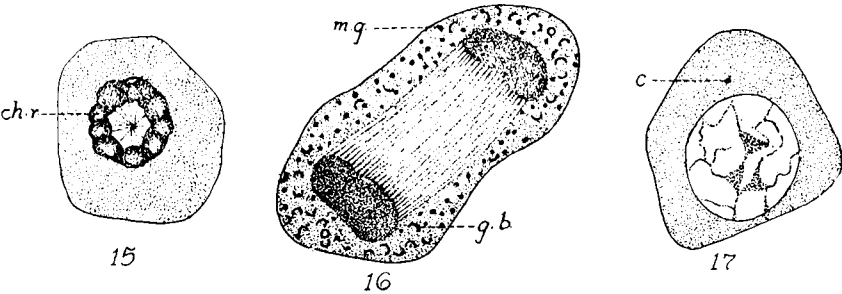
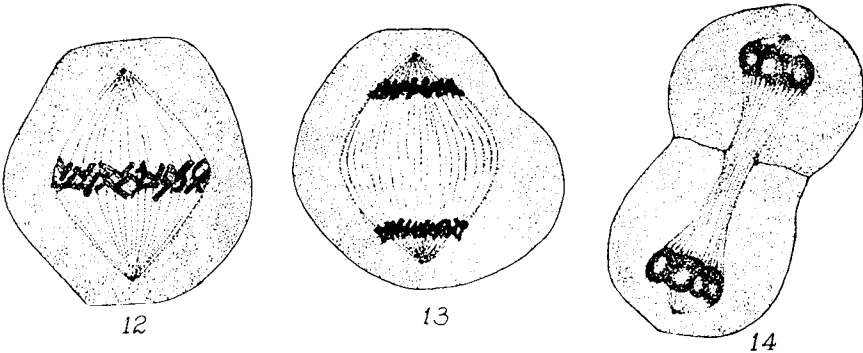
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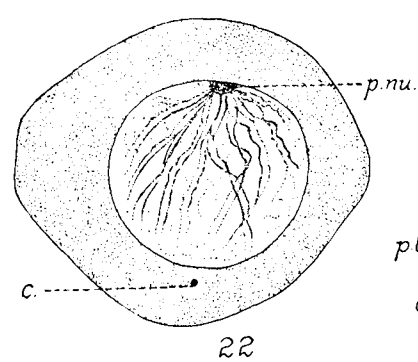
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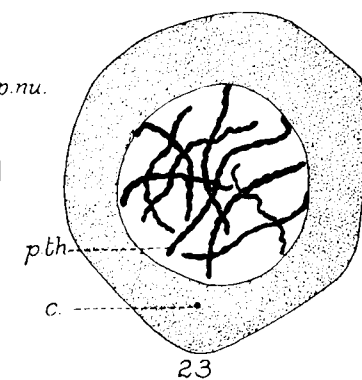
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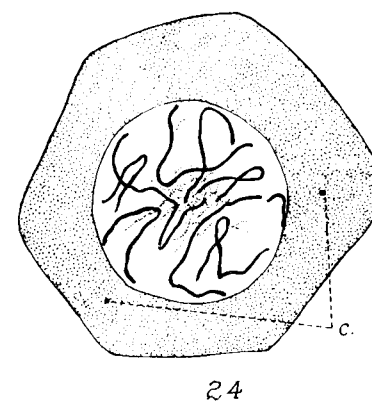




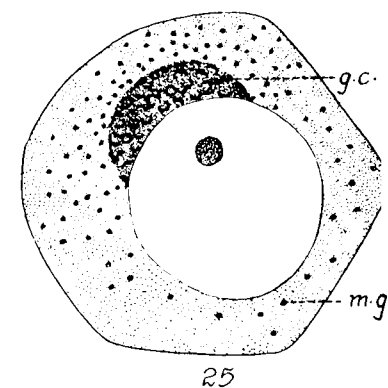
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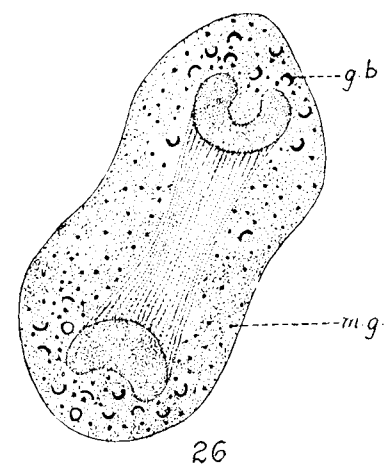
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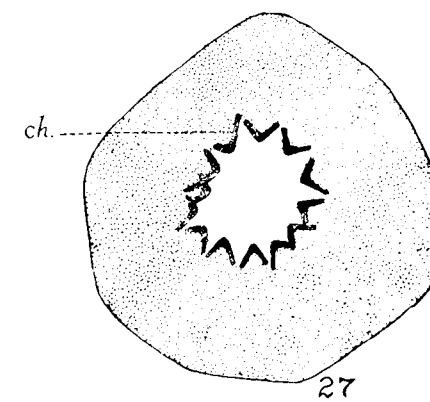
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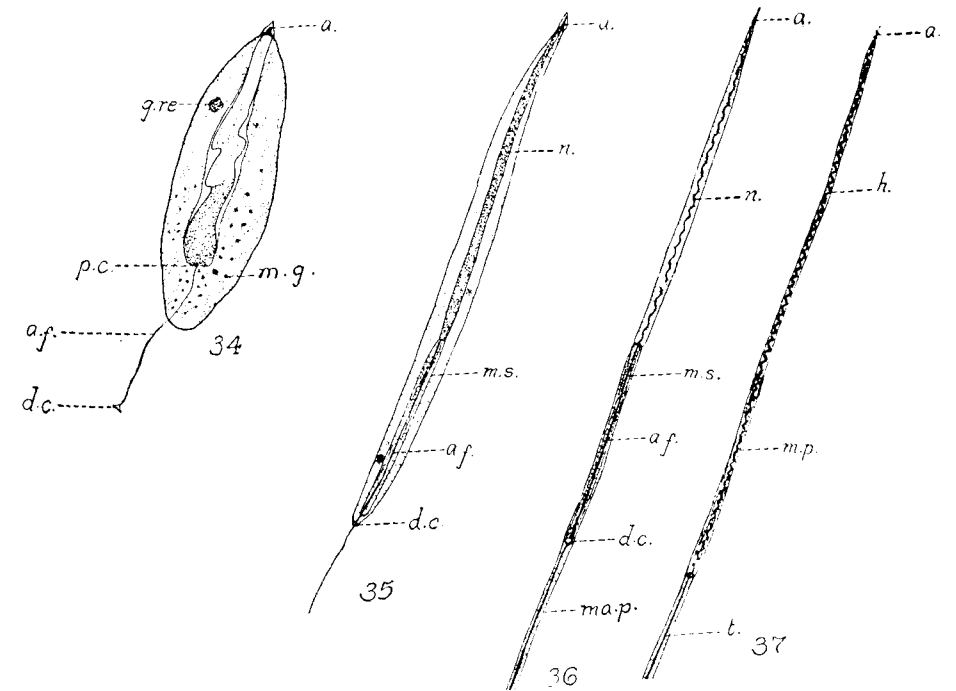
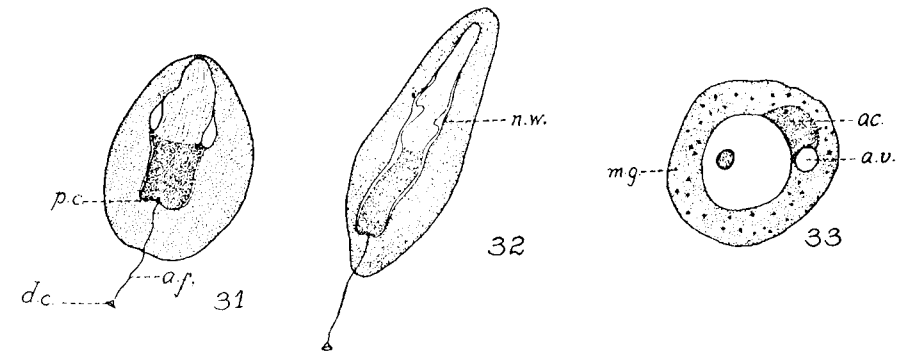
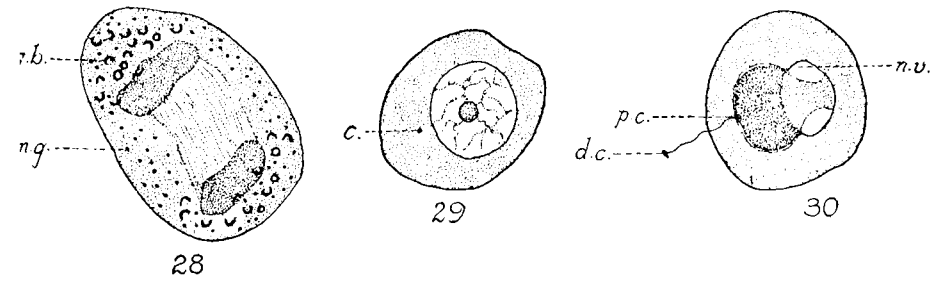
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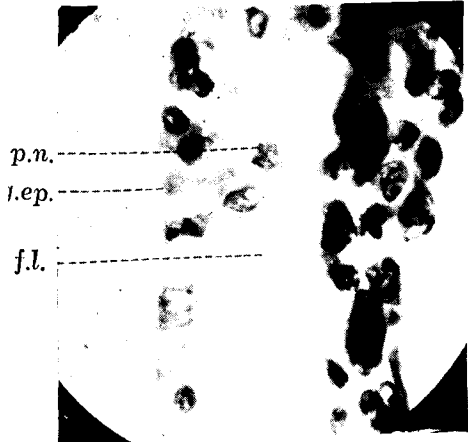


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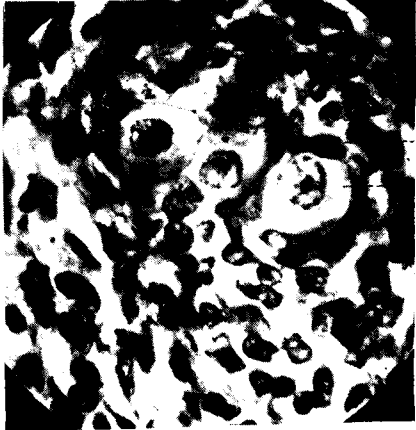


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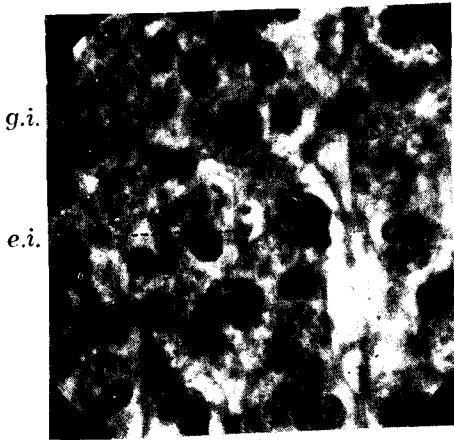




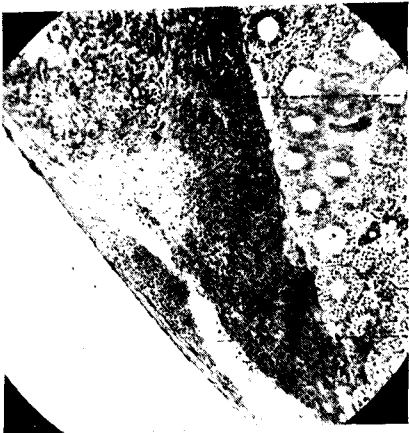
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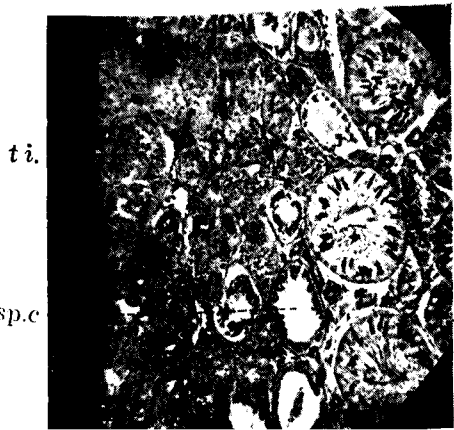
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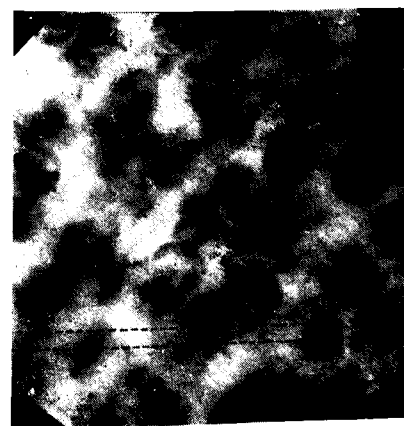


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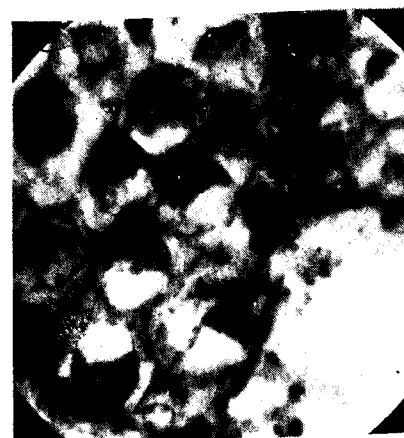
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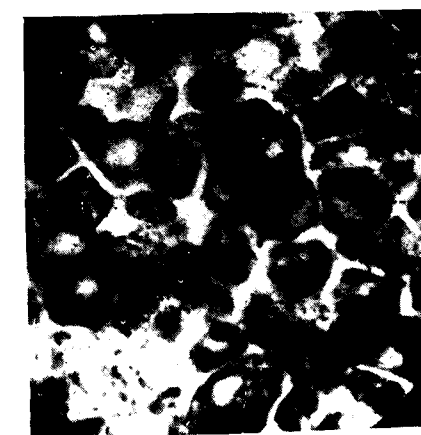
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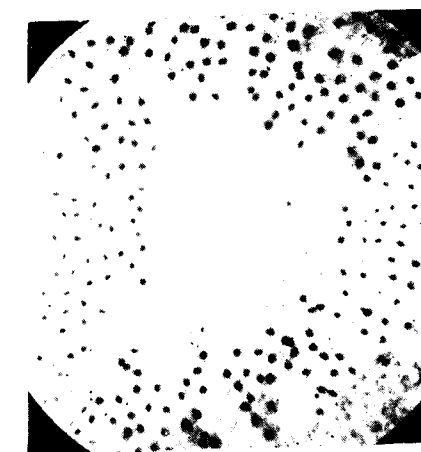
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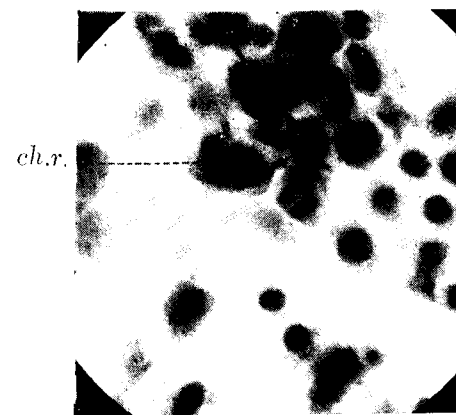
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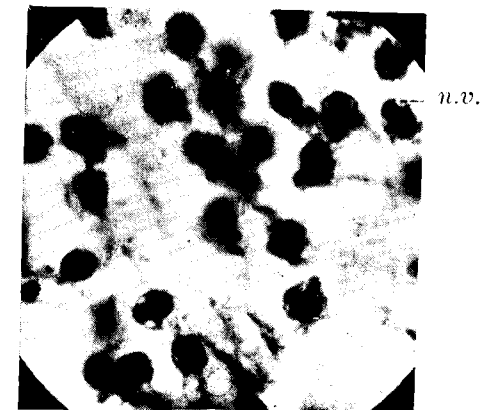
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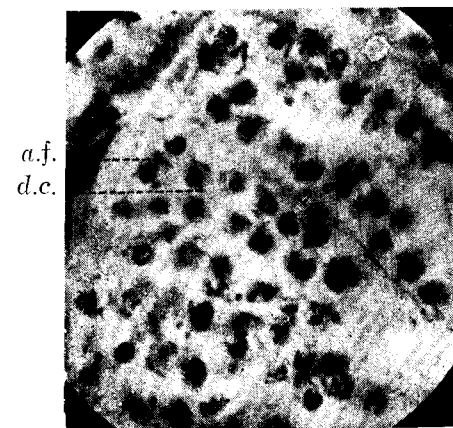
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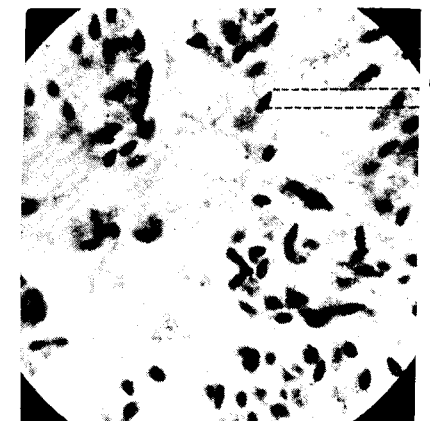
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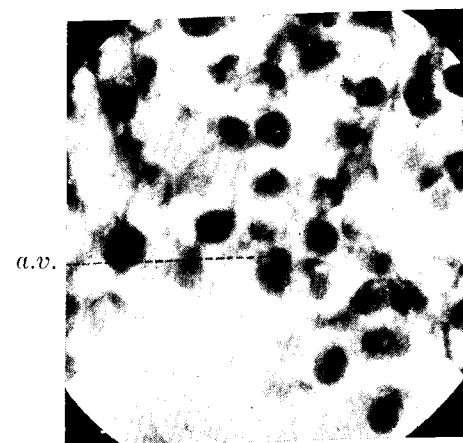
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EXPLANATION OF FIGURES

PLATE I.

1. A polymorphically nucleated cell. 20×100. Bouin and Iron haematoxylin.
2. A spherically nucleated cell. 20×100. Bouin and Iron haematoxylin.
3. A primary spermatogonium. 20×100. Corrosive sublimate and Iron haematoxylin.
4. A primary spermatogonium showing the crescentic cap of granular mitochondria. 20×100. Flemming without acetic and Iron haematoxylin.
5. A primary spermatogonium showing the disintegration of the mitochondrial cap. 20×100. Flemming without acetic and Iron haematoxylin.
6. A primary spermatogonium showing the distribution of the mitochondria. 20×100. Felemming without acetic and Iron haematoxylin.
7. A primary spermatogonium showing Golgi bodies at one pole of the cell. 20×100. MannKopsch.
8. A primary spermatogonium showing the scattered arrangement of the Golgi rings and crescents. 20×100. Nassanow.
9. A late stage of transformation of a polymorphically nucleated cell into a spherically nucleated cell showing the evolution of the network of chromatin within the nucleus. A nuceleolus is absent. 20×100. Carnoy and Iron haematoxylin.
10. A primary spermatogonium showing the appearance of a distinct nucleolus. 20×100. Bouin and Iron haematoxylin.
11. A primary spermatogonium showing the formation of chromosomes. 20×100. Carnoy and Iron haematoxylin.

PLATE II.

12. A primary spermatogonium showing the metaphase stage. 20×100. Carnoy and Iron haematoxylin.
13. A primary spermatogonium showing the anaphase stage. 20×100. Carnoy and Iron haematoxylin.
14. A primary spermatogonium showing the telophase stage. 20×100. Carnoy and Iron haematoxylin.
15. A primary spermatogonium showing the chromosomal ring in the telophase stage. 20×100. Carnoy and Iron haematoxylin.
16. Late anaphase stage of a primary spermatogonium showing the distribution of the Golgi and mitochondrial elements. 20×100. Nassanow.

17. A secondary spermatogonium. The centrosome is distinct. 20×100 . Corrosive sublimate and Iron haematoxylin.
18. A secondary spermatogonium, showing the Golgi bodies and mitochondrial granules. 20×100 . MannKopsch.
19. A primary spermatocyte showing the presence of primary and secondary nucleoli. The centrosome is very prominent. 20×100 . Bouin and Iron haematoxylin.
20. A primary spermatocyte showing the contraction of the chromatic thread work to one side of the nucleus. The two nucleoli are still present. 20×100 . Bouin and Iron haematoxylin.
21. A primary spermatocyte showing a typical leptotene nucleus. The secondary nucleolus has disappeared. 20×100 . Bouin and Iron haematoxylin.

PLATE III.

22. A primary spermatocyte showing the ends of the zygotene threads embedded in the primary nucleolus. 20×100 . Bouin and Iron haematoxylin.
23. A primary spermatocyte showing the moniliform pachytene threads within the nucleus. 20×100 . Bouin and Iron haematoxylin.
24. A primary spermatocyte showing the nucleus in the diplotene stage. 20×100 . Bouin and Iron haematoxylin.
25. A primary spermatocyte with the Golgi forming a crescentic mass applied to the nuclear wall and mitochondria more or less concentrated at this pole of the cell. 20×100 . Nassanow.
26. Late anaphase of a primary spermatocyte showing the distribution of the cytoplasmic elements. 20×100 . Nassanow.
27. Anaphase polar view showing the ringlike arrangement of the thirteen chromosomes. 20×100 . Bouin and Iron haematoxylin.

PLATE IV.

28. Late anaphase of secondary spermatocyte showing the distribution of the cytoplasmic components. 20×100 . Nassanow.
29. Spermatid. The centrosome is distinct. 20×100 . Bouin and Iron haematoxylin.
30. Transforming spermatid showing the flask-shaped nuclear chromatin. The axial filament is formed. 20×100 . Bouin and Iron haematoxylin.
31. Transforming spermatid. Later stage. 20×100 . Bouin and Iron haematoxylin.
32. Transforming spermatid. The nucleus has elongated considerably and the nuclear wall forms a loose jacket to the nucleus. 20×100 . Bouin and Iron haematoxylin.
33. Spermatid showing the Golgi mass secreting the acrosomal vesicle and the scattered mitochondrial granules. 20×100 . Champy and Iron haematoxylin.

34. Transforming spermatid. The acrosome is deposited at the anterior end of the nucleus and the Golgi remnant is proceeding backwards. 20×100 . Nassanow.
35. A very elongated spermatid. The nucleus presents a homogeneous appearance. The ring-like border of the distal centrosome has become distinct and the axial filament has extended further. Diagrammatic. Champy and Iron haematoxylin.
36. Anterior part of an almost mature sperm. The nucleus presents a wavy appearance. The middle piece and tail are formed. The acrosome is distinct. Diagrammatic. Bouin and Iron haematoxylin.
37. Anterior part of a mature sperm exhibiting the spiral nature of the acrosome, head and middle piece. Diagrammatic. Bouin and Iron haematoxylin.

EXPLANATION OF PHOTOMICROGRAPHS

PLATE V.

1. Section of a young gonad showing the migration of the germinal epithelial cells through the fibrous layer towards the central mass of cells.
2. Section of a young gonad showing encystment of primary spermatogonium within follicle cells.
3. Section of testis showing the granular and elongated inclusions in the cells of the stroma.
4. Section of the postero-ventral region of testis showing the streaming in of the stromal cells in this region.
5. Section of the antero-dorsal region of testis to show the tissue of large cells in this region.
6. Section of testis to show the arrangement of primary spermatocytes in cysts.

PLATE VI.

7. Primary spermatocytes showing the presence of primary and secondary nucleoli.
8. Primary spermatocytes showing pachytene nuclei.
9. Primary spermatocytes showing synizetic nuclei.
10. Primary spermatocytes showing the crescentic mass of Golgi applied to the nucleus.
11. Polar views of early anaphase stages of primary spermatocytes showing the ring-like arrangement of the chromosomes.
12. A whole cyst of secondary spermatocytes in division. The cells are arranged within the cyst in 5 or 6 tiers.

PLATE VII.

13. Polar views of anaphase stages of secondary spermatocytes showing the ring-like arrangement of the chromosomes.
14. Transforming spermatids showing the flask-shaped arrangement of the chromatin within the nuclei. The vacuoles at the sides of the neck are distinct.
15. Transforming spermatids showing the formation of the axial filament. The funnel-like distal centrosome is distinct.
16. Transforming spermatids showing the pyriform appearance of the nucleus. The acrosome is distinct in some spermatids.
17. Young spermatids showing the presence of acroblasts within secreting the acrosomal vesicles.
18. Part of cyst showing the presence of the elongated bodies in between the sperm bundles.

KEY TO LETTERING

<i>a.</i>	:	acrosome.
<i>a.f.</i>	:	axial filament.
<i>a.v.</i>	:	acrosomal vesicle.
<i>ac.</i>	:	acroblast.
<i>b.v.</i>	:	blood vessel.
<i>c.</i>	:	centrosome.
<i>c.p.sc.</i>	:	cysts of primary spermatocytes.
<i>ch.</i>	:	chromosome.
<i>ch.r.</i>	:	chromosomal ring.
<i>d.c.</i>	:	distal centrosome.
<i>e.i.</i>	:	elongated inclusions in stromal cells.
<i>e.b.</i>	:	elongated body.
<i>f.c.</i>	:	follicle cell.
<i>f.l.</i>	:	fibrous layer of testis.
<i>g.b.</i>	:	Golgi body.
<i>g.c.</i>	:	Golgi crescent.
<i>g.ep.</i>	:	germinal epithelium.
<i>g.i.</i>	:	granular inclusions in stromal cells.
<i>g.re.</i>	:	Golgi remnant.
<i>h.</i>	:	head.
<i>m.c.</i>	:	mitochondrial cap.
<i>m.g.</i>	:	mitochondrial granule.
<i>m.p.</i>	:	middle piece.
<i>ma.p.</i>	:	main piece.
<i>m.s.</i>	:	mitochondrial sheath.
<i>n.</i>	:	nucleus.
<i>n.v.</i>	:	nuclear vacuole.
<i>n.w.</i>	:	nuclear wall.
<i>nu.</i>	:	nucleolus.
<i>p.c.</i>	:	proximal centrosome.
<i>p.n.</i>	:	polymorphic nucleus.
<i>p.nu.</i>	:	primary nucleolus.
<i>p.sg.</i>	:	primary spermatogonium.
<i>p.th.</i>	:	pachytene thread.
<i>py.n.</i>	:	pyriform nucleus.
<i>s.n.</i>	:	spherical nucleus.
<i>s.nu.</i>	:	secondary nucleolus.
<i>sp.c.</i>	:	spent cyst.
<i>st.</i>	:	stroma.
<i>sy.n.</i>	:	synizetic nucleus.
<i>t.</i>	:	tail.
<i>ti.</i>	:	tissue at antero-dorsal region of testis.

THE THEORY OF TWO KÖPPERUNJINGAS

By

S. R. BALASUBRAHMANYAN

Chidambaram.

Mr. V. Venkatasubba Aiyar has re-examined this question in the last issue of the *Journal of the Madras University* (Vol. XIII, No. 1) and makes the confident assertion that "the Periyadevar evidence supported by the Chidambaram inscription is conclusive, and that the rule of the two Köpperuñjingas may hereafter be taken as well established." It will be clear from the sequel that the claim made is not sustainable.

I have discussed the main problem in my thesis (Vol. IX, No. 3 and Vol. X, No. 1) and the full implications of the Villianur record in a later issue (Vol. XII, No. 2) and I do not propose to cover the ground over again. My valid objections to the acceptance of two chiefs of the same name have received scant justice at the hands of my friend when he brushes them aside as 'other minor arguments' unnecessary to be considered, because he claims to have got at a conclusive proof to support his position, viz., what he calls the 'Periyadevar evidence' in relation to the three Chidambaram records (465 of 1902, 467 of 1902 and 103 of 1934-35).

His interpretation of these three records is different from mine. He first allowed a regnal period of 11 years to the so-called first chief, and he has now extended it to 16 years. A new co-regency theory has been postulated, and he has been further driven to the inconvenient fact that "the elder chief was also known as Köpperuñjinga, and that he had the title of Sakalabhuvana-Cakravartin."

It is clear—and it has also been conceded—that all these three records give the same name and titles to the ruler (Sakalabhuvana Cakravartigaḷ Avani Ālappirandan Köpperuñjinga); all mention his title of *Śōkkaccīyan*; and all refer to his feudatory *Śōḷakōṇ*. Therefore all these three records should be attributed to one King. While Mr. V. Venkatasubba Aiyar grants the premises, he denies the inescapable conclusion.

The term Periyadevar is a term of respect generally applied by a ruling chief to his predecessor. But in the documents of this chief, the terms '*devar*', *Periyadevar* and *Aiyadevar* (Munnūr record 62 of 1919) are used by the feudatories to the reigning monarch. *Śōḷakōṇ* refers to the King as *devar* or Periyadevar.

Further Mr. V. Venkatasubba Aiyar has made a mistake in assuming that there was only one garden called '*Śōkkaccīyan-Kamugu-tirunandavanam*' that is referred to in all these three documents under discussion and that is why he says, "This *Śōkkaccīyan-Kamugu-tirunandavanam* referred to above which is definitely known to have been formed in the 15th year of Periyadevar (Köpperuñjinga I) is again mentioned in a 3rd year record (A. R. No. 465 of 1902) of Sakalabhuvana Cakravartin Köpperuñjingadeva who must be identical with Köpperuñjinga II."

The *Śōkkaccīyan-garden* referred to in the 3rd year (81st day) record—485 of 1902—is different from the other garden of the same name referred to in both the other records of the 15th and 19th years. The former was at *Vikramasingapuram* and the latter at *Sundara-Śōḷanallur* in *Vēśalippāḍipparru*. The mistake has arisen by assuming these two gardens to be one and the same.

The 3rd year record (465 of 1902) makes a gift for a flower garden called *Āḷiyār-tiruttoppu* (based on another surname of Köpperuñjinga) at *Vikramasingapuram*; and food and clothing for its gardeners are provided at the same rates as those of the '*Śōkkaccīyan-Kamugu-tirunandavanam*'—evidently another garden just previously established in that very same village.

In the 15th year 262 day (grant finally engraved in the 16th year 262nd day) a grant of nearly 310 *mā's* of land is made towards the formation of a flower-garden called '*Śōkkaccīyan-Kamugu-tirunandavanam*' in *Sundara Śōḷanallur* in *Vēśalippāḍipparru* (467 of 1902). The grant is made up of two parts—one of 63 and odd *mā's* of land for the garden proper and another of 247 and odd *mā's* for the maintenance of the gardeners (*Jivitam*).

To the same garden at *Sundara Śōḷanallur*, in *Vēśalippāḍipparru* (referred to in 467 of 1902), a further endowment of 80 *mā's* of land (consisting of 63 *mā's* and odd + 16 and odd of excess-measurement) with benefits of remission of rent is made and this new grant of the 19th year (103 of 1934-35) was ordered to be

engraved on the same wall on which 'the previous grant of the 15th year of Periyadevar' had been engraved.

Mr. V. Venkatasubba Aiyar admits that "fortunately the very same 15th year record is found on the identical wall indicated above (A.R. 467 of 1902). It refers to the same garden." I agree. But I wish to add that the term Periyadevar used here clearly applies to the same king. In that case it is wrong to attribute the 15th year recorded to Kōpperuñjīṅga I, and the 19th and 3rd year records to Kōpperuñjīṅga II. Hence I hold that these three records belong only to *one chief*. And therefore the new structure, built on the foundation of what is claimed to be definite and indisputable evidence, on which sole reliance is now placed, simply collapses. Therefore this latest theory also is not maintainable.

UNIVERSITY NOTES

His Excellency Sir Arthur Hope, G.C.I.E., M.C., who assumed the office of Governor of the Presidency of Madras on the 12th March 1940 became the Chancellor of the University and continued to be so during the year.

As there was no Minister for Education, the office of Pro-Chancellor of the University was vacant.

Sir Mahomed Usman, K.C.I.E., B.A., M.L.C., continued as Vice-Chancellor.

Mr. William McLean, M.B.E., J.P., M.A., B.L., Chartered Secretary, continued as Registrar.

AUTHORITIES AND MEETINGS

Three meetings of the Senate and two meetings of the Academic Council were held during the year. A special meeting of the Senate was held on the 8th August 1940 convened under Statute 7(2) of Chapter XI of the Laws of the University to consider a resolution urging on the Government the imperative necessity of imparting compulsory military training in all arms to all men students and nurses' training to all women students undergoing any course of study in the University. The resolution was adopted and forwarded to Government for favourable consideration.

The Faculties of Arts, Science and Oriental Learning each met once during the year. There were ten ordinary meetings and four special meetings of the Syndicate.

Meetings of the Convocation for conferring degrees on Graduates were held on the 15th February, 9th and 10th August 1940, respectively. At the main convocation held on the 9th August 1940, His Excellency, the Chancellor presided and the Address to Graduates was delivered by Sir R. K. Shunmukham Chetti, K.C.I.E., B.A., B.L., Diwan of Cochin. The Vice-Chancellor presided over the Convocations held on the 15th February 1940 and 10th August 1940, respectively.

The number of persons that took the several Degrees at the Convocations was:—B.A.—1152; B.A. (Hons.)—157; M.A.—

100; B.Sc.—221; B.Sc., (Hons.)—44; M.Sc.—12; B.Sc.—4; B.L.—210; M.L.—3; M.B.B.S.—98; L.M.S.—1; M.D.—2; M.S.—2; B.S.Sc.—2; B.E.—61; L.T.—329; B.Sc. (Ag.)—26; B.O.L.—15; B.V.Sc.—8; M.LITT.—2; M.O.L.—1.

There was a special meeting of the Senate on the 18th October 1940 for the award of Titles and Diplomas to persons who had qualified for the same. The number of persons who took the several titles and diplomas at the special meeting of the Senate was:—Siromani—47; Vidwan—103; Munshi-i-Fazil—14; Afzal-ul-Ulama—7; Adib-i-Fazil—15; Diploma in Economics—3; Diplomas in French and in German—11; Diploma in Gynaecology and Obstetrics—8; Diploma in Geography—9; Diploma in Indian Music—5; Diploma in Politics and Public Administration—6; and Diploma in Librarianship—1.

Certain additions and alterations were made in the course of the year in the Statutes, Ordinances and Regulations. One set of these empowers the Syndicate to grant such exemption as may be necessary in the case of students overseas who had to cease their studies and return to India, or others in India who had been prevented from joining a University in Great Britain owing to the outbreak of hostilities, for the purpose of admission to the courses of studies in this University.

CONSTITUENT AND AFFILIATED INSTITUTIONS

The following Institutions were granted recognition, affiliation or approval as the case might be in the subjects noted against each to commence the courses with effect from the academic year 1941-42:—

- (1) Pachaiyappa's College, Madras.—(a) Botany and Zoology; Subsidiary under Part II of the B.Sc. Degree Course.—
(b) Group (iv-C).
Politics and History under Part III of the B.A. Degree Course.
- (2) Queen Mary's College, Madras.—Group (vii)—Geography under Part III of the B.A. Degree Course;
- (3) Sarah Tucker College, Palamcottah.—Group (i-b)—Mathematics under Part III of the B.A. Degree Course.
- (4) Madras Christian College, Tambaram.—(a) B.A. (Hons.) Branch IV—Economics and History.—(b) Group (iv-c) Politics and History under Part III of the B.A. Degree Course.

- (5) M. D. T. H. Hindu College, Tinnevely.—(a) Natural Science under Part III of the Intermediate Course.—
(b) Group (iv-C).

Politics and History under Part III of the B.A. Degree Course.

- (6) Malabar Christian College, Calicut—Natural Science under Part III of the Intermediate Course.
- (7) Missionary Medical College for Women, Vellore.—Pre-Registration and First M.B.B.S. Course.

NOTE:—The Management have stated that the courses would be started from the next academic year 1942-43.

- (8) Stanley Medical College, Madras.—Second and Final M.B.B.S. Courses.
- (9) National College, Trichinopoly.—Group (iv-C)—Politics and History under Part III of the B.A. Degree Course.

ITEMS OF GENERAL AND ACADEMIC IMPORTANCE

*Teaching of Sanskrit and other Indian Languages:—*The Syndicate approved the recommendations of the Special Committee that (1) holders of the B.O.L. Degree should be paid the same scale of pay as allowed to Lecturers and Assistant Lecturers in other Departments of the colleges and (2) the scales of pay of Vidvans, Siromanis and other Oriental Title holders should be approximated to the scale in Government Colleges and that such persons should be designated as Assistant Lecturers in the Languages Departments and not as Pandits and Munshis. The Principals of the Colleges were addressed on the above and while some of them approved the recommendation, the management of Government Colleges was not in favour of changing the designation.

*Physical Education—Degree or Diploma Course:—*As reported last year, the provision of a Diploma Course in Physical Education in place of a Degree Course was considered by the Board of Studies in Teaching whose opinion was not approved by the Syndicate. The matter was finally referred to a Special Committee which was of the opinion that no useful purpose would be served by the University instituting a Degree Course in Physical Education or making Physical Education a separate branch of study in the L.T. Degree Course. Regarding institution of a

Diploma Course the Academic Council did not express any opinion.

New Diploma Courses:—The question of institution of a Diploma Course in Ophthalmology (D.O.), proposed by the Surgeon-General with the Government of Madras has been referred to the Board of Studies in Medicine for consideration. Regulations were framed for the Diploma Course in Statistics and the course will be started from the academic year 1941-42.

Institution of New Departments:—The resolution of the Senate regarding the institution of University Departments of Study and Research in Physics, Experimental Psychology, Anthropology and Statistics was considered by the Syndicate in the light of the recommendation of the Special Committee appointed by the Syndicate to consider the question of effecting economies in expenditure in the University and it was resolved that in view of the present international situation the proposals be deferred *sine die*.

Military Science as a subject of study for the B.A. and B.Sc. Degree Courses:—The Syndicate has reported to the Senate in October 1940 that owing to the war it is not possible to do anything in the matter of making Military Science a subject of study.

Organisation of University Settlements:—The resolution adopted by the Senate in October 1940 that University settlements should be organised so as to bring College and University students into contact with the peasants and workers and make economic surveys in order to improve their status and impart literacy to them was communicated to the Principals of Colleges for their opinion. The matter is still under consideration.

Selection of Candidates for the Indian Air Force and the Madras Sappers and Miners:—In July 1940 the Air Officer, Commanding the Air Forces in India, New Delhi, addressed the University to recommend candidates for selection to Commissions and in the ranks of the Indian Air Force. The Vice-Chancellor and the Registrar formed a Committee and forwarded to the Air Force Headquarters batches of names of candidates interviewed and selected. With regard to clerical posts the names of persons registered in the University Employment Bureau was furnished to the Officer concerned.

The Officer Commanding, Queen Victoria's Own Madras Sappers and Miners, suggested that the Vice-Chancellor and the

Registrar might recommend names of persons from among students in colleges and others for selection to the Madras Sappers and Miners. A press communique was issued and two hundred applicants were interviewed in six batches and 89 persons were recommended.

TEACHERS AND RESEARCH DEPARTMENTS

Mr. V. Kalyanasundaram, M.A., was appointed Junior Lecturer in Geography in place of Mr. B. M. Tirunaranan, B.A., (Hons.), who resigned the post on being appointed to the Madras Educational Service.

Mr. M. Mariappa Bhat, M.A., L.T., was appointed Senior Lecturer in Kannada on the 14th September 1940.

Mr. B. Bhaktavatsulu Naidu, B.A., G.D.A., R.A., was appointed special part-time Lecturer in Commerce-Accountancy and Cost Accounting for the Diploma Course in Politics and Public Administration.

Mr. E. Divien, B.A. (Hons.), and Mrs. Ellen Sharma, M.A., M.Ed., continued as Lecturers (part-time) for the Diploma Courses in French and German respectively.

The services of Dr. P. J. Thomas, Professor of Indian Economics have been temporarily lent as he was appointed as Chairman of the Fact-Finding Committee (Handloom and Mills). As a result of this, Dr. P. S. Lokanathan and Mr. K. C. Ramakrishnan were appointed as Acting Professor and Reader respectively. Mr. B. Natarajan was appointed temporarily as Lecturer in the Department.

The Professor of Indian History and Archaeology, the Reader in Politics and Public Administration, the Reader in Indian Philosophy, the Directors of Biochemistry and Botany Laboratories delivered lectures to Honours students in Constituent Colleges in the respective special subjects under the scheme of association of teachers of the University with Honours teaching in the colleges.

Mr. S. Chandrasekharan, a Research student in Economics was awarded a foreign scholarship for one year at Rs. 60 per mensem tenable in the Columbia University, U.S.A., for advanced investigation on Mathematical Economics.

The Syndicate sanctioned the appointment of three Research Assistants for work on the Mackenzie Manuscripts, Indexing of the Puranas and Topology.

PUBLICATIONS

The following works of the members of Research Departments of the University were published during the year:—

<i>Books.</i>		
<i>Name of the work.</i>	<i>Author.</i>	<i>Department.</i>
Ezhuthaccan and His Age	Dr. C. Achyuta Menon	Malayalam
Oshadi Kosham	Messrs. A. Venkata Rao and H. Sesha Ayyangar	Kannada
Abhidhanaratnamala	Do.	Do.
Prakatharthavivaranam, Part II	Dr. T. R. Chintamani	Sanskrit
Slokavartika	Mr. S. K. Ramanatha Sastri	Do.

<i>Bulletins</i>		
<i>Name of the work.</i>	<i>Author.</i>	<i>Department.</i>
Commodity Prices in South India	Dr. P. J. Thomas and Mr. N. Sundararama Sastri	Economics.

Besides the above, the Endowment Lectures delivered by Dr. D. R. Bhandarkar (Sir William Meyer Lectureship—1938-39), Professor P. Narasimham (Principal Miller Lectureship—1939-40), the Rev. P. Carty, S.J., (Sir William Meyer Lectureship—1939-40) and Dr. A. Govinda Rao (Sir Subramanya Ayyar Lectureship—1938-39) were also published.

The preparation of a concise Tamil Dictionary based on the Tamil Lexicon was taken up and the work entrusted to a private firm.

Lectures:—The annual lectures by the Heads of the Departments of the University and the Lectures by the Honorary Readers in their respective subjects were as usual delivered in the year under review.

Extension Lectures—were delivered at Madras, Trichy, Madura, Coimbatore, Ernakulam and Mangalore.

Endowment Lectures:—The following lectures under the several Endowments were delivered:—

<i>Name of the Endowment.</i>	<i>Name of the Lecturer.</i>	<i>Subject of Lectures.</i>
The Maharaja of Travancore Curzon Lectureship—Medicine-clinical.	Dr. N. Mangesh Rao	Urinary Lithiasis.
do. Engineering	Rao Bahadur N. Govindaraja Ayyangar	Highway Bridges.
do. Agriculture	Dr. M. Damodaran	Nitrogen metabolism and the feeding of crops and stock.
The Sankara Parvathi Lectureship.	Sri V. R. Ramachandra Dikshitar.	Tamil Culture
The Sir Subrahmanya Ayyar Lectureship.	Dr. M. O. Parthasarathi Ayyangar.	Problems of Fresh Water Microscopic Plant Biology.
The Sir William Meyer Lectureship	Dr. Radhakumud herji	Muk- Chandragupta Maurya and his times.
The Principal Miller Lectureship.	Sri M. Hiriyanna.	The quest after perfection.
The Dr. Elizabeth Matthai Lectureship.	Dr. P. Kutumbayya	Rheumatic infection in childhood and adolescence.
The Rt. Hon. V. S. Srinivasa Sastri Lectureship.	Sir Shaafat Ahmed Khan.	The framing of the Indian Constitution
The Rt. Hon. Sir George Stanley Lectureship.	Humayun Z. A. Kabir.	Poetry and Social Integrity. Back to intuition—Wordsworth and Lawrence. The Modern Quest—Yeats and Eliot.
The Dr. Annie Besant Memorial Lectureship.	Sir P. S. Sivaswami Ayyar	Ahimsa and Asanga.

Vacation Lectures:—A course of vacation lectures for the benefit of workers engaged in Adult Education and Rural Amelioration was delivered by the Rev. H. A. Popley, Messrs. A. J. de Valois, R. Suryanarayana Rao, and F. Malthus Smith at Coim-

batore, Chittoor and Madura, Coimbatore and Madura, and Saidapet and Anantapur, respectively.

The Syndicate, on the recommendation of the Boards of Examiners has awarded the prizes for the encouragement of publication of works on modern subjects in the Dravidian Languages to (1) Messrs. J. P. Manikkam, M.A., and P. N. Appuswami, B.A., B.L., (joint authors) for their work on "Radio and Broadcasting" in Tamil and to (2) Mr. B. Natarajan, M.A., for his work on "Industrial Development" in Tamil.

University Library:—The total number of volumes in the Library is 112216 of which 92576 are in the Main Library and the remaining 19640 are in the Departmental Libraries. 2666 volumes were added during the year.

The printing of the Library Catalogue was continued and the following volumes have been published:—

Supplement Catalogues for 1939 (282 pages).

Botany, Agriculture and Forestry (240 pages).

2768 volumes have been catalogued during the year involving the preparation of 6561 cards. The departmental libraries have been centralised in the northern and southern wings of the University Buildings (first floor), under the charge of an Honorary Librarian (Mr. V. R. Ramachandra Dikshitar).

University Information Bureau:—Due to the War, there were few enquiries from students regarding prosecution of studies overseas. More enquiries regarding courses of studies in Indian Universities than in foreign Universities were made and the Bureau did its best to furnish every kind of information available.

University Union:—The Union continued to provide recreative facilities to the students of the colleges. The establishment of the Union was made permanent. The Pavilion for the Union was completed in September 1940.

Endowments:—No new endowments were made this year. The terms of award of several endowments were revised to suit the existing conditions.

Conferences and Congresses:—The Indian Philosophical Congress was held in Madras in December 1940 under the auspi-

ces of the University. Delegates were also sent to represent the University at the following Conferences and Congresses during the year:—

1. The Bicentennial Celebration of the University of Pennsylvania, Sept. 1940.
2. The 17th Session of the Indian Historical Records Commission at Baroda, December 1940.
3. The 4th Session of the Indian Historical Congress at Lahore, Dec. 1940.
4. The 29th Session of the Hindi Sahitya Sammelan at Poona, Dec. 1940.
5. The 8th All-India Music Conference at Allahabad, November 1940.
6. The 28th Session of the Indian Science Congress at Benares, Jan. 1941.
7. The Indian Economic Conference at Mysore, Dec. 1940.
8. The Indian Political Science Conference at Mysore, December 1940.

REVIEWS

BHAGAVADGĪTĀRTHAPRAKĀŚIKĀ by Upaniṣad-Brahma-Yogin, edited with the text ; published by Adyar Library, 1941; pp. xxxix+457.

The Adyar Library has rendered valuable service to Sanskrit philosophical literature by the publication of the upaniṣads with the not voluminous but illuminating commentaries of Upaniṣad-Brahma-Yogin. The present volume marks a notable and worthy addition to those publications. The *Gītā* commentary is short and lucid, following the general lines of Advaita tradition. The commentary on each chapter is introduced by a verse giving very briefly the purport of that chapter. Occasionally the commentator gives us samples of his own learning and originality as when he suggests three etymological interpretations of "Janaka" (III, 20). Both scholars and beginners will find that the commentary provides interesting reading. Dr. C. Kunhan Raja, Curator of the Eastern Section of the Library, has provided a valuable preface where he discusses many attempts to discover an original *Gīta*, either fuller or far shorter than the current text of 700 verses. Dr. Raja's attitude is wisely conservative; the present text comes to us with the sanction of all three ācāryas and cannot be questioned, especially when no better basis is provided for the questioning than undocumented texts, airy conjectures, apocryphal enumerations and free fancies as to how much could or could not have taken place in a battle-field. The reader cannot help agreeing for the most part with Dr. Raja, though he may continue to feel sceptical and unhappy about what is called the "direct teaching of the Lord." We trust the Adyar Library will continue its service to scholarship and bring out many more such volumes.

THE THEORY OF PROPER NAMES. By Alan H. Gardiner, F.B.A.; Oxford University Press, pp. 67. Price 5sh. net; 1940.

In this highly interesting, but "controversial essay," Mr. Gardiner starts with Mill's characterisation of proper names as "meaningless marks" and proceeds to substantiate it, showing how a name properly so-called has the sole function of *identification* (not description or distinction) and how this function is dis-

charged by the word as pure word without any or almost without any reference to meaning. The conditions of the use of proper names are (1) the existence of a plurality of sufficiently similar things, and (2) existence of interest sufficient to call for the identification of one out of this group, and (3) the application of a word, with the recognition that it is almost pure sound, serving to identify that individual or thing. There are incidental discussions about collective proper names (e.g., *Parliament*), plural proper names (e.g., *Azores*), proper names primarily in the plural, but serving as the basis for a derived singular (e.g., a *Mede* or a *Persian*) and so on. Mr. Gardiner's thesis deserves close examination, even if it does not command ready assent. Some Indian readers will be tempted to subscribe at once to his view that every name implies a nameable, at least as presented to the mind, but not as necessarily real. They may also see much value in the distinction between identification and description (or predication). But this doctrine on the borderland between Logic and Grammar will have to be developed more fully in its logical and ontological implications before it can be finally accepted or rejected. The Russell-Stebbing view of proper names as names for particulars, as exemplified in "this" or "that" comes in for some seven pages of criticism; we can only observe that the view is so erratic as hardly to deserve Mr. Gardiner's powder and shot.

THE TRAVANCORE TRIBES AND CASTES, Vol. III. The Aborigines of Travancore; By L. A. Krishna Aiyer, M.A., Trivandrum, 1941.

This compact and neatly printed volume completes the survey undertaken by Mr. L. A. Krishna Aiyer of the Tribes and Castes representing the Proto-Australoid element in Travancore, and presents the general conclusion of the author on these aboriginal peoples of Travancore. The data presented in the earlier volumes under each tribe are now reviewed against the background of current theories of ethnologists and grouped under convenient heads like Traditions of Origin, Megalithic monuments, Domestic Life, Exogamy, Marriage, Taboo and so on. The author deserves to be congratulated on the moderation and sobriety of his views and his clear and compact statement of them. He has made some useful suggestions on the policy of the State towards these tribes which will doubtless, one hopes, receive attention at the

hands of the Travancore Government that have initiated this survey so instructive to students of ethnology and administrators alike.

K. A. N.

THE RELIGIOUS POLICY OF THE MUGHAL EMPERORS.

By Sri Ram Sharma. Published by Humphrey Milford, Oxford University Press, 1940; pp. 226. Price Rs. 5.

Professor Sri Ram Sharma of D. A. V. College, Lahore, is a Persian scholar of repute and a historian whose work is characterised by great erudition and sound judgment. In the book before us Professor Sharma has given a succinct account of the religious policy of the Mughal emperors. The book stops with the death of Aurangzeb and the main outlines of the story retain the familiar features. Akbar's great attempt to unify India is put in a correct perspective in the light of what went before him and what came after. With Aurangzeb, according to the author, there was a definite reversion to the Muslim state of pre-Akbar days whose code was hostile to the people of the country, and which was therefore more a military camp established in a hostile country than a state in any proper sense of the term. Professor Sharma establishes his thesis by a formidable array of facts and cites chapter and verse largely from Muslim historians for every fact which he admits into his narrative. Students of Indian history will be deeply grateful to Professor Sharma for this succinct and authoritative account of one of the most important aspects of Mughal Indian history.

K. A. N.

THE PARAMĀRTHASĀRA OF ĀDI ŚEṢA (transliterated text, English translation and notes). Edited By S. S. Suryanarayana Sastri, Head of the Department of Indian Philosophy, University of Madras, and published by the Karnatak Publishing House, Bombay, 1941. Pp. xxi, 40. Price: Rs. 4.

Students of Indian Philosophy will welcome with eagerness the present edition of the Paramārthasāra of Ādi Śeṣa by Mr. S. S. Suryanarayana Sastri whose critical editions of Vedantic texts have earned a distinct place for themselves in Indian philosophical literature. The Paramārthasāra is a very early work belonging to a time when Kārikas began to replace Sūtras and the great Bhāṣyas had not yet come into existence. In his excellent intro-

duction to this edition, Mr. Suryanarayana Sastri rightly points out that we may consider the present work as representing the transition from Sāṅkhya to Advaita Vedānta and assigns it to some period before Advaita Vedānta was clearly and fully formulated. In the introduction he also discusses the central doctrines of the Paramārthasāra and their distinguishing traits, while in the elaborate notes which accompany the translation he draws attention to its affinities and divergences from Sāṅkhya teaching and of its uncertainties on some controversial points in the doctrines of Advaita characteristic of the very early stage of thought to which the work belongs. The translation, which, as usual with Mr. Sastri, is very correct and readable, draws upon the commentary of Rāghavānanda for indicating transitions of thought in the original text, the translation of the phrases so drawn being put within brackets. Particular attention may be invited to Mr. Sastri's attempt to identify the eighty-five verses of the original (p. xv) from which the work takes the name Āryā-pañcāśīti.

We congratulate the author and the publishers of this excellent definitive edition of one of the earliest texts of Advaita Vedānta.

K. A. N.

BAJI RAO II, AND THE EAST INDIA COMPANY, 1796-1818.

By P. C. Gupta, published by Humphrey Milford, Oxford University Press, 1939. Pp. 219. Price Rs. 7.

The last Peshwa and the transactions of his time are no very inspiring subject, but a student in search of a relatively neglected field to furnish the ground for a Doctoral thesis has every reason to turn to this epoch. Dr. Gupta has produced an accurate and well studied survey of the transactions of the time of Baji Rao II and in particular his relations with the East India Company. The work treats of the period in considerable detail, is based on a fresh study of almost all important documents bearing on the period, and is very well written. Not to speak of minor corrections in dates and details that are found throughout the work, one point to which attention may be invited is the attempt of the author to fasten responsibility for the murder of Gangadhar Shastri on the anti-British party in Baroda rather than on the Peshwa as has so far been the rule (p. 141).

The book will take rank as a very authoritative account of the closing years of the Mahratta empire in India.

K. A. N.

STATISTICAL YEAR BOOK OF THE LEAGUE OF NATIONS —1939-'40.

The Year Book gives "an international synopsis of available statistics relating to the most important demographies, economic, financial and social phenomena and includes as many countries as possible." Copious notes are attached to many of the tables explaining the scope and nature of the statistics. The Year Book improved in its scope and data published since its first appearance in 1927. But war had its own effects in this publication because most belligerent countries and certain neutral countries have forbidden the publication of economic data, in whole or in part. Hence some of the important tables relating to employment, production, hours of work and production of certain food products and others had to be curtailed. In spite of these omissions this book constitutes a very useful source for international comparisons, and great pains were taken in co-operation with national administrators and sister bodies like the International Institute of Agriculture, to obtain comparable and latest data possible. This is one of the useful products of the League of Nations, which though it failed completely in the political field, made several useful contributions in the social and economic fields. This volume is a very useful book for students of Economics who are interested in the studies of demography of population, agriculture and industrial production, transport and monetary statistics of the different parts of the Globe.

N. S. R.

THE VICEROY AND GOVERNOR-GENERAL OF INDIA. By A. B. Rudra (Oxford University Press, 1940, price Rs. 10).

This book represents the thesis approved for the Degree of Doctor of Philosophy in the University of London. It has an appreciative foreword from Prof. H. J. Laski. Dr. Rudra has endeavoured in it to give a historical and analytical study of the position of the Viceroy and Governor-General in the constitutional structure of India. "The Viceroy as such has no statutory recognition nor has he any statutory or delegated powers. The term gives the Governor-General the status of the personal representative of the King but even without the use of this word the Governor-General may be as fully the personal representative of the King as with its use.....Under the new constitution however, the term Viceroy has one important significance: while the single term 'Governor-General' or 'Crown Representative'

does not cover the dual capacities of the King's representative in India, the term 'Viceroy' does." As Viceroy he is the head of the Indian Federation, Crown's agent for the exercise of Paramountcy, and the agent of the British Government and hence of the British Parliament.

The book is divided into two parts. The first part is a study of the appointment and tenure of the Governor-General, his social and legal status and his powers under the Montagu-Chelmsford Reforms. Here are also examined the Departments of the Government of India, their organisation and secretariat procedure. Two sections are devoted to a description of the Executive Council, its functions and its relation to the Governor-General. This is followed by two sections on the Government of India and the Secretary of State for India. The Secretary of State in Council was a corporate body. Its composition changed from time to time. Notwithstanding the Act of 1919 the control of the India Office over the Government of India had been practically all-embracing. But the Act of 1935 has altered the legal position of the Secretary of State *vis-a-vis* the Government in India. The author shares the Indian public opinion that the less the interference of the Secretary of State the better will it be for both India and England. In addition to his rights and powers, the Governor-General enjoys certain extraordinary powers—disallowing the adjournment motions, legislation by certification and also by ordinance.

In part II the position of the Governor-General under the Act of 1935 is explained with the same accuracy to details, in spite of the fact that the Act is a complicated statute. The Act aimed above all at four things: All India Federation, Central Responsibility, Provincial Autonomy and Safeguards. While some departments will be under the direct control of the Governor-General, the rest of the Federal Departments will be in charge of Ministers, subject to the Governor-General's power of intervention. He continues to have positive power of legislation by ordinance and by Act. Dr. Rudra goes on to examine the position of the Governor-General in the Federal Executive. After a thoroughgoing examination of the constitutional structure it is concluded thus: "The constitution is one which has proved unacceptable to instructed political opinion in India. The safeguards are frankly irritating and not necessarily in the interests of India."

There are four appendices, two of them being Letters Patent constituting the office of the Governor-General of India and also the office of the Crown Representative. One appendix is the draft

Instrument of Instructions to the Governor-General. As one surveys the different chapters of the book, one sees that Dr. Rudra's study is very comprehensive, and the treatment of the subject judicious. Whenever he treads on a controversial field, he offers many a helpful criticism. His is a facile pen that makes his readers sustain unabated interest in the subject.

V. R. R. Dikshitar.

OXFORD PAMPHLETS ON WORLD AFFAIRS.

No. 36—*The Gestapo* by O. C. Giles.—Mr. Giles is an English barrister who has made a special study of Nazi Germany. He gives a very clear, valuable and dispassionate account of the origin and growth of the secret police, showing how it marks not a reversion to a state of suspension of civil right because of a state of emergency, but the growth of a new notion, that of National Socialist feudalism. Because of the growth of this notion, police control has passed from the constituent states to the Reich; the sphere of control has extended from public acts to almost the entire life of every citizen; in practice and largely even in theory the political police and even the ordinary police, when functioning as its auxiliary has become independent of judicial control; and by a queer distortion of principle Germany claims the right to punish through the Gestapo even crimes committed in foreign countries by German political!

No. 37—*War and Treaties* by Arnold D. McNair.—Political theorists of ancient India envisaged a circle of states consisting of friendly, enemy and neutral states which were bound by agreements and entente, the observance of which was something sacred and the non-observance something profane. If we take a long range view from the age long before the dawn of the Christian era down to the present day, we are disappointed to find any substantial improvement in the law and practice of treaties. If we only take into account the treatment given to these treaties between one state and the other during the last three years in Europe one has to say that the sanctity attached to them in former times is no more respected. This booklet endeavours to show this state of affairs in a detailed manner, especially Hitler's way with treaties. The author believes in the principle of the revision of treaties provided the parties agree to it, and that to be effected by peaceful means. Article 18 of the Covenant condemned secret treaty-making. If we want to minimise the war-risks, it could be done only

by honourable diplomacy and a keen sense of the standards of international morality. What is wanted is a courageous tackling of international law, by depriving it of its imperfections and immaturities in regard to treaties.

V. R. R.

No. 38—*Britain's Blockade* by R. W. B. Clarke.—Propaganda, diplomacy, blockade coupled with bombing of Industrial objectives calculated to intensify the effects of blockade, are the weapons by which Britain can hope to counteract the Nazi military power and weaken it from within. The Pamphlet was written in October 1940, and part of it, particularly the discussion of the position of neutrals in the blockaded region, is now antiquated. Otherwise we have a careful and balanced view of the position of the enemy under the blockade (which is pronounced to be effective) in the matter of vital supplies, oil, coal and coke, metals, textiles and leather, as also of the war-time economies in civil consumption and their effect in prolonging the struggle. The author finds 'no reason to suppose that a condition of starvation will develop (in Europe), or anything like it,' though the quality of the food may deteriorate owing to lack of meat, fats and so on; yet, 'it seems likely that by the end of 1941 the raw material blockade will be having serious effects upon the German and Italian productive systems.' Relaxation of blockade 'even for the most humanitarian purposes' without safeguards (which are not likely to be forthcoming) is deprecated, and the need for giving up static defensive strategy in favour of shrewd counter-attacks and pushes clearly demonstrated.

K. A. N.

No. 39—*South Africa* by E. A. Walker.—A succinct history of the Union and its racial problems. With the closure of the Mediterranean, South Africa has regained its former importance as the half-way house from Europe to India. The present war which threatened a political crisis at its outbreak may provide the common experience that will unite the Europeans of South Africa into one people, or conceivably, the fires still smouldering may be fanned into flame by the Nationalist followers of Dr. Malan, and even of Hertzog, listening to German war propaganda. Anti-semitism is also rising. The problem of the coloured races, native Bantu and Indian immigrant, is briefly stated, and their fate is frankly admitted to depend on the sweet will of the Whites who are by no means friendly to them.

K. A. N.

No. 41—*The Origins of the War* by E. L. Woodward.—This pamphlet seeks to explain the immediate and deeper causes that led to the outbreak of the present conflagration in Europe. The immediate cause was of course Hitler's demands on Poland, one for the return of Danzig to the Reich and secondly the grant of a wide zone across the Polish Corridor so as to construct a military road and railway. The Poles regarded these demands as an attack on their independence and rejected them. The Führer answered by an invasion. The British and French Governments warned Germany of their obligations to Poland and asked for the withdrawal of her troops from the Polish frontier. This was not to be. So the Allies went to war to aid the distressed Poles.

Though this was the prelude to the war still there were deeper causes ever since Hitler became Chancellor of the Reich. It began with Germany's withdrawal from the League of Nations in October 1933. She then proceeded to strengthen her military, naval and air arms. Great Britain continued to keep diplomatic negotiations with Germany and the latter voluntarily entered into the Locarno agreements only to denounce them soon. Germany and Italy after the outbreak of the Spanish Civil War in July 1936 increased their armaments and embarked on new methods of war. In 1938 Austria was annexed and then Czechoslovakia. National Socialism appealed to Germany while the danger to democracy and all that is noblest in Western civilisation became more and more prominent. The Allies were forced to enter the war to make the world safe for democracy.

V. R. R.

No. 42—*What Acts of War are justifiable?* by A. L. Goodhart.—The Professor of Jurisprudence at Oxford discusses what acts are or are not justifiable in a belligerent state's relations to non-combatants, combatants, and neutrals. The German misdeeds both in the last and in the present war are shown up in their true colours. The infringement of International Law is coupled with an attempt to show that there has been no violation; hence even the enemy implicitly admits the existence of such law. The blockade of Germany is not on a par with German frightfulness, since the Allies but seek to prevent the entry into Germany, of such material as is likely to be used for military purposes. One may agree with all this and still question whether the primary evil is not war, rather than the incidents here discussed. War at the present-day is not the pursuit of a *kula-dharma* by a lusty, fighting class, but the expression of earth-hunger masquerading under claims of *Kultur*,

Race, or *Lebensraum*. With such falsity at the core, it seems as idle to look for observance of International Law, as to justify the right to reprisal (p. 25). Pace Prof. Goodhart, one still tends to be a pessimist and hold that *modern* war knows no laws.

No. 43—*Latin America* by Robin A. Humphreys.—A well-studied account of the history of the S. American states with a stress on the role of England in favouring their liberation in the nineteenth century. The rapid economic growth of the States since the First World War, their attitude to the League of Nations, and their reactions to changes in the United States policy are clearly expounded; and incidentally the strength of the German element in these lands assessed. Geographical and economic data of great value are very impressively presented.

K. A. N.

ENGLISH TRANSLATION OF THE SAMANYA VEDANTA UPANISHADS by T. R. Srinivasa Aiyangar and S. Subrahmanya Sastri; Theosophical Publishing House, Adyar; pp. xxxvi+534, 1941.

Messrs. Srinivasa Aiyangar and Subrahmanya Sastri continue in the present volume the work of Upanishad translation which they started with the Yoga Upanishads. The work has been done with great care and thoroughness, following the commentary of Upanishad-Brahma-Yogin whenever the bare text has to be supplemented or interpreted. The sectional captions of the Adyar Library edition have also been translated, offering valuable help to the reader. In some cases, however, they fail to be sufficiently helpful; for instance, the heading given on p. 24, will hardly make it clear to the reader (as does the commentary) that in the *sidhānta* of this Upanishad, the continuance of *prārabdha* is discountenanced; and the reader's confusion is increased by a set of quotation marks (in the penultimate line) marking the end, but not the beginning of a particular passage. Again, *Nirvikalpa samādhi* (p. 17) is hardly 'misconceptionless trance'; and 'wealth of cattle' would have been a better rendering than 'bovine wealth' on p. 529. But as Mr. Srinivasa Aiyangar says (p. vii) "nothing is perfect in this phenomenal world of ours" and for what we have got we are really thankful to the translator and his editor. The get-up, as usual with the T.P.H. is excellent.

HISTORY OF THE KAMMAS—PART II by Kotta Bhavayya Choudari of Sangam Jagarlamudi, Tenali Taluq, Guntur Dt.

Kammas are a sect of people belonging to the non-Brahmin community of the Telugu country. They are said to have derived their name from that part of the Telugu country namely 'Kamma-vāḍu' also called Kammarashtra or Karmarashtra comprising the Guntur and part of the Nellore District of the Madras Presidency, from having inhabited that country. This sect of people along with some others like Reddis, Kapus, etc., are mostly well-to-do people engaged in agriculture and are generally considered as an upper class among the various sects of that community. The chief purpose of Mr. Kotta Bhavayya Choudari in writing this history of Kamma people is not only to trace the genealogies of the individual families of this sect to earlier times but also to establish connection of many of those families with the various dynasties of kings who ruled over the Telugu country from times immemorial. In trying to do so he has laboured hard to gather information about the various dynasties of rulers of the Telugu country, and to identify the names of some villages and towns occurring in inscriptions granted by them and of which they are said to be the overlords, with the house names of the Kamma families obtaining in this country for some centuries.

Part I seems to have dealt with the history of the ruling dynasties of the country till the end of the 1st millennium after Christ. Part II, the present work, deals with the rulers of the later dynasties from the beginning of the 11th century A.D., like those of Chalukya, Duriyaya, Chada and Haihaya and tries to trace the descent of some Kamma families from rulers belonging to those dynasties. Though it cannot be denied that a few later Kamma families might have descended from some of the old ruling families of that country particularly Karmarashtra, the method adopted by the author in tracing their descent from them does not seem to be quite satisfactory. One or two instances may be mentioned here. Vol. IV of S. I. I. is said to have recorded an inscription of Vengi Mahadevaraja perhaps the son of Velanati Gonka III wherein the former was mentioned as 'Siddhipuravaradhiswara'. The author tries to identify this 'Siddhipura' with some Suddhapalligrama, and to trace the family having the Suddhapalli as their house name, to the family of the Vengi King Velanati Gonka III. Inscription No. 1325 of Vol. IV S.I.I. is said to have mentioned that in the time of Kulottungachola, one Pendalapaka Bhimayya who was an 'adapa' i.e., betel-leaf-bag carrier, gave some

goats to the God for the merit of Vishnuvardhana Brahmadhiraya Tammayya. The word 'adapa' in this sentence is interpreted as governing the following word and construed to be the house name of the latter to which the later 'adapa' family has been traced. "Pendalapaka Bhimaya Zaina adapa Vishnuvardhana Brahmadhirayaru Tammayyakudharmarthambuga bettina goriyalu." In another place "elamanchi maharaju Lakkamadevi Kunturu Ambikadevi"—Elamanchi is taken as a house name, while 'elamanchi maharaju' evidently means the Ruler or the Lord of Elamanchi.

Though it must be said that the author has taken great pains in presenting in this work the history of some of the ruling dynasties of the Telugu country in some detail, we cannot be sure that he has everywhere succeeded in his attempt to trace the history of the families of Kamma sect to the ancient ruling dynasties of the country.

K. R.

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Hannum and Brown: *Laboratory text in Elementary Zoology*.
Modern Verse, 1900-1940 (World's Classics) (O.U.P.).
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The Madras Agricultural Journal, Vol. XXIX, Nos. 1, 2 and 5.
The New Review, Nos. 74, 75, 76, 77, 78 and 79.
Bulletin of the Deccan College Research Institute, Vol. II, Nos. 3-4 with appendix.
The Journal of the Literary Committee, Vol. I, No. 1.
Indian Journal of Venereal Diseases and Dermatology, Vol. 7, Nos. 1 and 2.
Adyar Library Bulletin, Vol. V, Pt. I.
The Zamorin's College Magazine (March 1941).
The Journal of the University of Bombay, Vol. IX, Part 5.

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THE QUEST AFTER PERFECTION

By

M. HIRIYANNA

THE QUEST AFTER PERFECTION*

LECTURE I

According to the terms of the endowment, these Lectures should deal with 'the inner meaning of human history'. This description of their subject-matter implies that there is some ultimate purpose which man as such continually pursues, but that he does so unknowingly or, at all events, without a complete consciousness of it. If it is such a distinctive feature of man to pursue this purpose, we shall be able to determine it, at least in a general way, by inquiring wherein he most differs from the rest of sentient creation. The difference lies, as is commonly recognised, in the fact that he can become self-conscious or explicitly aware of his own identity. While other animals also lead a conscious life, they never know that they do so. In the words of one of our scriptures,¹ they live only from moment to moment, whereas man is aware of the past as well as the future. It is a great gift, because it enables him to review his thoughts, feelings, and actions as if they were apart from himself and pass judgment upon them. This capacity for self-criticism necessarily points to an awareness of a standard by which he judges; and the standard can be nothing short of absolute perfection, for the simple reason that the need for criticism will continue to be felt until an ideal, which is free from all imperfections and is therefore completely satisfying, is reached. In fact, man would not feel that he was imperfect if he had not within him such an ideal, latent though it may be. Whether he will ever attain it or whether, in thinking he will, he is only chasing a will-o'-the-wisp is a question to which I shall advert later. For the present it will suffice to note the existence in his mind of this ideal, urging him to strive for reaching a state in which he may rest with a feeling of contentment.

It is the presence within him of this ideal of perfection that makes man a spiritual being. Though all people are alike prompted by it, a loyal response to its promptings is by no means easy, for man is also a natural being. That is, he is not only inspired by a

* The Principal Miller Lectures delivered on the 17th and 18th December, 1940, under the auspices of the University of Madras.

1. *Aitareya Āraṇyaka*, II.iii.2.

consciousness of what he *ought to be*; he is also what he *is*, which tends to keep him bound to the pursuit of lower ends. This double nature results in an internal conflict between the flesh and the spirit or, as they are otherwise termed, the lower and the higher selves; and only some can, by overcoming it, respond wholeheartedly to the bidding of the higher self. It is to their thought and labour that human progress is entirely due. Since, however, the ideal is not explicitly known, even they can aim at it only tentatively; and the ends, which they actually pursue, may fall far short of it. My object in to-day's lecture is to find out whether we can define the ideal better, by considering the scope and nature of these tentative ends. I shall select for consideration what are called the eternal values, viz. Goodness, Beauty and Truth which are typical of such ends. They are now often regarded as standing for the ultimate ideal itself; but, I hope, it will become clear as I proceed that it is not correct to do so and that in pursuing them, however praiseworthy the pursuit in itself may be, man is still groping about for his final goal.

(1) *Beauty*

To begin with the second of these three values, viz. beauty, and consider it in relation to art first. It is well known that the contemplation of a work of art leads to an attitude of mind which is quite impersonal. Man not only grows unselfish here, but also forgets himself completely; and in the supreme aesthetic moment, he is conscious of nothing but the object or the situation portrayed in the work of art in question. His attitude then resembles what the *yogins* term *savikalpaka-samādhi*, in which one loses oneself, as it were, in contemplative union with the object. As a consequence of this self-forgetfulness, man rises above all the cares and anxieties of everyday life and experiences a rare kind of satisfaction, such as characterises, according to what I have stated, the realisation of the ultimate ideal. Further, this satisfaction, as commonly construed, is, like the final ideal, sought for its own sake and not as a means to anything else. All this is true; yet art experience cannot serve as that ideal, for it has, at least, one great deficiency which renders it unfit to do so. The contemplative satisfaction which it signifies is transient, because it lasts only as long as the art stimulus lasts; and the stimulus is bound to end, sooner or later, since it arises from an external and fictitious situation created by the artist. It is not suggested by this, that art experience will not leave its wholesome influence behind. All that is meant is that, whatever may be the nature and extent of that influence, the experience

itself, with its distinctive features, disappears after a time. And no state that is transitory can obviously be regarded as the final goal of life, whatever its other excellences may be.

To turn now from art to nature: There is a view, put forward by some, that beauty has no meaning when applied to physical objects. What they mean by it is that whether a natural object is beautiful or not does not depend upon itself, but upon what *we* can make it mean. 'Nature is mute' says Croce, 'if man does not make her speak'. But we may, perhaps, dismiss that view for this reason among others, viz. that while, according to it, all external objects must stand on the same footing, some actually appear to us as more attractive and arresting than others. Assuming then that there is no absurdity in speaking of beauty in nature, I may point out that that beauty in its entirety—immanent, as the poets say, in everything 'from the creeping plant to sovereign man'—is beyond common human experience. Such of it as ordinarily comes into view may be the beauty of single objects like a smiling flower or of a natural scene like a landscape radiant in the morning sun. In either case, it is but a fragment of nature that is presented; and we cannot lose sight of its boundaries at the time of appreciating it, as it necessarily appears in its cosmical context. It thus differs from a work of art which is a world by itself, and is so self-complete that it has been compared by some to a monad. In this respect, the beauty of nature, as it ordinarily reveals itself to us, hardly reaches the level of beauty in art which absorbs our entire attention. And so long as the appreciation of nature is piecemeal, the deficiency of transience pointed out above in the case of art experience is also here, because the fragmentary spectacle cannot be held before the mind for very long. Sooner or later it is succeeded by another, and the experience to which it gives rise may be altogether unaesthetic. There is also the possibility here of a beautiful spectacle in nature, because of its reality, changing its appeal from the aesthetic to the practical, even within the time it is kept in sight. A person admiring the scenic beauty of a mountain may conceivably be diverted from it at any moment by the thought of some practical purpose, say, of making the place fit for a health or holiday resort. It may thus become the focus of a different kind of interest; but no such diversion of interest is conceivable in the case of art, because its object is unreal. To a person contemplating the same mountain depicted in a picture, the idea of making it subserve a practical end does not occur at all. Thus the realisation of beauty in nature can no more be the final ideal than the realisation of beauty in art can.

That an exclusive devotion to the pursuit of beauty, whether in art or in nature, does not satisfy all the needs and aspirations of the human heart is, indeed, a theme which is familiar to readers of poetry. Tennyson's *Palace of Art*, for instance, is based upon it. In that poem, as is well known, the poet describes a gifted soul as building for itself a fine and spacious mansion amidst magnificent surroundings, but on the summit of a hill far away from the common people. After ornamenting it with artistic works of great beauty and splendour, it enters the happy abode saying to itself, 'All these are mine; and let the world have peace or wars, it is one to me.' This self-complacent attitude, no doubt, does not continue very long, because the soul, which has thus isolated itself from others, grows penitent of its pride and unsocial behaviour and, at last, steps down from its lofty mansion to join the common life and share its sorrows and its joys. But the poem makes it clear that there is nothing in aesthetic experience itself to guarantee against a life of self-centred satisfaction. The ideal of perfection, if it should answer to that description at all, cannot allow any side of human nature to be starved; and it will not hereafter be ever divorced from sympathy for fellow beings.

I have dwelt at some length on the inadequacy of the value of beauty to serve as the final ideal. Similar defects characterise the other two values also; but it will suffice to refer to them only briefly now, as I shall deal with them again later in this lecture.

(2) Goodness

This term, as is well known, is extremely ambiguous. But it is enough for our immediate purpose to take it in its most usual sense of the moral good and understand by it, in particular, what is signified by the golden rule, viz. that we should do to others, as we would desire them to do to us.² Man's belief in the need for such altruistic activity arises directly from his self-conscious nature, for he thereby becomes aware not only of his own self but also of others as having selves like his own and as subject to the same feelings of pain and pleasure as he is. That is to say, man realises through it that he is a social being, with obligations to discharge towards others amidst whom he lives. But when we remember that he, as a natural being, has also lower motives to contend with, we see that the pursuit of the good requires strenuous and continued effort; and so long as there is need for conscious effort, it is clear that the ideal is not

2. *Ātmanah pratikūlam yat parasya na tadācaret.*

reached. The moral good cannot therefore represent the final goal of life, until self-love is wholly overcome and altruistic service becomes the effortless expression of a permanent attitude of mind. Long training in social morality may establish in us habits of right conduct, and moral activity may thereby become a second nature with us. But such training, by its very nature, is adjusted to a general standard; and, while it may ordinarily be adequate to guide us aright in situations that more or less conform to that standard, it cannot be trusted to do so always. For there are sure to arise new situations in life, or there may suddenly present itself a conflict of duties, when it may fail us. Such situations will give rise to a tension of mind which cannot, unless moral success is a matter of pure chance, be got over till we are able to perceive for ourselves the kind of action which they demand of us. This perception presupposes common social morality, as its indispensable basis; but it also needs, over and above it, as I shall try to point out, a knowledge, or more strictly an intuitive understanding, of the ultimate truth about reality. In other words, goodness as a value depends for its complete realisation on another member of the trinity, viz., truth, and cannot therefore by itself stand for the highest ideal.

(3) Truth

The deficiency of art experience, viz. that it is transient, because of its dependence upon a situation created by the artist, is not found in the case of philosophic truth, for it has direct reference to reality. Nor does it suffer from the other drawback of fragmentariness characterising our sense of beauty in nature, for such truth is all-comprehensive, its object being the whole of existence. Any satisfaction, which its discovery may have for man, should therefore be quite stable. Further, the pursuit, as in the case of art and morality, is also marked by unselfishness, for truth, in its pure and undefiled form, is not likely to be attained if it is not sought for its own sake. Its purpose is to satisfy disinterested curiosity, and the intrusion of any personal interest like gain or glory is sure to vitiate the result that may be reached.

But, all the same, this value also has its limitation for, as now commonly conceived, it is speculative and signifies a purely theoretical understanding of reality. Such a conception fails to take account of the bearing which philosophy, unless we exclude from it the consideration of the nature of man and his place in the universe, has on his life. Bradley, for instance, states that philosophy

'seeks to gain possession of Reality but only in an ideal form.'³ Another modern thinker writes that 'its mission terminates in the quest rather than any actions that may follow it.'⁴ This bearing upon life, as implied in the latter quotation, is not, indeed, denied now; but, as being of a practical character, it is generally regarded as the concern of religion and not of philosophy. Here, it seems, we have an unwarranted extension to philosophy of a feature found in the pure, as distinguished from the applied, sciences. What I want to point out is that, unlike the truths of the pure sciences, those of philosophy and kindred subjects of study necessarily influence life. Indeed, they cannot be prevented from doing so, when once they have satisfied our reason and won our acceptance. A person may learn that the planet Saturn has a certain number of rings encircling it. That is knowing a scientific fact, and the knowledge may have no conceivable relation to his everyday mode of living. But the same cannot be said, for example, of the truth about the survival of the self. It is sure to influence life—in one way if a person believes in it, and in quite a different way if he does not. The study of formal logic again, to take another instance, with its exposition of the nature and sources of fallacious reasoning cannot be without its effect on the thinking of those that devote themselves to it. The ultimate truth of philosophy is of this kind; and, if what I have said about its significance for man is correct, it must contain a reference, latent or explicit, to the final ideal of life which, as an ideal, implies that he ought to aim at realising it in fact. To separate the theory of truth from its practical implication⁵ is to make of philosophy a mere game of speculation; and to rest in it is not to realise truth, but rather to leave off its pursuit in the middle.

To summarise what has been stated so far: A common feature of the pursuit of these values is its disinterestedness. Any admixture of selfish aim contaminates, and at once brings them down from the high place they occupy in the scale of values. If, for instance, a person tries to do good to others in order that they may do good to him in return, or even that he may thereby enjoy the consciousness of his own goodness, he is not really acting morally. In the words of the *Gītā* a moral action, truly so described, signi-

3. Bradley: *Essays on Truth and Reality*, p. 12.

4. J. S. Mackenzie: *Ultimate Values*, p. 26.

5. As thus philosophic truth is not utilised for achieving an end external to it, there is no contradiction here of what was stated earlier, viz. that it should be sought for its own sake.

fies that it has been prompted by *sattva*, and not by either *rajas* or *tamas*. A person may repay a debt willingly or unwillingly; and the act may outwardly appear to be the same. Really, however, it is very different, for it is not the act alone that counts but also the spirit or manner in which it is done. 'God cares a great deal more,' some one has stated, 'for adverbs than he does for verbs'. It is chiefly because of this feature of disinterestedness that these values are termed 'higher,' to contrast them with others like wealth or valour which are generally tainted by selfishness and are therefore lower or impure. Apart from this common feature, which is negative, each value has its own positive excellence. The pursuit of the good signifies altruistic service; that of the beautiful results in relief from the perpetual tension of life as it is commonly led; and that of the true yields comprehensive knowledge which, by removing all doubt and uncertainty, produces a stable conviction. But each has also its peculiar limitation. The first is necessarily characterised by strife, and can never be fully achieved in and by itself; the second may, no doubt, be realised but only for a limited time; and the third, as commonly understood now, being purely speculative, may prove utterly barren of result so far as practical life is concerned. Thus, though the realisation of these values means the overcoming of certain prominent deficiencies of common life to a greater or less extent, they have defects which render them, on the whole, unfitted to serve as man's final ideal, the attainment of which alone can completely satisfy his spiritual nature.

But it is necessary to guard against a possible misapprehension here. In criticising thus the triad of values, I only mean that none of them is ultimate in the sense of an all-sufficing or absolute value which leaves nothing further to be desired. That is, indeed, clear from the fact that they are reckoned as *three*. But all of them are ultimate in the other sense of being fundamental. Each has its own characteristic feature; and each appeals to a distinctive side of man's spiritual nature. That is, though none of them by itself suffices to be the final human goal, each stands for some necessary aspect of it. No final ideal can exclude altruistic service or restful peace or a comprehensive knowledge of reality.

All the three values are thus included in the ideal. A far more important point about them for us now is that, as shown by their description above, they supplement one another, and are sufficient, when taken together, to yield us all its essential characteristics. What then is the nature of the final ideal? To begin

with, disinterestedness should be a constant and outstanding feature of it. Further features of it are given by the excellences of the three values, but freed from their respective shortcomings. That is to say, conscious effort must disappear in the case of goodness, and moral action must become spontaneous and joyful. The restful peace and relief from the tension of life, resulting from the appreciation of beauty, must be not provisional but constant; and this necessarily implies that it should be derived from the contemplation of the whole of reality, and not merely of a portion of it, or an imaginative situation created by the artist. The complete knowledge of reality again, for which philosophic truth stands, must not remain a mere ornament of the mind but should become the inspiration of daily life. To set free these values from their respective deficiencies will be to metamorphose them totally. In other words, the ideal is not a mere combination of the three values but represents a creative synthesis of them, by which they are fused and welded into a new unity. It may consequently be said not only to include, but also to transcend them. This new ideal is, to characterise it in brief, a state of absolute unselfishness and of spontaneous joy that manifests itself always—whether one is engaged in outward action or is absorbed in inward contemplation. The testimony of Shakespeare in any matter is of great value, especially when it is found in his *Sonnets*, where he is commonly taken to have unlocked his heart. In consonance with his theme there, the poet generally refers only to the beauty of his friend and to truth by which he means the friend's constancy; but in one sonnet,⁶ he mentions the good also, and there he indicates the supreme value of the result of unifying them by speaking of it as quite a rarity:

'Fair, kind and true often lived alone,
Which three till now never kept seat in one.'⁷

Here naturally the question will arise whether such an ideal is at all feasible. How can man, it may be asked, who is finite and fallible, ever become perfect? There is a view held by some thinkers both in the East and in the West, according to which,

6. No. CV.

7. Compare also Tennyson's lines prefixed to his *Palace of Art*, already referred to, where he speaks of these values as

'three sisters
That doat upon each other, friends to man,
Living together under the same roof,
And never can be sundered without tears.'

strife, sorrow and insecurity are necessary features of human life and the only escape from them for man is in betaking himself to a realm which his own mind has fashioned, such for instance as imaginative art. In the actual world, he is entirely at the mercy of blind forces which are sure to frustrate his efforts to attain the ideal. This view assumes that the real neither is nor ever can become perfect, and that the ideal is always bound to remain unreal. It thus postulates a complete lack of harmony between the world of facts and the world of ideals. That is pessimism, pure and simple. It looks upon life as 'a vale of tears' and regards art, to confine our attention only to it, as nothing more than a hobby or pastime to which man may turn for relief from the worries and vexations of routine life. The practical outcome of this view is, as indeed is admitted, the passive virtue of resignation. A person resorting to it, though resigning himself to whatever may happen, may not be insensitive to the troubles of others. But the help which he can render them will be such as depresses him that gives and him that takes, because it has its source, not in love with its creative insight, but in pity for them as fellow sufferers in the same tragedy of life. It may be that this doctrine of despair cannot be logically refuted; yet the best thought all over the world is different; and, in India in particular, the majority of thinkers have all along believed not only in the superiority of the ideal of perfection but also in the possibility of realising it.

We may refer, in support of their belief, to the fact that man is not an alien in the universe but a part of it; and there is consequently no reason why it should prove hostile to him in his efforts to maintain an ideal which, be it remembered, is not the fabrication of a few minds but is implicit in his very nature. The attempt to accomplish it, no doubt, involves an internal struggle, especially in its initial stages owing to the double nature of man already mentioned; but it is his duty, as a self-conscious being, to overcome it. We may even go further and say that he not only ought to overcome it but *must* do so, for the nature of the higher self is such that it will not allow itself to be suppressed or to be subordinated to the lower, unless man has once for all sunk back into the life of the mere animal. Here is the necessity which impels him onwards; and he cannot rest until the opposition between them is resolved, and the lower self has been turned into a willing and ardent ministrant to the purposes of the higher. One may find a brief spell of peace by turning to works of art or other similar means of escape; but that is only to evade the chief problem of life and not to solve it. What is a fact, however, is that

the advance towards the ideal is very much chequered and discouragingly slow; but slow or uncertain progress need not necessarily mean that the pursuit will end in failure. Even if we grant that perfection can never be finally attained, that man's reach will always exceed his grasp, it would be necessary to recognise it as a regulative ideal, in order to determine the *direction* in which man should advance, for no continuous progress is conceivable without reference to a single definite goal.⁸ The adoption of perfection as the one ideal will help him to be ever progressing towards that which he instinctively feels to be his ultimate aim in life. By the term 'ideal' here is accordingly to be understood not a mere glorified idea for, though not finally achievable, there is no degree of approximation to it beyond which one may not aspire. To say that the ideal cannot be actualised is not consequently the same as summarily discarding it as false and futile.

And now as regards art: So far from being a mere sanctuary of escape from the troubles of life, it is an 'intimation' to man of the possibility of realising the ideal. In fact, according to Indian thinkers,⁹ the goal of perfection, in its essence, is already within the experience of all that are familiar with art. Like it, art experience also, as shown by the description of it given above, is altogether impersonal and is marked by pure and spontaneous delight. It gives us a foretaste of the ideal state, and may thereby serve as a more powerful incentive to its pursuit than anything else. By provisionally fulfilling the need felt by man for restful joy, it may induce him to do his utmost to secure it finally. It may have its limitations, such as lack of stability; but they only show that art experience is not the ideal itself, but is merely its analogue. They do not disprove that both experiences are of the same order; and we may well conclude from the fact of the one to the feasibility of the other.¹⁰

But how is this state to be attained? Just as its idea is derived by a synthesis of the three values, it is achieved by a combined pursuit of them all. In other words, they are not only a help in formulating the ideal; they also serve, when pursued together, as the means to reach it. But there is an important difference in the way in which they do so. I have just pointed out the unique

8. The alternative of a plurality of goals, like the triad of values, may prove distracting or lead to indulgence in caprice.

9. Cf. *Brahmāśvādamiva anubhāvan*: *Kāvya-prakāśa*, iv. 26-8.

10. The same remark applies to the beautiful in nature also.

manner in which the pursuit of the beautiful may help the attainment of the ideal. Being only analogous to it, the help it renders is indirect. By carrying us to the threshold, as it were, of the ideal and giving us a glimpse of it, art but inspires us with a desire for realising it. Unlike it, the other two values of goodness and truth, have a direct role to play; and they actually lead us to it, if pursued in intimate relation with each other. I shall now briefly point out how their correlated pursuit transforms both of them, and results in the ideal which is higher than either.

(1) The defect of a purely speculative knowledge of truth, as stated above, is that the seeker of it may feel satisfied with the intellectual conviction which it brings, and that it may therefore remain all unrelated to life. Instances are not wanting to show that strong theoretical convictions may coexist with defective conduct. But it may be asked how such dissonance between philosophic belief and practical life is possible, if, as I have said, there is a necessary connection between them. The answer is that the belief *does* tend to influence life but that there are undisciplined impulses in man which, without his knowing, assert themselves and prevent it from doing so. It is on account of such unconscious assertion of them that we, in actual living, lose sight of the truth, although we may have given our intellectual assent to it. Here we see the need for connecting the pursuit of truth with that of goodness. If these impulses are brought well under control by means of systematic moral training, philosophic truth comes, of itself, to influence life; and the process of its embodiment in practice deepens and intensifies our understanding of it, as mere arguments never can. The reason for this is the constant dwelling upon the truth necessitated by its application to everyday conduct. It removes gradually from our mind all beliefs which are incompatible with the philosophic truth we have learnt; and, as the pressure of these false beliefs grows less and less, we become more and more intimate with the truth and assimilate it better and better. When this process of inward assimilation advances sufficiently, the knowledge of ultimate reality, instead of remaining a mere intellectual conviction, becomes suddenly kindled into an intuition of it. We then see the truth *for ourselves*, and may be said to have made it our own.

The term 'intuition' however, as ordinarily used, is notoriously ambiguous; and it is therefore necessary to add a few words as to what I mean by it. Broadly speaking, there seem to be two senses which the word bears: it signifies either a means to the dis-

covery of new facts, or only a change in the mode of viewing what is already known. The ambiguity attaching to the term appears to be largely traceable to a confusion between these two uses. I am using it here in the latter sense, as equivalent to merely an altered way of knowing a thing already known which, in the present case, is the truth about reality as a whole. This truth, whether it is learnt from others or reached through reason, is comprehended by us only mediately or from without; but, when intuited, it becomes realised from within. Or, to state the same in other words, thought becomes thereby transformed into experience. The Sanskrit word *jñāna*, we may note by the way, is used indifferently in these two senses, and may mean either mediate knowledge or direct experience. But sometimes it is distinguished from *viññāna*, which corresponds exactly to 'intuition' as used above. Śaṅkara, in his commentary on the Gītā where this distinction is made, says that *jñāna* is mediate knowledge of truth, and that *viññāna* means the same but 'as brought within or transmuted into one's own experience.'¹¹ It is this feature of immediacy that is common to both kinds of intuition. There is nothing mysterious or occult about intuition in this use of the word, as there may be in the other. It also claims, no doubt, to be true like the other; but that is because it depends upon what has already satisfied our intellect and won our acceptance, and not independently as in the other case. It would, perhaps, be better to describe it as immediate experience or insight than as intuition. As an example of such immediate experience, we may give a man's awareness of his own pain or pleasure or any other aspect of his inner life, as distinguished from his knowledge of the corresponding states affecting others. A doctor understands the ailment of his patient through its symptoms or from the outside, while the patient himself experiences it from the inside.

(2) This is how knowledge of truth is transformed when its pursuit is combined with that of goodness. The reverse also takes place since what we believe, as already observed, cannot but influence what we do. When the living of the good life comes to be illumined by the knowledge of ultimate truth, it will be charac-

11. *Jñātānām tathaiṣa svānubhava-karaṇam* (vi. 8). Cf. iii. 41, ix. 1., and xviii. 42. We may substitute for this all mediate knowledge, whether it is derived through others' teaching, inference or logical construction. It may even be due to another's intuition in the first sense, if such be admitted. In all these cases, there may be need for changing it into immediate experience. It is only when the original knowledge is one's own intuition, in the sense of discovery, that there is not this need.

terised by a new spirit of confidence. The reason why such confidence is lacking in the pursuit of the good by itself is that moral action, signifying as it does a reaction to objective situations that demand some change, presupposes a proper, though only an implicit, appraisal of them. But every such situation is necessarily relative and fragmentary; and, if it is true that nothing can be fully known except when it is viewed in the perspective of the whole of reality, a proper reaction to it requires complete knowledge. But, ordinarily speaking, man cannot help regarding each situation, more or less, by itself. To set about changing it without a full and clear understanding of it, can only result in activity which is faltering and uncertain; and it may or may not be adequate to meet the requirements of the given situation. An element of contingency thus enters into all moral action. This difficulty in determining what course is right in pursuing the good explains the importance that has all along been attached in the moral life to adherence to social custom. The Mahābhārata says that, as the secret of *dharma* is hidden from man, the only course open to him is to follow the example of the better minds of the community to which he belongs.¹² It also seems to be at the root of the practical maxim 'Do the duty that lies nearest to you.' But with a direct experience of reality, man's reaction to any presented situation becomes quite decisive, because he can perceive at once its connection within it. He will be, to cite an illustration given by Bergson, in the position of a person who is appreciating a series of pictures relating to different phases of a city which he has seen, and not in that of one who is trying to do so without a personal knowledge of it. Morality, even then, continues to be the response of the agent to individual situations; but, owing to the comprehensive vision of reality that is his now, it ceases to represent tentative or *ad hoc* decisions as before, and all his actions will find their explanation in his new orientation towards the world, though in diverse ways.

The same insight into the nature of the whole of reality, by revealing the integrity of one's own self, also puts an end to the inner strife between the higher and the lower selves which, as stated earlier, is a great hindrance to the leading of the good life. It is the operation of lower motives that comes in the way of the higher activity. When a person rises above them, his actions, while they may be different considered in their individual aspect, will all alike

12. *Dharmasya tattvam nihitam guhāyam mahājano yena gataḥ sa panthāḥ*. (iii. 314 st. 119).

point to the same unvarying attitude towards the ideal of goodness. Hence conduct and character cease to be externally related; and the one becomes just the outward manifestation of the other. That is to say, philosophic insight determines a man's line of conduct finally, and all his voluntary actions will therefore constitute a consistent whole.

Thus the knowledge of philosophic truth, when it is changed into an immediate experience, transforms the attitude of the moral agent towards himself as well as towards the situations to which he is to respond. An important consequence of this double transformation is that the strifes and perplexities of ordinary life cease, and the doing of good becomes a matter of spontaneous joy. Man becomes self-forgetful in acting; and, though exercising self-control, he will not be aware of it. Self-consciousness being thus transcended, man's experience in the new state may be described as resembling that of art. In fact, art becomes superfluous to him for he reaches the kind of experience, which it can induce, through all voluntary activity. Even when he is not acting and is contemplative, he attains the same attitude since, thanks to his new vision, he sees beauty in nature always, and sees it not in this or that aspect of it merely but in it as a whole. Nay, his attitude then is higher for, in addition to its being detached and restful as in art experience, it is derived directly from nature; and any value is higher, other things being the same, if it is realised through the true instead of the untrue. I may quote in support of this view the following from the *Principia Ethica*¹³ of Prof. Moore: 'We do think that the emotional contemplation of a natural scene, supposing its qualities equally beautiful, is in some way a better state of things than that of a painted landscape; we think that the world would be improved if we could substitute for the best works of representative art *real* objects equally beautiful.'

When goodness and truth are thus pursued together, they serve as complementary to each other and lead to the same result, as the two eyes in seeing lead to the perception of one form or the two ears in hearing to the perception of one note. Knowledge that does not influence practical conduct is an empty accomplishment; and conduct that is not rooted in complete knowledge is only blind striving.¹⁴ Indeed, the relation between the two is so intimate that neither can entirely

fulfil its true aim without the aid of the other. The identity of the result which they yield, if they are properly pursued, is what Socrates meant when he said 'Virtue is knowledge.' It may seem a paradox to us because we commonly take knowledge to stand for mere intellectual conviction which, as already pointed out, may coexist with defective conduct. But it is used here to mean direct experience, which necessarily expresses itself in virtuous conduct. We sometimes think that we knew an act to be wrong, and yet could not help doing it. As an old Sanskrit saying has it, 'Man knows *dharma*, but he does not practise it, and he knows *adharma* but does not desist from it;¹⁵ and there is also its Biblical counterpart, 'The good that I would, I do not; the evil that I would not, that I do.' The fact is that in such cases we only know by hearsay that the act is wrong. If we knew it for ourselves and it was a self-won conviction, we could never have willed it. That is the meaning of the saying 'No one does wrong wittingly'. Our fault is thus really not so much a weakness of will as a lack of direct knowledge. It is, as a result of this combined pursuit of the good and the true, that man attains the ideal of perfection, which may be described indifferently as joyful and disinterested activity inspired by complete enlightenment, or as complete enlightenment which expresses itself as joyful and disinterested activity.

It is the quest of perfection, in this sense, that is the hidden meaning of all human endeavour. The ideal is exactly the same as what Indian thinkers designate as *mokṣa*, and whose achievement they regard as higher than either *dharma* which may roughly be taken to stand for the moral good, or *jñāna* which is knowledge of philosophic truth. As in the case of the ideal so far considered, it also is reached through the combined pursuit of these two. Since, according to the common view, *mokṣa* is a state to be achieved on a supernatural plane, the above identification may appear strange. But I shall deal with this and connected points about the conception of *mokṣa* in the next lecture.

13. P. 195.

14. Cf. *Haṭam jñānam kriyā-hīnam jñāna-hīna haṭā kriyā*.

15. *Jānami dharmam na ca me pravṛttiḥ, jñāmyadharmam na ca me nivṛttiḥ*.

LECTURE II

I tried to show in the first lecture that the ultimate purpose which man continually endeavours to attain, though not always with a clear knowledge of it, is self-perfection. I also indicated that this ideal had risen to the level of explicit consciousness in the Indian conception of *mokṣa*. My aim to-day will be to explain this conception. I shall also point out that the ideal for which it stands unfolded itself only gradually and that even now, though all Indian thinkers are agreed regarding its ultimacy, there is disagreement among them about several of its details. So far as the latter aim goes, I shall be concerned with what the terms of the endowment describe as the increasing revelation of man's ultimate purpose in the course of the ages. But it is not necessary to treat these two points separately. I shall begin with the second of them, which relates to the progressive unfolding of the ideal; and I hope that, in dealing with it, the first also *viz.*, the conception of *mokṣa* will become clear.

To judge from the literature that has been preserved, the conception of *mokṣa* is found for the first time in the history of Indian thought in the Upanishads; and since they are separated from the earlier portions of the Veda by several centuries, we may conclude that it dawned upon the Indian mind only after a prolonged search. But the stages by which the advance towards it was made cannot now be traced, because the long prevalence of the ideal finally reached has led to their almost complete obliteration. Yet so much is quite clear, *viz.*, that the true and the good were pursued separately as ultimate values before *mokṣa* came to be thought of:

(1) Truth

The surviving literature of ancient India may be said to start with the ideal of speculative truth, or truth sought for its own sake. The purpose of several philosophic hymns in the Rigveda is little more than the satisfaction of theoretic, or what is called contemplative, curiosity. The cosmogonic hymns, in particular, illustrate this point very well; and their mythology may well be described as the nature-philosophy of the age. The poet-philosophers of the day marvel at the vastness and splendour of the universe, and exhibit a passionate desire to know how it came into being. One of them, for instance, asks of what material it is constituted, 'What

was the wood and what the tree from which they fashioned forth the earth and heaven?'¹ and another, casting a speculative glance at the heavens, enquires, 'These stars which are set on high and appear at night, whither do they go in the day-time?'²—questions which suggest no motive beyond the mere desire to know. The answers given, as may be expected, are various, being based upon the beliefs prevalent at the time in the religious and other spheres of life. But the Indian came in course of time to conceive a dislike to the pursuit, in such matters, of theoretical knowledge as a final aim, and to feel that it should be sought only if it be useful in the attainment of some practical end. It is quite a commonplace to find it stated in the beginning of serious treatises in Sanskrit that the useless,³ like the obvious, merits no investigation.

(2) Goodness

The other value of goodness also was once pursued for its own sake; but it is necessary, before considering it, to explain the significance of the word *dharma* which, as I stated yesterday, might be taken as roughly equivalent to it. According to popular usage as well as some systems of thought,⁴ *dharma* signifies moral merit, which consists in or results from practising virtues like temperance, charity and compassion, and is therefore the equivalent of goodness. That, however, is not its sole meaning. It is sometimes used to denote ritual or religious duties;⁵ and, when so used, it points to activity whose final aim is to secure some personal good to the agent. But even then, the idea of *dharma* necessarily presupposes moral goodness, in its double aspect of devotion to social duties and cultivation of private virtues. There is a simple story narrated in the Mahābhārata (xii. 124) to illustrate this point. Once upon a time, it is stated here, Prahlāda, the king of the demons, defeated Indra in battle and took over from him the whole of the heavenly kingdom. Distressed at this discomfiture, Indra went to his victorious opponent in the guise of a pupil, and served him most dutifully for a long time. Pleased with that service, Prahlāda conferred

1. Rigveda, X.31.7.

2. *Ibid.*, I.24.10.

3. E.g. the number of *kāka-danta*. The taste for speculation as such, however, did not entirely disappear. In almost every department of learning, we find discussions whose bearing on practical life is very slight. But this is only the exception that proves the rule.

4. See *Vātsyāyana* on *Nyāya-sūtra*, I. i. 2.

5. See *Bhāṣya* on *Mīmāṃsā-sūtra*, I. i. 2.

a boon upon Indra, leaving the choice of it to him. Indra then asked Prahlāda as to how he had come by such a splendid kingdom; and learning that it was the fruit of his goodness he asked for its transfer to himself—a device by which Indra in the act of securing virtue for himself, would deprive his enemy of it. Bound by his promise, Prahlāda agreed. Soon after, he saw something radiant emanating from his frame and passing out. When he questioned what it was, it replied that it was his own virtue moving towards its new abode. But that was not all. Immediately after, he saw another apparition of the same kind; and, on being questioned similarly, it replied that it was *dharma* following virtue unable to bear separation from it. The point thus concretely illustrated in this story, which we have to note, is that the relation between goodness and *dharma* is necessary, so that to speak of a person as devoted to *dharma* is to imply that he is of a virtuous character. With this implication of *dharma* in our mind, we may pass on to consider the place assigned in early Indian thought to the value of goodness.

Passages, commending the pursuit of *dharma* as an end-value, appear on a much larger scale in the Veda than those pointing to truth sought for its own sake. The whole of the Brāhmaṇa literature, which forms the bulk of the Vedas, may be said to be concerned with it. In the language of a somewhat later epoch, it may be described as the *tri-varga* or threefold ideal for, according to it, the only legitimate human values are three, viz., *dharma*, *artha* and *kāma*, of which the latter two are to subserve the first. This view excludes *mokṣa* from the sphere of the higher values, and therefore also *jñāna*, or knowledge of ultimate reality, which is but a stepping-stone to it in the opinion of all the schools that uphold that ideal. Whatever use was found for knowledge in that view was as subordinate to *dharma*.⁶ But, unlike speculative truth, this value continued for long to be recognised as ultimate. In many portions of the Mahābhārata we find only the *tri-varga* ideal set forth, although the final purport of the epic, in its present form, may be *mokṣa* as expert interpreters point out. Āpastamba again refers to it in his Dharma-sūtra;⁷ and Jayanta in his *Nyāya-mañjarī* alludes to a school of thought which, in controverting the ideal of *mokṣa*, says 'It is all very well to talk of it as the highest value. But is it feasible at all? Really the values are only three—*dharma*, *artha* and *kāma*; and the so-called fourth value is nothing but a

myth. When distress overtakes a man by the death of those near and dear to him, he may talk of *mokṣa*; but when it comes to a question of actually pursuing it, he fails to find any truly practical means to its successful achievement.⁸

To consider now the ideal of *mokṣa*. As already stated, it is mentioned for the first time in the Upanishads; and the fact that they are regarded as the crown of the Vedas points to the belief that it came, in course of time, to be taken as the highest value. But it should not be understood from this that either *dharma* or *jñāna* was excluded, for we come across statements in the Upanishads which emphasise the need for both in attaining the ideal of *mokṣa*. The Śvetāśvatara Upanishad, for example, declares that where *dharma* or ritual is practised, 'there inspiration is born' (ii.6), and also that 'there is no winning of the goal of life except through knowledge' (iii.8). While admitting that *jñāna* and *dharma* or *karma* (to use the term which is commonly substituted for it in this context) are necessary, these early thinkers seem to have discussed for a long time their relation to each other and to the final ideal.⁹ The Īśa Upanishad (st. 9-11), for instance, places equal emphasis on both (*ubhayam saha*); but others, like the Brhadāranyaka (IV. iv.22), assign a relatively subordinate position to *karma*. The same diversity of opinion survives in the later schools of Vedānta, some subordinating *karma* to *jñāna*, others regarding them as of co-ordinate importance. Without entering into details, we may note that all the schools of Vedānta, while admitting the need for both, refuse to subordinate *jñāna* to *karma* as the Mīmāṃsā does.

The new ideal not merely includes the old ones; it also transcends them as shown, for example, by the statement in the Īśa Upanishad to which I have just referred. According to it, *karma* and *jñāna* yield their own distinctive fruits;¹⁰ but the result to which they lead, when pursued together, is higher than either of them. In this process of combined pursuit, the two values are totally transformed; and the transformation is precisely like that which, as pointed out in the previous lecture, the good and the true should undergo, if they are to culminate in the ideal of perfection. In the first place, *jñāna* changes from being mediate knowledge to imme-

8. Pp. 513-5. This view seems to have been held by the early Mīmāṃsakas or, more strictly, the Yājñikas.

9. See *Vedānta-sūtra*, I. i. iv and III. iv. 1-17.

10. Cf. *Karmanā pitṛ-lokaḥ*; *vidyayā deva-lokaḥ* (Br. Up. I. v. 16).

6. According to the principle enunciated by Jaimini in his Sūtra (I. ii.

7). Cf. Saṃkara's com. on *Vedānta-sūtra*, I. i. 4.

7. II. xxiii-xxiv.

diate experience. That, for instance, is the significance of Upanishadic passages which prescribe a course of meditation upon the final truth after it has been learnt.¹¹ In the second place, *dharma* also undergoes a similar change. Conceived as an ultimate value, it serves, as indicated earlier, a double purpose—securing some personal advantage to the agent, and ministering to the good of others. Of these two, the former or the egoistic aim is here wholly given up, according to the well-known teaching of the *Gītā*;¹² but its altruistic purpose continues as before, so that *dharma* becomes service to others rendered in a spirit of absolute detachment.

A similarly protracted investigation, it may be added, was carried on regarding another point touching the nature of the ideal. The goal of human existence, as first conceived in India, was the attainment of unalloyed and everlasting happiness in a future life by offering sacrifices to the numerous deities believed in at the time, and otherwise propitiating them. Whatever may have been the nature and extent of the self-sacrifice presupposed by a successful achievement of that goal, it cannot be gainsaid that it was finally the seeking of happiness for oneself. This hedonistic aim naturally gave rise to a reaction; and we find springing up various other schools adopting the opposite view and representing the goal as one not of happiness, but only of freedom from pain and suffering. This negative view was advocated, for instance, by the followers of the Nyāya-Vaiśeṣika and the Sāṅkhya-Yoga. There was a reversion from it, afterwards, to the positive ideal of bliss in the Vedānta, which stands for the final verdict of the Indian mind in this, as in so many other, respects. According to all forms of it, the final state of release is characterised not only by the absence of suffering but also by the presence of bliss.¹³ The restoration of the earlier aim, it must be added, also meant its sublimation, since the bliss or happiness of *mokṣa* is not conceived as a *new* acquisition by the self but as the regaining of what is intrinsic to it. Further, the notion of the self itself is in one way or another profoundly transformed in all the schools of Vedānta. In the theistic schools, like the Dvaita and the Viśiṣṭādvaita, it is conceived as completely dependent upon God, while according to absolutistic doctrines, like the Advaita, the individual self as such ceases to be, because it merges in the universal self.

11. E.g. *Vijñāya prajñām kurvīta*: (Br. Up. IV. iv. 21).

12. Cf. *Īśa*. Up. st. 1 and 2.

13. Cf. *Tarati śokam ātma-vit*, Ch.; Up. VII. i.3. *Rasam hyevāyam labdhvā ānandī bhavati*, Tait. Up. ii.7.

The point to be specially noted about this ideal, whether conceived as negative or positive, is that when once it was definitely formulated, it came to be accepted by all the Indian thinkers as the highest of human values. Even the Mimāṃsakas, the direct successors of the old exponents of *dharma* in the sense of ritual, from whom determined opposition to it might have been expected, acknowledged it; and there is reason to think that the new ideal had been adopted by them by the time of Upavarṣa, who is commonly referred to the early centuries of the Christian era. Thus the conception of *mokṣa* marks a definite advance in the search for the ideal in India; and the step which India took in this is unique in the whole history of human thought. We may have a purely practical ideal or a purely speculative one elsewhere; and we may occasionally find even a welding of the two with a view to reach a higher goal. But the explicit formulation of it, and its acceptance by all thinkers and once for all is peculiar to India alone. It means that there are two aspects of man which need to be taken into consideration in arriving at the true conception of his highest ideal. In the first place, he is ignorant of the ultimate truth; and he is also aware of that ignorance, as shown by his very efforts to philosophise. It is not, however, his only shortcoming. If it were, a knowledge of the ultimate truth would suffice for him to attain the goal. But it does not, for every man, according to his past, has more or less of selfish impulses in him; and these need to be brought under proper control, if not altogether eradicated, before he can achieve the ideal. So long as he is subject to their influence, he can neither whole-heartedly pursue the good nor even effectively strive to acquire metaphysical truth—the two necessary requirements for self-perfection. This does not mean that an exclusive attention to either of these aims, viz., goodness and truth, is not of any value. Both, to be sure, leave their elevating influence behind. In the case of moral practice particularly, to quote the words of the *Gītā* (ii. 40), even a slight advance made has a lasting value. What is meant is only that the *complete* development of man's nature rests not on the purification of the impulses alone nor on the removal of ignorance alone, but on both. In fact, as we have already seen, neither can be achieved finally without the help of the other; and the culmination of the one process implies the culmination of the other¹⁴

14. *Na hi sarva-kāmānām vimokṣa paramātma-sākṣātkāramantareṇa upapannāḥ*: Citsukha's *Tattva-pradīpikā*, p. 395 Nirṇ. Sag. Edn.). Cf. *Bhāṣya* on *Yoga-sūtra*, i.16; *Jñānasyaiva parā kṣāthā vairāgyam*.

Though agreement has thus been reached in regard to the status as well as the essential nature of the ideal, there are still important points about it which remain undecided. I have already had occasion to allude to one such point, viz. the yet unsettled controversy concerning the precise relation of *karma* and *jñāna* to each other and to the ideal. I shall mention two more; but, in so doing, I shall confine my attention, as I have for the most part done thus far, to the schools of the Vedānta. The other doctrines, including the orthodox Mīmāṃsā have for long been superseded completely so that it is not really necessary to refer to them in reckoning up the final conclusions of Indian thought. They mark but stages in the unfolding of the Indian ideal; and their primary interest now, so far at least as our immediate purpose is concerned, is historical.

(1) The first point concerns the question whether or not the ideal can be attained in the present life. Among the Vedāntins, none but Śaṅkara holds that this is possible.¹⁵ He does not, indeed, mean that all will attain it here and now; but the point is that, according to him, there is nothing inherent in the nature of the goal of perfection to prevent its achievement in the present life. He is well supported in this by the Upanishads which, though they also refer to *mokṣa* as taking place after death, contain several statements which show that it can be achieved here. One of the most explicit among them is the following: 'When all desires dwelling in the heart vanish, then a man becomes immortal; and (even) here reaches the goal.'¹⁶ The other Vedāntins explain such statements as more or less rhetorical, and maintain that release is possible only after death. Even so great an authority as Āpastamba¹⁷ ridicules the idea of achieving perfection when one, to all appearances, still continues to live under finite conditions. But Śaṅkara states, in one of the very few passages in which he seems to refer to his own experience, that the matter is one of personal knowledge and that it is not for another to deny it.¹⁸ Even those who refuse to accept the possibility of *jīvanmukti*, as this is called, admit that man may reach so near to the ideal here that release will result *immediately after* physical death. What they insist therefore is only that the process of preparation should not

15. Some of the non-Vedāntic schools of Indian thought, like the Sāṅkhya and Buddhism, also accept *jīvanmukti*.

16. Kaṭha Up. II.iii.14.

17. Dharma-sūtra, II. xxi. 14-16.

18. Com. on Vedānta-sūtra, IV.i.15. This does not make it subjective, for it has the support of *śruti*.

cease *within* this life, but should continue till its end. According to Śaṅkara, on the other hand, there is no reason for such insistence because, if to realise the ultimate truth is the means to it, *mokṣa* must be achieved whenever such realisation takes place;¹⁹ and there can be no interval between the two, as there can be none between the dawning of the day and the disappearance of darkness. One can understand the view that the ideal can never be actualised by us, for it seems to be in its very nature to recede as we pursue it; but, if it is granted that it is achievable, it is hard to see why its attainment should invariably be after this life. This question, it is obvious, touches the conception of the ideal intimately; and it is scarcely necessary to point out that the positivistic view of *mokṣa* advocated by Śaṅkara, makes a greater appeal for man than the eschatological one.

Here the question may be asked whether such complete intuitive knowledge of reality as is required for *mokṣa* can be attained in the present life. The answer to this question depends upon what we understand by the term 'knowledge' in this context. It refers, no doubt, to reality as a whole. But what aspect or aspects of it precisely are intended to be understood by it? It is often assumed that it should comprehend *all* details concerning it. If it does, there is probably something to be said against the conception of *jīvanmukti*, because it is inconceivable how all details relating to the whole of reality—past and future, far and near—can be comprehended by any one in this life. But there is truly no warrant for such an assumption. The knowledge is only of the *essence* of reality—such essence as is suggested by the well-known examples given in the Chāndogya Upanishad (VI. i) to illustrate its all-pervasiveness, for instance, the substance gold in all golden things. To take the advaitic doctrine, with which we are at present concerned, the truth taught in the Upanishads is the oneness of all with the Absolute. Now to intuit this truth, in our sense of the word, is to realise that oneness within one's own experience. Its realisation may be far from easy, but there is nothing impossible in it. The correctness of this view is vouched for by recognised exponents of the doctrine. One of them, interpreting the Chāndogya passage in question, 'When the self is known *all* is known,' writes that the word 'all' there refers only to the inner essence of all things and is not intended to signify the knowledge of each one of them in its

19. See Śaṅkara on Vedānta-sūtra, III.iii.32. It is virtually the goal, according to him, and *mokṣa* in the eschatological sense automatically follows after death. Cf. *Vimuktaśca vimucyate*: Kaṭha Up. II.ii.1.

individual and accidental form.²⁰ No objection, on this score, can therefore be urged against the ideal of *jīvanmukti*.

It is desirable to add a few words in elucidation of this ideal. We should not think that, in the view of those that uphold it, progress and perfection are conceptions pointing to the same level of experience. The one takes place in time; the other signifies transcending it. As Prof. Radhakrishnan says, perfection is not attained within the time order or within the limits of the historical process. It is 'victory over time, a triumphant passage from the historical to the superhistorical.'²¹ That is, perfection is not to be understood as taking place gradually or step by step, but in a flash at some point during the progress. This is the significance of the scriptural passage, quoted by Śaṅkara in his commentary on the Kāṭha Upanishad,²² which means that the knower 'arrives at the goal without travelling.' It does not consist in moving towards a goal, but is a mere change of outlook.²³ Progress and perfection are, indeed, related to each other, but only as time is related to eternity, where eternity is not everlasting time but what transcends it; and that relation cannot obviously be temporal. There is certainly a long course of preliminary discipline prescribed for reaching the goal; but, as Śaṅkara is never tired of reminding us, it serves only as an indirect aid. Or, as we might put it, the discipline is merely for gathering the spiritual momentum needed for rising above the stream of time. This kind of sudden transformation in us occurs whenever any of the higher values is realised; but while in the other cases we catch but a fleeting glimpse of the perfect state, here it is attained once and for all. We touch the ideal there, but fall away from it soon. Here there is no such lapse.

A person that has attained *jīvanmukti* does not abandon activity if, indeed, it is possible for anybody to do so; but the activity becomes wholly impersonal, and he responds to presented situations without relating them to himself. It is this transcending of all subjective or personal valuation which is the significance of the Upanishadic saying²⁴ that a knower is not troubled by thoughts like 'Have I not done the right?' or 'Have I done the wrong?' It means that he rises above the moods of self-approbation and self-

20. *Sarva-padasya sarva-tattva-paratvena tattadasādhāraṇarūpena sarva-jñānasya avivaksitavāt: Siddhānta-leśa-saṁgraha—*(Kumbhakonam Edn.), p. 62 (com.). See also *Pañcadaśī*, xiii. 54ff.

21. *Philosophy*, (1937), p. 264.

22. *Anadhvagaḥ adhvasu pārayiṣṇavaḥ* (I.iii.12).

23. *Avagatireva gatiḥ* (Ibid.).

24. *Tait. Up.* ii.9.

condemnation, and not that he ceases from acting. The freed or perfected man thus does not lead a passive life. Nor is his attitude towards the world one of pessimistic fatalism, as it is too commonly assumed. That is clear from our characterisation of *mokṣa* as a state of supreme bliss; and there are many passages, like the song of the soul's unity in the Taittirīya Upanishad (III. x.), which revel in describing the peaceful state of the knower. There are again *saṁnyāsins*, still among us, who are the embodiment not only of loving kindness for all, but also of detached joy of which the serene smile that ever plays on their lips is a sure sign.

(2) We have thus seen that there is nothing in the nature of *mokṣa* which necessarily makes it attainable only in a future life. The second point, which I like to mention, relates to the question whether this ideal is such as can be achieved by one and all or only by some; and, if the former, whether it is to be attained by individuals separately and in isolation from the rest or by all together. This is a detail about which also the Vedāntins have not arrived at any definite conclusion. According to certain schools, like the Dvaita, some are eternally bound; of the remaining schools some maintain that release is for all but that it is for each separately; and others that no one, whatever his qualifications and however far he may advance on the path to it, will attain *mokṣa* until all are qualified for it. The last is what is generally known as the ideal of *sarva-mukti* or universal release. Unlike *jīvanmukti*, there has been a long and keen controversy about it even among the advaitins; but it is clear that there can be no other conception of freedom which makes a wider appeal. The belief of the Indian in the *karma* doctrine which, in its prevalent form, holds each person responsible for whatever he is now or may ever become hereafter may suggest that the conception of release should be individualistic.²⁵ But several great thinkers have believed in *sarva-mukti*, and there are various ways of conceiving the possibility of it recorded in old Sanskrit works. Of these, I shall refer here to one that is least dependent upon the technical postulates of Vedānta.

Long prior to the time of Śaṅkara, there flourished a Vedāntic thinker, named Bhartṛprapañca.²⁶ He also was a monist, like

25. This, of course, does not mean that society is neglected, as is clear from the insistence on altruistic service in the training qualifying for release.

26. See *Indian Antiquary* for April, 1924, for an outline of the views of this thinker. Cf. Nṛsiṃhāśramin's *Vedānta-tattva-viveka*, pp. 34-8. (Chowkhamba Series).

Śaṁkara; but he advocated what is known as the *bhedābheda* view. That is, though he believed in the sole reality of Brahman, he, unlike Śaṁkara, found a place for all variety in it. According to him there is only one soul, but it functions in many centres. The common notion of a plurality of souls is due to this functional divergence and the mistaking of a temporary focusing of experience for the permanent individuality of the experient. But really this individuality only represents one of the numerous points where the single soul operates. Or to express the same in a different manner, the only soul that is, the cosmic soul as we may term it for convenience in referring to it, reveals itself simultaneously through several bodily organisms. A giant banyan tree, judged by its secondary trunks standing apart, may appear to be many; but it is really one for they all meet at the top, the seeming trunks being only roots that grow in the air instead of under the ground. There is nothing novel in this notion of one and the same soul being in relation with many bodies for, according to the *karma* doctrine, a single soul is regarded as assuming different bodily frames in different births, though the bodies there are conceived as succeeding one another *only in time* and not, as here, as coexisting *in space also*. If thus there is only one soul to be liberated, the so-called individual *jīvas*, which are but partial and provisional manifestations of it, can only contribute towards its liberation, which will not obviously result until the effort in that direction of the last *jīva* is successful. All of them should strive, but it is for a common end that they should do so. This unity of purpose, however, is only from the standpoint of *mokṣa*. In regard to other purposes relating to moral or material welfare, the *jīvas* manifestly differ; and their difference, so far, is admitted to be real.²⁷ That is, while every person feels, and feels rightly, that he has his own specific aims to achieve, that feeling is wrong, if entertained towards the final aim of life, because he cannot secure it apart from the rest. In this twofold aim, he resembles, we may say, a planet which, while moving on its own axis, also moves, in accordance with the constitution of the solar system, about the sun as all the other planets do.²⁸

27. This is expressed by saying that, though *avidyā* is one, the internal organs (*antah-karāṇas*) are many. Brahman becomes the cosmic soul through the adjunct of *avidyā*, and it is split up into a manifold of *jīvas* through the different internal organs. The *jīvas* thus have two adjuncts. In Śaṁkara's Advaita, the second of these is traced to the first, so that they are conditioned ultimately by only one adjunct, viz., *avidyā*.

28. The adoption of this double attitude by Bhartṛprapañca towards the

A necessary corollary to this view is that the achievement of the final ideal requires a twofold discipline. The first part of it is for overcoming narrow attachment (*asaṅga*), which is the source of man's wrong belief that he is essentially different from others. He should therefore first rise from this false belief to a consciousness of the underlying unity of all. And the means to it is devotion to social morality and meditation on the truth that there is but one and only one soul, though it shows itself as manifold. It is the conviction that the souls are many and are only externally related to one another that is the source of much, if not of all, moral evil. When that conviction is replaced by the contrary one that they are but the same, the moral evil practically disappears. It is only when this unity of all the selves has been realised, not only in thought but also in fact, and man has shaken off the burden of a separate self that he will be able to work for the further and final ideal of spiritual freedom. If we start with the notions of matter, finite selves, the cosmic soul and the infinite spirit, we may say that the object of the preliminary training is to realise the ultimate oneness of all finite selves with the cosmic soul. The aim of the second part of the discipline is the realisation of the ultimate unity of all Being, including matter, and of that Being as the infinite spirit. The discipline of the second stage also consists in work and meditation; but it is not necessary to enter into further details. It will suffice to observe that a person, who has experienced his identity with the cosmic soul, will necessarily be actuated by universal love, and that, there being nothing to disquiet him except the consciousness that there are others who have yet to realise the same identity, his main concern then will be to assist them in doing so.

What we have to note particularly in connection with this view is that man must disabuse his mind once for all of the notion that he can reach his spiritual goal apart from others. To say that one's salvation is one's own concern is like saying that the heart or the lungs have their own end to achieve independently of that of the bodily organism as a whole. Whatever separate purpose they may serve is only contributory to *its* well-being. The excel-

self makes his view better than the other views of universal release now commonly known. It avoids the solipsistic position of those that maintain the possibility of such release on the basis of one *jīva* alone, and explain the belief that there are many *jīvas* as purely a delusion. If to avoid this difficulty, the *jīva* is taken to be *in reality* but one, though *appearing* as many, we should be in the self-stultifying position that when one strives for and attains *mokṣa*, all will be released: *Munirmanute mūrkhō mucyate*, as an old saying has it.

lence of this position consists in the fact that it gives no room for the charge that may be brought against the other ideal of isolated release. Whatever may be the extent of altruistic service involved in the training necessary for reaching it, there is no question that that ideal is eventually individualistic. But here it is not so at all. Every one, who is qualified, works for the perfection of all ; and he does so with the full conviction that he has nothing to gain thereby for himself exclusively. Here we have a parallel to the Gītā teaching of selfless duty. It asks man to do his duty without any reference whatsoever to his personal interests. The same principle of detached action is, in this view, extended to the higher aim of *mokṣa*. The teaching of the Gītā is to be followed here also, but not for achieving one's own salvation, as it is usually explained; it is rather for acquiring the fitness to work for the ultimate purpose of universal perfection.

Thus we see that, although the view that *mokṣa* is the highest ideal has been accepted by all Indian thinkers, and the Vedāntins among them are also agreed as regards certain important features of it like its positive and blissful character, there are details relating to it which remain still unsettled. These details, to judge from the instances just given, are such as will, when determined, not only clarify the ideal but also inspire man with fresh motives for responding readily to its call. That man should still be far from the goal of life is not so surprising, for he is governed not only by his spiritual but also by his animal nature. What is surprising is that, with all the attention which the best minds have devoted to it for so long, even the nature of the ideal should be yet not completely known. The ordinary view that it is known and is embodied in the triad of values—the good, the beautiful and the true—is, as we have seen, not correct. Until the ideal becomes quite clear in all its important aspects, we cannot expect true or steady progress towards it to be made. But its further determination, it should be plain from what has been stated so far, does not depend upon mere speculation; it depends also upon an earnest pursuit of it on the practical side, as far as it has been envisaged. That is how the ideal has hitherto been ascertained. Mere theoretical advance is not of much avail; and advance on the practical side only, though certainly more useful, cannot by itself lead to the final goal. It is only when both theory and practice are pressed into service that, on the Indian view, any genuine progress in our knowledge of it can be made. As the nature of the final goal becomes clearer and better understood in consequence of this twofold endeavour, we may be sure that man's march towards it will be less slow and less chequered than it has hitherto been.

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