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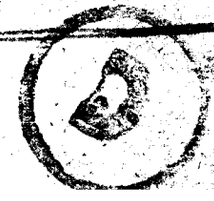

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CIVILISATION AS A CO-OPERATIVE ADVENTURE

THE PRINCIPAL MILLER LECTURES, 1932.

BY

PROF. A. R. WADIA.

Lecture II

In my last lecture I rigidly avoided direct references to the present. I thought it safer to concentrate on the past and learn from it as much as we could before venturing to speak of the living present. We are too much in it to see things clearly or as a whole. Our likes and dislikes obsess us at every stage; the shadows of life stand out far too prominently and cast a gloom over the sturdiest heart. We have not yet recovered from the devastating effects of the greatest war in history, when the prospect of another great war raises in us the gloomy reflection whether the civilisation that the hands and brains of so many nations have built up is not on the threshold of disruption. But if the past has any lesson to preach, it is this: that nothing great has ever emerged in human history without a prelude of utter despair. And the present may have yet in its womb something great, something noble which is to carry humanity to some yet higher peak than any the past has seen. This is indeed optimism, but not of that shallow variety so witheringly satirised by Voltaire two centuries earlier in his *Candide*. If optimism can be shallow, so can pessimism be with the additional disadvantage that it saps our energy and makes us mere futile Cassandras. Far better is it to repeat with Shelley: '. . . . . O wind, If Winter comes, can spring be far behind?' China is passing through a painful crisis, but need she despair? Is it not true, though paradoxical, what Dr. Will Durant has said: 'They (the Chinese) lose every war and win every peace'? And why? Because, he says: 'Surely the future must belong to a nation that can be happy without money, content without love, strong without good food and healthy without soap'. Such a nation is the Chinese.

Bearing the lessons of the past in mind, I should like to consider to-day the significance of the present for the future. The most outstanding event of the last hundred years is the complete dominance of the European civilisation in the whole

world. Only a partisan would be so bold or so foolish as to say it is perfect—perfection is not given to mortal nations. But it would be equally foolish not to see that it could not have succeeded to the extent it has, unless it had something very vital in it: a daring adventurousness, bold initiative, grit and a power of organisation and capacity to unite, a cunning inseparable from imperialism, and yet a vision which catches time by the forelock. The West too is in its own way wedded to the past, but refuses to be dominated by the past or to be a slave of the past. Yesterday I sought to bring out the interesting fact that civilisations whether in the East or the West had grown and prospered by their willingness to learn. China was willing to learn and did learn from India and so did eastern Asia generally. Greece learned from Persia as much as Judæa did, and Persia was not slow to benefit by imbibing Hellenism. The Arabs assimilated the culture of the Persians as much as the religion of the Jews and the Christians. And through this culture they came to rekindle the dying embers of culture in Europe. Persian Sufism was but a new edition of Indian Vedanta. Would it be incorrect to say on the basis of these facts that Judæa died to live in Christianity; Greece of the city-states died to live in Macedon and then in the Roman Empire; Rome died to live in Europe; Persia died to let Hellenism enter Asia and later again to live in the glories of the Mahomedan Khilafat, and still later in the Moghul Empire of India?

I venture to suggest that the death of civilisations is not so final as at first sight it appears to be. The parents live in the children long after their sojourn on this earth has come to an end. But for this continuity which runs through every department of the world we should not have that slow but steady building up of all that has made humanity great and dominate the world. If there be truth in the immortality of the soul, we are in a position to realise how each individual human life dies to live afresh. The same law applies to the so-called 'death' of civilisations. If there is any vitality in them, they must live in a wider environment to fructify a wider world.

The only death that civilisations can know is the slow lingering death of stagnation. But even here some providential

hand makes its appearance just when a civilisation seems to be stagnating too much, for what Time has built up with infinite patience and labour it is unwilling to see decaying and perishing. A monstrous polytheism with its endless tribute of men and maidens was corroding the life of Babylonia and Egypt and there came the vivifying spiritual breath of Zoroastrianism. The Vedic culture was sinking under ritual and caste, and Buddhism was born. The Chinese culture was tending to be too self-centred and Buddhism came in good time. Greece and Rome were languishing for something truly spiritual, and Christ came with his message of universal peace and love. Zoroastrianism was languishing in Persia and the wave of Mahomedanism revived its flickering spirituality. Europe in its ascetic mood was sunk in darkness and the needed spur came from the Saracens. The East was languishing in its so-called spirituality and it had to be stirred up to new life, and the disturbing factor came in the form of the traders and adventurers from the West. Socrates boasted that he was a gad-fly to Grecian society and Napoleon did not inappropriately adopt the stinging bee as his emblem. Human pride and self-complacency need to be pricked, and the powers that guide human life see that this pricking is done whether its victims like it or not. Lessing appears to be correct when he said that 'contingent truths of history can never prove eternal truths of reason', but it is doubtful whether history is merely contingent and whether there are any truths which all would accept as absolutely eternal. On the contrary history shows that whenever any people flattered themselves that they alone were in exclusive possession of truth and therefore had to learn nothing from others, they invariably came to grief in the realm of spirit as much as in that of matter.

The world to-day is confronted with three main problems: economic reconstruction, internationalism and racialism. All these three problems are very closely interconnected and it would be interesting to see how far the world can hope to solve these problems.

I

It may not be possible for us to accept whole-heartedly the materialist philosophy of history for which Karl Marx

and the Bolshevists have made themselves responsible. But it would be futile to deny the core of truth it has: the prime need of satisfying our economic needs. The growth of empires may have been due to the overweening lust for power in individual conquerors and incidentally may have had remarkable repercussions in the realm of spirit. But as often as not, they have been due to a need to find out new sources of food supply or new markets for superfluous products. The imperialism of Europe to-day as well as its nationalism and racialism have an economic basis and to that extent the Bolshevist interpretation of history cannot be wholly gainsaid. In fact it is the hope of solving the hunger problem, the hope of doing away with the constant dread of unemployment, the weakest point of capitalist economics, that has been responsible for the large and growing number of recruits to the ranks of communists. Communism is an assertion of human equality and the right of every man to live. It is conscious of the great achievements of science especially in the direction of food production and the rapidity of food transmission, and therefore Bolshevism no less than capitalism bases all its hope of success on industrialism, of which the Five Year Plan is but a first instalment. Years ago when the very existence of Bolshevism seemed a dim and distant dream, Prince Kropotkin in his *Conquest of Bread* had emphasised the possibility of science hastening the day of minimum labour with the maximum of food supply. If the dream comes true, it will come true only through industrialism. The East will have to follow suit or go under more and more. I have read few more striking things than the essay by a Chinese scholar, Mr. Hu Shih.[1] In that essay the fundamental weakness of eastern age-worn economics as compared with the go-ahead methods of the West is brought out with withering scorn. The civilisation of the bullock cart has no chance to compete on equal terms with the civilisation of the motor car. Industrialism is something good in so far as it is the expression of the human need to create more and more, but it has its palpable limitations in so far as more and more creation may lead to reckless over-production and the exploitation of

[1] *Whither Mankind.* Edited by Charles Beard.

weaker countries as convenient dumping centres. Organised production means organised control, which can only be effectually exercised by the state. Therefore the state is a logical necessity of human nature and it is an idle dream of the Bolshevists that they will be able to do away with it at any time. So Bolshevism by itself cannot hope to achieve peace. With the existence of independent states the chances of jealousy and clash remain and that gives the point to the need for a sane internationalism.

The existence of backward countries is a great danger to the peace of the world, for they are a perpetual temptation to the aggressive human nature of the strong. But is there anything in human history to justify the view that some nations—the coloured nations from the standpoint of the white imperialists—are eternally doomed to be mere carriers of water and hewers of wood? Thus behind internationalism lies racialism. Men like Houston Chamberlain in Germany and Gobineau in France and the racial imperialists in the British Empire, whose names are so well known that they need be hardly mentioned, believe that the brown and the black have no right to an independent existence.

Racialism is strongest in the United States and the British Empire, particularly South Africa. The South African whites waste no time in any subtle camouflaging of their real aim to rule Africa in their own interests. They do not hesitate to declare that 'no ethical considerations such as the rights of man will be allowed to stand in the way.' They proceed on the assumption that, 'the Negro must always be treated as a child and given some form of manual education that will increase his efficiency as a labourer; but he must not be taught letters, as they would muddle him with ideas that he could never appreciate'. Even so level headed a statesman as General Smuts thinks that the 'easiest, most natural and obvious way to civilize the African native is to give him decent white employment. White employment is his best school; the gospel of labour is the most salutary gospel for him'. The position of the Negro in Africa is about the gloomiest picture in the world to-day, for without the traditional advantages of culture and a high religion that the people in other parts of the world can command, the unfortunate Negro seems to have a

very dark future before him, unless the Negroes of America will ever be in a position to do what they can for the uplift of their race.

Japan has been an eye-opener to the East as well as to the West. That there is nothing specifically western which under suitable conditions and with suitable modifications cannot be transplanted to an eastern sky has been proved by Japan. It has given a lie to the idea that there is anything in which the West can enjoy a perpetual monopoly. Under the aggressive militarism of the West, the East had been so cowed down and its spirit so broken that it seemed an idle dream that the East could ever compete with the West. This miracle was performed by the Japanese within the short space of forty years, and it has given rise to a new orientation of values, the significance of which has not been lost on the whole of Asia, including of course India and also Egypt and Turkey. Japan has once again proved the age-old lesson of history that isolation does not pay, that refusal to learn whatever new can be learned spells death. Japan has been westernised, but has not lost her peculiar characteristics. She has borne witness to the fact that the East lives and is not sunk in the inactivity that masquerades under a defunct spirituality. Turkey and Persia have had to learn the same truth, and whether orthodox mullahs like it or not they have forged ahead. In the study of the Japanese Renaissance we have to acknowledge that it is not merely western industrialism and western militarism that have played their part. Christianity with its emphasis on social service has played a part which the Japanese and the Chinese themselves are not slow to admit. And yet the Christianity of the Japanese is nearer liberal Buddhism than to the Fundamentalist Christianity, as Dr. Pratt himself admits. In China, we learn from the personal observations of the same writer, there is a definite Buddhist revival and an attempt to reconstruct Buddhist theology on the lines of modern philosophy. In this revival Christianity has been acting both as a rival and a friend and the Chinese themselves are not slow to admit that Buddhism owes its revival to the labours of western scholars. Perhaps the most interesting way in which this mutual reaction between Christianity and Buddhism has been acting can be seen in the

case of a Buddhist young girl, who is made by Dr. Pratt to tell her story in her own words: 'At the age of 19 I made a vow before Buddha that in this life I would never marry but give my life to Him as a nun. I have kept this vow for four years and many times I wanted to shave off my hair, but was prevented by my parents. I am sorry that I cannot be a nun early in life. I have three friends with the same mind. . . . . At first we thought that by becoming nuns we would escape from the world's misery and sorrow, enjoy peace and work off by penance some of our sinfulness. Furthermore by becoming nuns we sisters could live together and never be separated, which is supreme joy. But now after reading Hai Chow Yin, we know that to forsake the world is to benefit others, not ourselves. Having known this, my will to be a nun has become stronger than ever.' It was really the discovery of Buddha that the only real renunciation is the service of mankind, but it was lost, for men find it easier to idle away their time in what they call meditation than in actual service, and modern Christianity has rediscovered the old truth. Even secular pursuits ethically pursued are really a spiritual occupation. Spirit has got the power to spiritualise all that it touches and Leigh Hunt's Abou Ben Adhem was right when he made no secret that his first love was for mankind, and yet his name was first in the list of those who loved God.

When I come to speak of Hindu India I must plead guilty to extreme perplexity. On the one hand as a student of philosophy I am attracted by the sublime thoughts of the Upanishads or of their later superstructure as revealed in all the schools of Vedanta. The Gita has a vigour, a universality which has a message as great as any other sacred book, and yet it is steeped in philosophy as no other sacred book is. But when we look round as to its actual significance for mankind we find that it has been confined more or less to India and even here not to all Hindus. Hinduism whether as a religion or as a system of thought has not had that triumphant career as a world force that Zoroastrianism and Buddhism, Christianity and Mahomedanism have had. Its depth, its message have become exclusive possessions. It is a paradox and a very perplexing one. I have thought about it and my conclusions

may be wrong, but I shall have the courage to place them before you for what they are worth. I shall be content, if my remarks provoke you to thought.

The source of India's weakness has all along been in its unabashed emphasis on caste. The principle of caste is the feeling of aristocracy and is the negation of that fundamental truth: the unity of mankind, which has been the message of the greatest thinkers all over the world. That was the burden of what Zoroaster in Persia, Buddha in India, Confucius in China, Christ in Palestine and Mahomed in Arabia taught and there are no higher names than these. I am inclined to think that the Gita is capable of interpretation in terms of universalism, though one has to despair of making the punditic mind do so. Whatever justification the caste organization may have had in the days when the fair Aryans from the snowy Central Asia found it necessary to defend themselves against the native Dravidian population, it is questionable whether its continuance has not on the whole done more harm than good.

To do full justice to all the aspects of the caste system would take much longer than the space I can devote to it as a principle of civilisation in this lecture. One thing is certain which would be admitted by the most orthodox that the caste in its origin was nothing so rigid as it has come to be. I do not agree with those who regard it as a Dravidian institution. It was unquestionably Aryan, for it existed in ancient Persia, where there were no Dravidians. It must have been economic in its origin, though in India in virtue of its contact with the Dravidians it very soon developed a racial tinge, which has clung to it right through. It was an ingenious experiment for the solution of the racial problem, but it was no more successful than the segregation thrust on the Negroes in America to-day, though the Negroes have had a much better scope for development than the jungle tribes and the untouchables generally have had in India. It is disagreeable to admit, but unfortunately true, that Hinduism has not had the same civilising influence on the lowest strata of the people in India as Christianity has had on the lowest classes in Europe or on the American Negroes, or Mahomedanism has had on the wild tribes of Northern Africa. But no segregated

community is above exercising its evil influence in a subtle fashion and thereby proving their brotherhood with the higher castes in much the same way as the unfortunate Irish widow of Carlyle succeeded in proving her sisterhood by infecting seventeen people with typhus. The lower forms of worship current among Dravidians have penetrated the purer forms of Vedic worship, and hence the enormous gap which divides the pure heights of Hindu philosophy from the crude anthropomorphism and mythology of the ordinary Hinduism of the masses with their animal sacrifices and endless ritual. It is true that a good many of these things can be ingeniously explained away as mere symbolism, but the unfortunate fact remains that there is hardly one in a hundred to understand the symbolism, while the remaining ninety-nine hardly get a chance of understanding its esoteric religious significance. It is an iron law of history that when two cultures come into contact with each other the higher must raise the lower to its own level or it must run the risk of being brought down to the level of the lower. No better example of this can be found than in the history of Hinduism. The caste with its sense of superiority has generated a power of resistance, which drove Buddhism into exile and even the strong waves of Mahomedanism and Christianity have just succeeded in ruffling the surface without dislodging the aristocratic feeling. Successive influences have produced reformed sects, which after a few generations have lapsed into new castes. Jainism and Veerasaivism and Sikhism, Brahmos and Arya Samajists have just become branches of the Hindu polity. A large-hearted catholicity marks the poets of the Bhakti movement, but the sentiment figures more as a truth to be understood than as a precept to be practised. Unable to weld together its own component units into a strong phalanx of effective resistance to external attacks or to withstand inward decay, it has been still less able to enter into a real unity with the various other communities, large and small, that have found a home in India, and to the prejudiced observer it is no wonder if India presents just a spectacle of congeries of communities, which neither human love nor the amenities of the dining floor can bring together. Swami Vivekanand had the courage to admit the decay of Hinduism and did not hesitate

to declare that Hindus had become mummies ten thousand years old.

Any one who is obsessed with his own importance and is unwilling to learn from others is apt to be left behind in the surging tide of advancing knowledge, and to cherish the idea that Sanskrit learning attained such perfection that there is nothing more to learn from modern knowledge is on a par with the fatuitous statement traditionally, though wrongly, attributed to Caliph Omar that all books except the Koran should be destroyed, for if they contained what was in the Koran they were superfluous, and if they contained anything that was not in the Koran they were not worth reading. The pundit of to-day has become a fossil. Compared to the other oriental countries the progress that India has made in modernism has been very disappointing. Our universities have failed to play a bold part in social reform and this has hindered our political progress as well. Hegel a century ago made the most astute remark that 'it is a false principle that the fetters which bind right and freedom can be broken without the emancipation of conscience—that there can be a Revolution without a Reformation'.

The Hindu Law in its early history reflected the evolution of social changes, but we have to-day a practical immobility of social institutions, though the world has moved for a thousand years. The Committee appointed by the Government of His Highness the Maharaja of Mysore to review the rights of women under the Hindu Law has produced a document, which ought to mark a landmark in the history of social legislation in India. It had the advantage of being presided over by a far-seeing and enlightened Chief Justice of the Mysore High Court: Dewan Bahadur K. S. Chandrasekhara Aiyar. Speaking of the joint Hindu family the Report says: 'Under the impact of modern conditions and the consequent growth of the individualistic spirit—with its sense of legal rights and personal interests—it is visibly breaking up, a phenomenon which cannot be arrested and need not be regretted'. And yet when an important piece of social legislation comes up, we find our enlightened members of the legislative assemblies busy creating a lack of quorum or putting it down with the official block. Perhaps they are right in fearing premature legislation,

which will be openly defied by the masses, but then we find no strenuous steps taken to cultivate public opinion on social problems or to create a social conscience against the existence of evils, whose only claim to exist is that they are centuries old. Is it not a sufficient condemnation of the caste system as a social or a moral institution that during the last hundred years the very best Hindus, who can really claim to have done something for their country whether in politics or science or literature or even more in religion itself, were all condemned with more or less intensity to the rigours of social ostracism? Is it not a greater condemnation of it that many good souls, who would willingly be different from what conventions expect them to be and yet lack the requisite courage, are doomed to hypocrisy: pretending to be orthodox, while both their head and heart revolt against orthodoxy?

It is significant that Indians inspite of the advantage of coming into contact with the advanced thought of modern Europe much earlier than other easterners, in social matters still lag far behind Japan and China, Egypt and Persia and certainly behind Turkey. All these countries have seen through the patent fact that unless they imbibe the highest culture of the present age, mere whining about national culture will not help them. It is futile to expect to race bullock carts with motor cars, or to return the charge of machine guns with a shower of arrows. They who have power will use it for themselves, a simple political truth and yet so hard to digest. The *Zeit Geist* is ruthless in its march. The patriotism of Brutus did not avail against the inevitable death of the Roman Republic any more than the patriotic but sentimental philippics of Demosthenes had availed to stem the rising tide of Macedonian power.

Japan was the first and remains the greatest eastern power to awake from the sleep of ages and furnishes one of the most astounding miracles of history in its capacity to learn and sacrifice all narrow considerations. It is a most unfortunate trait in human character, which has been responsible for most of the evils in life, that those who possess power or privileges do not give them up, when larger interests require that they should be given up. In this respect it is noteworthy that the Samurai of Japan, the hereditary aristocracy, had the vision to

see that any further continuance of their privileges would end in Japan becoming a dominion of some European nation and they gave up their hoary privileges and reaped the full reward of their self-sacrifice: they have built up Japan and broken the spell that was reducing the East to a state of helotage. One could indeed wish that she had not developed that imperialism which is creating havoc in China to-day, but it would be wise to await events and see the good that may come out of this evil. Perhaps this aggression may serve to weld together the centrifugal forces in the Chinese Empire. We must all be glad that China even in her misfortunes is proving to the world that she is awake and alive, that the unchanging China is changing fast under the pressure of circumstances.

I am afraid I give you the impression that I am emphasising the importance of the modern culture of the West far too much. I do not mind pleading guilty to this charge, for I stand by human spirit. The East and West are just geographical terms to designate, not different species, but just different branches of the one great human family. The West has grown to its present stature, because it did not disdain to learn: ancient Greece from Egypt and Persia and even from far-off India. Europe took her religion from Palestine. She took up her printing and gunpowder and mariner's compass from China. She did not despise Plato and Aristotle because they came in Arabic garb from the Saracen. She is always prepared to learn and hence has become the ruler of the world. We in the East gave in abundance in the past and there is no shame now in learning from the West whatever is necessary, but while learning, we cannot overemphasise the need to be critical. The West is but human and has its full share of human weaknesses.

The most common criticism levelled against European civilisation is that it is materialistic. We are rather apt to flatter ourselves that we are spiritual and thereby soothe our defeatist consciousness. Verbiage and sentiment apart, the significance of materialism and spiritualism has to be comprehended before we can pride ourselves on spirituality or condemn others as materialistic. When an Indian generally speaks of the western materialism, he has in mind the industrial

system and the power of the machinery which so dominates life in Europe and America. But it is questionable whether the invention of machines is really inconsistent with a deep spirituality. A machine is a mere tool, an instrument to help man in his struggle for existence. With the development of pastoral life useful animals came to be tamed and dominated by man for his own purposes. With the discovery of agriculture the cattle and the horses rose in value, so much so that even to-day the cow or the buffalo is worshipped, since the purely economic origin of their importance has come to be forgotten. To the nomads in the desert the camel and the horse are as dear as life itself. For centuries animals have been recognised as instruments of human life whether in the East or the West, and who would venture to argue that animals have been less material than the machines in our factories or the motor cars on the roads? Every discovery, every new invention is a tribute to man's genius and is an expression of his higher nature, I would venture to say of his spirituality. Animals do not create. If they dominate, they do so only by brute force or an inherited cunning associated with their instinctive life. But man is man by virtue of his intellect, his capacity to think, his capacity to invent new devices to meet new situations. In recent centuries this capacity for mechanical inventions has conspicuously flowered in Europe and America, but thereby far from showing that they are merely materialistic, the westerners show the strength of their inward spirit.

Materialism and Idealism are philosophical terms which signify the ultimate supremacy of matter and spirit respectively as the principle of existence. This is the only legitimate meaning of the terms and in this sense only those are materialists, who believe that matter is the only thing that exists, that even mind is only an epiphenomenon. That materialists of this type exist and have always existed in Europe is not to be denied any more than that in the fruitful history of Indian philosophy materialists like the Charvakas also flourished once. It is certainly remarkable that most of the European scientists, who have changed the face of the world through their epoch-making discoveries and inventions, are not necessarily materialists. Like people who really

know, they are conscious of their limitations, and the more they strive the more they understand how purposefully, how logically even nature works. Darwin's emphasis on natural selection has with deepened knowledge yielded place to Lamarckianism with its emphasis on teleology. The triumphs of psycho-analysis go to show that even the seemingly most absurd and nonsensical dreams have their inner symbolic logic and are full of meaning for those who have the gift and the patience to extract their secret. Indeed, life is too mysterious to be explained in terms of mere matter. The exact place of science is well understood by the great creative minds in the realm of science. The distortion of their teaching comes from lower intellects, popularisers who can only be compared to unproductive middle men in the realm of commerce. For a generation after the great work of Darwin and in the flush of first telephones and gramophones many philosophers were excited and on the point of enthroning matter as God, but since then with deeper knowledge and a deeper consciousness of what has yet to be learned, the present generation of thinkers has become more sober and is anything but purely materialistic.

If the West, however, can be absolved of the charge of philosophic materialism, it does not escape the guilt of a practical materialism, which centres round a worship of money. Wealth in the West literally covereth a multitude of sins. This has its legitimate corollary in this that men and women alike come to be appraised, not by what they are, but by what they look and what they have. One can understand how Carlyle came to write his great Sartor Resartus, but the very existence of men like Carlyle goes to show that the worship of the external form and the tailor's and milliner's art is by no means universal. The large army of Western scholars, buried in tomes of research as well as the large army of Western men and women, who dedicate their lives to some form of public service, go to show that the zest to serve is still there and explain the vitality of European civilisation. The sense of social service is still strong and contrasted vividly till recently with our inactive 'spirituality' in India. The desire to do away with the slums and the incidents of poverty is universal in Europe and America, and the effort to realise this desire is

laudable, while in India the huge majority are still at the stage when the existence of the poor and the down-trodden is looked upon as a divine dispensation, which only a sacrilegious and degenerate man thinks of disturbing. There is in our midst a good deal of tall talk of spirituality, but it is mostly confined to a meticulous performance of ceremonies and pilgrimages and preserving one's holiness by keeping masses of men at arm's length. If Christ taught that the touch of the holy sanctifies the unholy, spiritual India still believes that even the shadow of the 'unholy'—and this is merely a matter of birth—can pollute the 'holy', again a mere matter of birth. No wonder if our talk of our spirituality is not taken at its face value by the majority of the Westerners, for after all the real test of spirituality is to be gauged by what we do, and not by what we talk.

Is the West declining? We in the East with our more conservative ideas of life and manners are apt to answer this question in an emphatic affirmative, while the volumes of Spengler have given a new fillip to it. For Spengler the decline of the West is an inevitable phenomenon on the basis of a law deduced by him from a wide study of other civilisations in the past. Culture is what he adores, but when culture spreads, it becomes civilisation and the stage of civilisation marks the beginning of the decline. I cannot say that his general line of thought or his conclusions appeal to me as correct. His thought savours far too much of an aristocratic scholar who cannot come to appreciate goods of the soul aspiring to a place in the open market. Nor is there yet any reason to believe that either the physical or the mental vigour of the European shows the slightest signs of decay. Reports about the incidence of the venereal diseases or the lurid reports of night life in western cities may lead one to think that the West is burning its candle at both ends, but as against this we have to set to its credit side improved housing conditions, a fine system of physical education, spread of literacy and the development of a social conscience. In fact during my visit to Europe last year nothing struck me so much as the beautiful physique of the younger generation. An educational officer of the London County Council challenged any one to point out one foul mouth in the school children in London, so

confident was he of the immense attention paid to dentistry, a phenomenon which certainly did not prevail twenty years back in my own student days. I found everywhere health, and where disease prevailed, there were everywhere resources to grapple with it.

Yet there is no doubt that the decline of the West is inevitable. Europe for the last two centuries has been predominant. Her adventurous spirit, her organising capacity, her inventive genius put the rest of the world under a severe handicap. And this process of domination was fostered by the inferiority complex of the Asiatics and the Africans alike. Things are changing. The supremacy of the Westerner is no longer regarded as a divine dispensation, but as a matter of mere historical incidence. The non-European world has awakened from its sleep of centuries and is trying to make up for lost time. This will be achieved in course of time. Europe is bound to realise that her supremacy will be challenged and she will lose her dominating position both in commerce and in politics. It is only in this sense that the West will decline: but that is a matter of relativity. If the Europe as we know her to-day ever declines and dies, it will not be before she will have transfused her spirit into the rest of the world. History may repeat itself, but only by creating a better world.

Commercial supremacy and political dominance are bound to breed a class of the idle rich. Europe is full of them, though thanks to the rising tide of socialism the rich are becoming appreciably poorer. Even so, western cities to-day present an appearance of luxury and superficialities, which militate against the higher values of life. Holywood may not be representative of the real West; nevertheless the amount of space it occupies in the public mind is symptomatic of the corroding influence of luxury. We are not concerned to deny that the stars of the filmland are genuine artists, who have a contribution to make to the world of art, but the amounts they earn and the publicity they enjoy are out of all proportion to their exact place in the scheme of life. Behind their beauty and their wealth and series of romances ending in cycles of marriages and divorces, there may lurk—I am sure there lurks—an emptiness of heart, a void as to the deeper meaning of life.

And it is here that the materialism of the West stands out in all its naked ugliness. The empty round of pleasures: theatres and dances, surfeiting dinners and cocktail parties, and shortlived love episodes, which leave behind bitter memories of divorce courts and broken homes—these are indeed spots that darken the face of Europe and America even to-day at the zenith of their power.

It is with reference to this life of superficial existence, which finds its champions even in the ranks of philosophers, that the East becomes conscious of its superiority in spite of its degeneracy. The genius and the logic of thinkers like Lord Russell cannot prove that the immoral is moral in sex relations. Such advocacy points to a changing world, where every change is worshipped just for the sake of change. The East with its age long conservative traditions is more cautious, perhaps too cautious, and suspicious of any change, but to its credit it must be admitted that behind its conservatism there is an abiding consciousness that the life of wealth and giddy pleasures does not bring out the best in man, that life is too serious to be reduced to a round of hectic pleasures, and that money cannot measure the depths of life. This consciousness is inborn in India and is the most relieving feature of Hindu civilisation. Individual materialists there may be and are among Hindus as everywhere else, but the miracle of Puran Bhagat as so vividly portrayed by Kipling can happen only in India. It is not an idle boast that Buddha and Gandhiji could have been produced only by India. In the midst of the busiest life and greatest prosperity there suddenly comes to the Hindu a call of the saffron robe and out he goes with a beggar's bowl and staff. There is something majestic, something awe-inspiring in this. It has often served as a cloak for hypocrisy, it has often degenerated into a parasitical existence, flourishing on the credulity of the ignorant and the hard-earned money of the honest. But at its best this renunciation is something exquisitely beautiful, especially when it means renunciation for the sake of service. No country in the world other than India can boast of such a long line of recluses as have renounced their own individual happiness to leave the world better than they had found it. Such was Buddha. Such were Sankara and Ramanuja. Such were the mystics like Kabir and

Chaitanya, Tukaram and Chokemela. Ramakrishna Paramahamsa is still a living memory. And there is Gandhiji, commanding in his simplicity and sincerity, evoking the homage even of those who differ from him.

It is not surprising that this capacity for calm suffering evokes the admiration of foreigners like Mons. Romain Rolland or Dr. Gilbert Murray, and of all those who have in their innermost being a deep consciousness of the eternal. That is why the westerners who feel distracted by the hurry and skurry of their native environment wistfully turn to India to secure that rest, that *ananda*, which through ages has been the quest of Indian sages. The East to-day, and particularly India, however, needs something of that nervy activity which is the characteristic of the full-blooded westerner; it needs that zest for social service which scorns individual peace of mind when there is a cry of suffering near by. On the other hand the West needs that spirit of calmness which would enable it to resist the incessant call of the flesh and to appraise life in all its bearings; it needs the strength of a calm spirituality which does not make its men and women victims of the passing moment, but actors in an eternal drama: the drama of life. India has much to learn, but she has much to teach. The sage of Kapilavastu and the sage of Sabarmati join hands across centuries and remind the world that India is still in possession of that spirit which produces prophets and philosophers.

II

Hegel in his lectures on the Philosophy of History stopped with his own epoch on a note of exaltation of his own country. *Prima facie* it gives one the impression that for Hegel the world process ended with the supremacy of the German spirit. It is certainly questionable whether so deep a thinker as Hegel could have been guilty of so childish a conclusion. If he stopped where he did, he did so, because he stuck to the rigid interpretation of history as concerned with the past and not with the future. But if history is not brute contingency, if it is an enfoldment of some law or laws, it ought not to be impossible to foresee the trend of events. This is not to be confused with fatalism or a rigid determinism. Few would take Spengler

seriously when he is casting the horoscope of the future and points out determinate periods during which this and that will happen. As I have already pointed out, there is an uncertainty in the future: there is room for chance and accident and yet even chance and accidents have their own logic and their own significance. On the basis of the past it may be possible to say, not that this or that is sure to happen at this or that particular time, but that this or that is likely to happen. On the whole the history of mankind has shown a steady tendency towards bringing the peoples of the earth nearer to one another. It is a far cry from the isolated hordes of the prehistoric ages to our times when an earthquake in Japan is known the world over in five minutes and thousands of miles can be covered in as many hours as it took days not such a long while ago. It would be interesting to see if there is any justifiable basis for this interesting speculation that the future will see men more and more appreciative of and sympathetic towards one another. It is true that nationalism is still going strong and that nationalism has become as great a danger to the peace of the world as anything else in the world. But nationalism of the intense aggressive type is a matter of comparatively recent growth and there is no reason to take for granted that it will continue unabated in its present virulent form for all times to come. On the contrary there are already signs that the great leaders of thought in every country—always in a minority in their own country and in their own generation—are showing signs of revolt, of which the League of Nations is a tentative expression. It would be interesting to scan the horizon of our times and see what portents there are to hold out a hope, if not an absolute certainty, that humanity is on the eve of some further great evolution and that the ills of our age are but the birth throes of some coming great event.

In this great aim of bringing human beings nearer one another, Science has played a very important part. It is true it has wasted precious time and energy in manufacturing diabolical instruments of destruction, but this is only one aspect of it. So long as there is a demand for warfare, there will be the needed supply of more and more destructive weapons. But this apart, its work has been most distinguished in the realms of peace. We have grown so accustomed to all

the conveniences of modern life that it has become difficult for us to imagine how we or our ancestors got on without them for so many years. To hear a human voice speaking six thousand miles away or see on the screen a human being in his own far off native environment is in itself a new training in developing human sympathy. No wonder that there is a flutter in the ranks of the anthropologists that their world is disappearing far too fast under the pressure of modern life. One can appreciate their zest and the great work they have done to recreate the buried past, but it will hardly do to wish that old savage or semi-savage customs and modes of life should survive merely to give grist to the anthropological mill or to amuse the sentimental tourist from the West.

For all practical purposes distances which appeared to be interminable only a few years ago have disappeared and the most distant parts of the world have been brought nearer. It is inevitable that this will bring about more mutual knowledge and its natural corollary will be: more human sympathy and imitation. If the French adage is correct: to know all is to forgive all, it also holds that to understand is to appreciate. Half the miseries of ours are due to our stubbornness in holding that our country alone is right and the rest of the world is wrong.

The only corrective to a narrow chauvinism is culture and in this direction far more work has been done in our times than ever before. The treasures of European literature and philosophy have penetrated wherever the European has penetrated and that means practically the whole world. But it must be said to the credit of the European that he has been both generous and diligent in studying and popularising the old cultures of Asia so that we in the East have come to know our own cultures better through the work of the western orientalists. As a result of it, not merely does the easterner roam through the corridors of European museums and picture galleries, fascinated by the countless beautiful Madonnas smiling from the walls and the superb specimens of human beauty handed down from the days of Phidias and Praxyteles, but the westerner too has grown to appreciate the dreamy beauty of Ajanta and the virile art of Ellora and the swift and delicate lines of the Japanese artist and the gorgeous products

of Chinese art. Oddly enough these have been given their proper place through the labours of the western scholars. It is a sign of the time that the best treasures of Persian art were exhibited in London, while the greatest political iconoclasts like Lenin and Stalin do not fail to have a soft corner in their hearts for a foreign classic like Shakespeare or Goethe. Indeed, to understand is to appreciate. In the artist, literary or plastic, we find one of the finest manifestations of human genius, and the religious recluse who fails to appreciate it misses one of the glories of existence.

The magic wand of knowledge has also converted the narrow bigotry of the professional missionary of Christ. There was a time when he could see nothing good in any religion outside Christianity. But more study has brought wisdom and even admiration. Dr. Miller was one of the early missionaries whose catholicity was suspect in the orthodox circles, but time has brought him his reward and there is hardly a missionary to-day who has not come to look upon Christianity as the 'crown' of religion rather than the whole of it. Knowledge again has sobered the orthodox masses. Half empty churches in Europe perhaps betoken a new faith in the spirit of Christ rather than in the mere external observances of a dogmatic creed. Real religion implies a warm heart that goes out to human misery wherever existing, and is not found in an attitude of supercilious contempt for others as 'pagan' or 'heathen.' When this spirit will permeate all religions, religious acerbity and religious pride and religious fanaticism will cease to count and in future ages come to be laughed at in that good-humoured way of Puck's 'what fools these mortals be'!

Coming down to a more mundane level, even from the economic standpoint, the world is coming to feel its greater and greater unity. The failure of a huge concern in one country has tremendous repercussions in every other civilised country. International trade and international credit have overshadowed merely national economics. Norman Angell predicted a quarter of a century ago that war under modern economic conditions is such a ruinous proposition that all war would be impossible. The greed of the powers indeed has given a lie to this prophecy and yet on its merits Norman

Angell has proved a true prophet, for if war has not become impossible, it has at least been experienced to be a disaster, which has spelled more ruin than profit. Old Caspar of Southey's *Blenheim* two centuries later would still find it hard to say what they fought each other for, but could only find consolation in the naive thought: 'but 'twas a famous victory'. There is no doubt that in our own times the nationalist state with its huge tariff walls is putting up a desperate fight against the economic facts of the twentieth century. One may even say that nationalism is engaged in a life and death struggle to maintain its existence. But the whole spirit of humanity is against it. You cannot bring into being forces which make for the oneness of humanity and yet try to circumscribe your sympathies within the bounds of a nation or an empire.

It is from this standpoint that the League of Nations has a future. To-day, dominated by a few great powers, it has to be more diplomatic than just. It has to soothe and placate, if necessary even wink at unpleasant incidents. But it is an institution which with all its weakness is yet a force which will count more and more, as the dumb millions will not meekly submit to be cannon fodder to satisfy the 'patriotism' of war lords and commercial magnates and munition interests. If the League of Nations is to fulfil its mission, it will find its most sincere ally in socialism.

Socialism is of many brands. It has been compared to a hat which has been worn on so many heads that it has lost its shape. But however much the different schools of socialism may differ from one another, they differ more in their methods than in their ideal. And that ideal is the emancipation of man from ignorance and poverty: two inherent foes of human happiness right through the ages. Buddha and Christ preached love of mankind and stray individual saints have kept aloft this lofty ideal, but till the last century poverty was taken as a divine dispensation, which nothing could do away with, so that all society was divisible into the rich and the poor. But socialism holds out a new hope, a real conquest of poverty by a new economy of production and a new economy of distribution. A critique of socialism ought to follow at this stage, but at the fag end of this lecture I must resist the temptation,

One thing in fairness I must say that I do not see in Bolshevism such an inveterate enemy of civilisation as its detractors try to make out. Its worst enemies have to admit that in the short space of ten years and in spite of its crippled resources and in spite of enemies within and without, Lenin's Bolshevism has waged a successful war against illiteracy, unparalleled in the history of even the most advanced nations whether in the past or at the present day. Its naked communism, its outspoken attack against the age-old institution of private property has raised mortal enemies against it. But communism is only an ideal which Lenin and Stalin alike have had to modify even before our eyes. And who knows how many more concessions will have to be made to human nature and to economic facts in the years to come? But *the Hammer and the Sickle* may at least put an end to the soulless orgies of the idle rich and the tyranny of the capitalist, who controls the policies of states, and the over-weening conceit of the war lords, who cheerfully spend millions on armaments and as willingly send forth millions to slay and be slain. In socialism nationalism finds its bitterest foe, and even if it fails in literally banishing poverty, it will have achieved magnificent success, if it diverts the millions spent on armaments to the other more vital and crying needs of humanity. Socialism has built up an international organisation, which has immense possibilities to override mere national considerations. The nationalist with his great belief in steel frames and what not is apt to look upon Gandhiji as a mere visionary, but what will happen when the English workman refuses to work when a war is declared against say Germany, or the German workman refuses to work when the German armies are poured into Belgium? Co-operation is the basis of life; it can be international and not merely national.

To us in India to-day Gandhiji's teaching appears of supreme importance as offering a means of escape from the over-nationalised and over-industrialised society of Europe. But when the dust of strife is laid to rest, we may be in a better position to appraise his work. Perhaps the verdict of history will be that as a religious teacher and as a man of universal sympathies he was in his element, but that with the usual intensity and the resulting narrowness of religious

teachers he was apt to overlook the complex make up of human nature and do scant justice to its artistic and cultural side. On this side he is weaker than Bolshevism, which has grasped the fact that poverty has no absolute virtue in itself and that to overcome poverty men will have to make the maximum, though a controlled, use of all the scientific discoveries, including machinery. It is man's destiny to progress, not to go back on the wide culture of humanity gleaned through centuries. If he does go back, he does so at his peril, for the man who has to struggle with poverty is bound to lose sight of the other interests of life. I do not deny that there is something great in the self-imposed poverty of Gandhiji himself, but it is not a rule which can be universalised, though the world needs off and on men like him as a perpetual reminder that money is not, and can never be, the highest aim of human existence, and such men only India can produce. That is her glory, her mission.

I do not know if I have succeeded in carrying you with me in this rapid survey of the past and the glimpse of the future. As an idealist I have a faith in the reign of reason. Reason has its own logic, its own plan. It is not a mechanical device, which like a gramophone makes men and women talk or like a cinema makes them act. Reason in its essence is free. This is what philosophers have been teaching for centuries. It was science that again and again tried to back up determinism in the interests of what it was pleased to call exact knowledge. But even science has ceased to be determinist. Einstein has enthroned relativity at the heart of things and Sir James Jeans is constrained to admit: 'To my mind the laws which nature obeys are less suggestive of those which a machine obeys in its motion than of those which a musician obeys in writing a fugue or a poet in composing a sonnet'.[1] If the same eminent scientist can be taken as a thoroughpaced representative of the scientists generally, it is interesting to find him writing: 'Unless this whole branch of science is wrong, nature permits herself quite literally only two alternatives: progress and death; the only standing still she permits is in the stillness of the grave'.[2] This is exactly the conclusion

[1] Sir James Jeans: The Mysterious Universe, p. 136.
[2] Ibid., p. 144.

which I have had in mind while dealing with the more personal and therefore the more difficult world of human history. Wherever they are born, men must learn from one another, or else go under. The highest goods of life: beauty in art, truth in thought, goodness in life are human, not national possessions. They know no East and West. Their home is in the limitless depths of human heart.

[Note.—These lectures were delivered on the 26th and 27th February 1932.]

THE NATTUKOTTAI CHETTIYARS[1]

A COMMUNITY OF BANKERS

BY

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The Nattukottai Chettiyar is the indigenous banker *par excellence* of Southern India. In some respects, the Chettiyars are the most remarkable banking community in the whole of India. Unlike the Marwaris and Jains, their business is almost exclusively banking; and they do not combine with it trading and other occupations. The methods of their banking business are also of a higher order than those of other indigenous banking communities in India. A reorganisation of the banking system of India is now overdue, and in any scheme of reorganisation, the central problem will be the linking up of the indigenous banking system with the organized money market of the larger cities. In view of this, it might be profitable to make a survey of the banking organisation of so remarkable a class of bankers as the Nattukottai Chettiyars.

The home of the Nattukottai bankers is Chettinad which falls within the District of Ramnad and the Indian State of Pudukottai. From there, they first expanded their business all over Madras Presidency and the Indian States adjoining thereto. Subsequently, attracted by the increasing opportunities for profit opened out by the growth of plantations in Ceylon, Malaya, Burma, and Straits Settlement, the Chettiyars went over to those countries, and to-day they carry on an extensive banking business all over Southern Asia, including Siam, French Indo-China, Sumatra, Java, and neighbouring islands. They have penetrated into the innermost fastnesses of those countries; they finance the rice trade of Burma and have also important interests in Ceylon rubber

[1] From the writer's forthcoming work on 'Rural Finance in India.'

and tea and Malayan rubber.[1] In fact their banking business in India is to-day only a small fraction of their total business.

The Chettiars are also called Nagarathars, because they belong to certain nagarams (or townships), 9 in number. At the head of each of those nagarams there is a temple, which is maintained by the common funds of the Nagarathars. The married couple (pulli) forms the social unit of the community, and each such unit has to contribute pullivari and asthi-vari to the temple. They are devotees of Siva and are generally vegetarians. They have built fine temples and have established several choultries and poor houses, and have always shown readiness to contribute liberally to public charities. From ancient times, a percentage of the profits of all Chettiar firms has been set apart for charity (magimai).

Like the Marwaris and Jains, they are sparing in their expenditure on personal comforts and all their daily avocations are characterised by extreme simplicity and frugality. Yet they have been lavish in the making of ornaments and in the building of houses. The barren region of Chettinad is studded with numerous palatial houses which cost on an average Rs. 100,000 each to build; in Devakotta alone, there are many such houses. The total investment in houses and jewels is estimated at about Rs. 14 crores. When Chettiyars go away on business, their families generally stay in Chettinad. But they always come home to perform their ceremonies, and marriages are celebrated almost invariably in the ancestral homes.

Most of the indigenous banking communities of India do not carry on money-lending as their sole business. They may also be general merchants, commercial agents, dealing in bullion, cotton, grain, cloth and other produce, brokers or jewellers.[2] Often money-lending is only auxiliary to these occupations. Thus in Bombay, U. P. and C. P. the bankers trade in grain and cotton and carry on speculation. They purchase cotton and grain at harvest and store them against a rise of price.

[1] Their connection with Ceylon and Malaya dates back to a time earlier than the boom in tea and rubber; but they first went there chiefly for trade and only subsequently took to banking. *Madras Banking Committee's Proceedings*, Vol. III, p. 1170.

[2] Jain, *Indigenous Banking*, pp. 43-45.

The Marwaris of Bombay operate on the cotton exchange, and to them money-lending is only a side-line. Elsewhere they are large landowners, or own mills and factories. In Bengal,[1] they finance a considerable proportion of the distributive trade. In fact most of the indigenous bankers are but businessmen using their capital to earn a profit and they undertake any kind of business which in their view will bring profit. This has always been the case in India. Money-lending was auxiliary to trade and with the increasing vogue of joint-stock banking in India, this tendency has grown more conspicuous than before.

The Chettiar and the Multani are the principal exceptions. Even among these two classes, there may be several pursuing other trades as well, but nearly always even those traders are allied to banking. For example, the Multani buys and sells gold and carries on internal arbitrage operations and some of them also buy and sell commodities for their clients.[2] Arbitrage transactions and dealing in bullion are auxiliary to banking, and profitable, if safely pursued. The Chettiar sells gold, but the sales are mostly unredeemed pledges. There are also some who buy and sell gold as a regular business.[3] Speculation is usually associated with indigenous bankers, and in the case of several classes of them, it is a fact that they have been speculating in commodities as well as in bullion. Such speculation ruined several wealthy bankers in the past, and now there is much less of it than before. The Multanis seldom buy and sell commodities for themselves, and as for Nattukottai Chettiars, they avoid speculative dealings, and this partly explains the stability of their business even in bad times.[4]

It is true that several Nattukottai Chettiars have become proprietors of rubber and tea gardens, rice mills, saw mills and other factories, not only in India but in Ceylon, Burma and Malaya, but it must be admitted that this was not due to deliberate design but was thrown upon them by the failure

[1] *Bengal Banking Report*, p. 185.
[2] *Indian Finance*, Jan. 18, 1930, p. 72.
[3] *Burma Banking Report*, p. 197.
[4] *Madras Banking Committee*, III, p. 1175. This was in the matter of rice imports to Ceylon, and this gave a windfall to the Chettiars of Tirupattur and around.

of their debtors to pay up. Thus in Ceylon, Chettiars have become owners of several rubber and tea estates and oil mills; and in Burma, they have now much land in their possession. This apparently was not due to the Chettiars' desire to become landowners, and in several cases the land was sold away where an opportunity came: and although a certain number of Chettiars have taken to cultivation of land in Burma by hired labour, it is not possible that the great majority of them will give up their hereditary profession.[1]

Organisation of their Banking Business

The business of most of the banking communities of India are organised on the joint family basis. Members of the family work in common as farmers and the profits go to the common fund of the joint family. Not only do they live in common, but they generally keep a common mess. When such a firm takes outside partners, they are taken only as working partners with a share in the capital, and such partners are paid a fixed salary and a bonus according to the profits of the business. Indeed as families get larger and larger division is effected, not only of the capital but also of the clientele.

The above, however, is not true of the Nattukottai Chettiars. With them, every married person of means has his own business or becomes partner in another business. When a Chettiar marries, he becomes independent. He may live in the same house as his parents, but he has his separate mess, and every year a budget allotment is made by his parents for his maintenance. This custom has made the Chettiar more independent and self-reliant than his compeers.

In spite of such pronounced individualism and self-help, the Nattukottai Chettiars have developed among themselves a strong tradition of mutual help and sodality. In all the principal towns, where they carry on business, they congregate in one common street and often live and work in the same premises although their businesses may be all separate. Wherever they go they maintain a common temple, and have

[1] See *Burma Banking Report*, pp. 198-99.

many economic, social and other interests in common. Many of their firms are partnerships, and such partnerships may last many generations. The same person may have shares in several partnership concerns and thus there is strong interlock of interests between them.[1] Even when such interlocking does not exist, the Chettiars are prepared to guarantee each other, and in times of need, they are ready to give generous aid to distressed firms. They guarantee each other when borrowing from the joint-stock banks and such solidarity enhances their credit in the market. This system of mutual guarantee has also its evils, for when one firm fails many others may also be involved in the failure and a general crisis may result.

Such sodality is naturally stronger among the Chetties in distant centres. 'Existing as a small alien group with frequent blood relationship and with common economic interests, descent, language, worship and all caste associations, but divided in all these points from the population around them was sure to generate a feeling of sodality, especially as there was necessarily mutual dependence in some matters, such as the occasional need of liquid resources.'[2] In Rangoon, Singapore, Colombo and other outside centres, they all congregate in the same street and even have their offices in the same building. Thus all the Chetty firms at Rangoon are in Moghul Street and in close vicinity of their temple, where they all meet in the morning daily for exchanging news and for fixing up interest and terms of business.

There is also a strong communal system of arbitration obtaining among the Chettiars. Attached to every temple (kovil) is a temple council (Panchayat), which is composed of the elders among them and adjudicate on all matters relating to marriage, monetary transactions, family disputes, etc. The manager of the Kovil arranges for meetings and records evidence; and the award is given orally and not usually in writing. If the parties do not abide by the decision, they may be ostracised, and their marriages may not

[1] The firms are generally called by the initials of the different combining partners. Thus P.M.R.M. means the partnership of Palaniappen, Murugappen and Ramanathan. The name of the agent is often given after the initials.
[2] *Burma Banking Report*, p. 194.

be celebrated under the auspices of the Kovil.[1] Similarly when a man fails, a Panchayat is appointed to take up the matter and they generally settle affairs in such a way that intervention by the Court is avoided and the unsuccessful man is given a chance to start life again as employee of some other firm.

Similar institutions exist among other indigenous bankers also. However, of late such institutions are getting weaker owing to the onrush of individualism.[2]

Most of the indigenous banking firms are family businesses or partnerships. The Multanis are organized on a joint family basis and therefore the different members of the family manage the business in different parts of the country. The leading partners generally live at Shikarpur or Bombay, and the junior partners work as agents abroad. Besides members of the family, others are taken as working partners.

The Chettiyars form partnerships, especially when establishing firms abroad. Thus, excepting the Bank of Chettinad (which is a private limited company registered under the Indian Companies Act), the Chetty firms in Burma are partnerships organised in India and represented there by agents sent from India. The money is sent from India, and the accountants and clerks are also Indians. Both in India and abroad Chettiars maintain firms only in the larger towns and trade centres. Sometimes small agencies called *Ulkade* are opened in out-stations and railway stations (*railkade*) and these are controlled by the agents in the larger centres.

The agent is the central figure in the Nattukottai banking business, whether within the country or abroad. He is often a relative of the partners and is engaged on a three years' contract during which his board and lodging is provided by the principal. Part of his salary (1/2 to 2/3) will be paid a month after appointment and the other part after the expiry of half the period. The amount of the salary will depend upon the ability and position of the agent, the volume of transactions and upon the distance of the agency from the head office. In Burma, the usual rates range from 6,000 to 15,000 rupees for the triennium. Besides pay, the agent is

[1] Thurston, *Castes and Tribes in S. India*, Vol. V, p. 263.
[2] Jain, *Indigenous Banking*, p. 40.

also given on return a bonus which may vary from 6 to 10 per cent of the net profit earned during his term. Six months before the expiry of an agent's term, another person is sent to the spot, to get acquainted with the details of the business. The new agent classifies all the outstanding loans as good or bad and sends a report to the proprietors. If the two agents disagree reference is made to the proprietors. The outgoing agent will then return to Chettinad and settle up with his employers, after which he will go home and take rest for three years. He may then offer himself for appointment to his old employers, or set up a business himself. If the agent is an able man, his employers may make him a partner in the business.

An agent has usually an establishment of 5 or 6 persons, of whom the principal are the Assistant (*aduthal*), the Cashier and the Accountant; others are usually young persons learning the business and generally help the principal employees by going on errand, etc. All these persons are selected with great care, and careful watch is kept on them. Severe punishment will be meted out in case of dishonesty, and, to a Chettiar, caste ostracism is a worse punishment than conviction by court.

An apprentice is usually paid no salary for the first triennium, he gets only his board and lodging and pocket money. On return home, he may, like the agent, receive a bonus. After a year's rest, he is again sent out on a fixed salary, anything between Rs. 1,000 and Rs. 2,000. The salary is increased at every succeeding periods of engagement. The apprentice gradually becomes accountant or cashier, and after 7 or 8 years may become an assistant agent and sent to an outstation. After about 15 years' experience, he becomes a full-fledged agent. The sons of large bankers have also to undergo nearly the same training, although the period may be shortened. The Chettiar is a firm believer in the maxim that he who wants to command must first learn to obey. Therefore the sons of wealthy families are also apprenticed.

The working capital employed by the Chetty community has been estimated by the Burma Banking Committee at about Rs. 120 crores, of which 75 crores are in use in

Burma, 25 in F.M.S. and the Straits, 14 in Ceylon, 5 in Cochin China[1] and only one crore in the Madras Presidency. According to the Madras Banking Committee's estimate, the amount of working capital in Madras is Rs. 6½ crores, and its volume of business is as much as 11 crores.[2] Another estimate was made by Mr. Saverinatha Pillai, Assistant Commissioner of Income-tax, in a memorandum which he placed before the Committee. According to him the volume of business in the Presidency is only 3 crores,[3] apparently excluding the Bankers of the Pudukottai State from his computation.

Sources of the Chetty Capital

A banker is sometimes described as one who makes profit with other people's money and his own brains. Indigenous bankers in India do indeed make profit, but it is not chiefly with other people's money. The system of receiving deposits obtained from time immemorial, but often it was done to oblige the depositor more than to benefit the banker. However, with the increased opportunity for investment, a demand for deposit arose among bankers, and moneyed men deposited large sums with them. But there was always a reluctance on the part of Chettiars to receive current account deposits, and, as the joint stock banks showed no such reluctance, the bulk of Indian deposits went to them. At present the indigenous bankers deal with their own money or money borrowed from joint stock banks. The Nattukottai Chettiars still receive deposits, both on current account (*kata kanakku*) and on fixed deposit (*thavanai kanakku*). But such deposits form only a small part of their working capital. According to one estimate, about two-thirds of the Chettiars' working capital is supplied by the proprietors themselves, and of the rest more than one-half comes as deposit from other Chettiyars. Thus only one-seventh of the capital comes from non-Chettiyars. It used to be rather more, but owing to the failures of Chetty

[1] *Burma Banking Report*, pp. 210-11.
[2] *Madras Banking Report*, p. 186.
[3] *Madras Banking Evidence*, Vol. III, p. 1174.

firms in recent times deposits from the public are not at present so abundant as they used to be.[1] The Chetty capital thus deposited is chiefly the money of married women and widows. Chetty women receive fairly large dowries at marriage, and these moneys are generally placed on deposit with a number of firms. Chettiars will not generally place all their money with one firm, but will distribute it among different firms for the sake of safety. The non-Chettiar capital that comes into Chetty firms is either deposited by the public or borrowed from joint stock banks.

The kinds of deposit best known to Chettiyars are 'Tavanai' deposits and 'Veyan-vatti' deposits, which are both fixed deposits. The Tavanai deposit is for a period of 2 months, and its interest is fixed monthly, on the 16th day of the Tamil month. The depositors are mostly Chettiars, and only these receive the full tavanai rate fixed, while the others have to be satisfied with a percentage or two less. The veyan-vatti deposits are fixed deposits at fluctuating rates of interest described by its excess in annas per Rs. 100 per mensem above the current rate, and the usual period is three, six or twelve months. Deposit receipts or Promissory notes are given to the depositor; but it is understood that demand will not be made till the prescribed period is over. Deposits on current account are less popular owing to the necessity for keeping liquid resources that it involves. The rates on current account deposits are fixed monthly, on the 16th of every Tamil month, and they apply not only to ordinary current account deposits by Chettiars and others, but also to the rates paid by agents to the principals for working capital supplied, and veyan-vatti rates are calculated on the basis of the current rate as fixed monthly.

The Clientele of the Chettiars

Chettiars lend to agriculturists as well as traders, but, in the case of S. India, it cannot be said that they finance agriculture or trade to any great extent. Agriculture in S. India is financed chiefly by the village money-lender, who may be

[1] *Burma Banking Report*, p. 213. *Madras Banking Evidence*, Vol. III, p. 1176.

a shopkeeper or a landowner. Some Chettiars do lend to these people and thus they may be said to indirectly finance agriculture. In Burma, on the other hand, Chettiars are first and foremost financiers of agriculture. In Lower Burma, their dealings are chiefly with landlords and agriculturists, but in Upper Burma traders are their principal clients. In fact, the Chettiars lend to all those who have personal credit, whether they be agriculturists, industrialists or traders. They lend for both short-term and long-term purposes, and the purpose of the loan is seldom a consideration for them. Most of the long-term loans given by them are for celebrating marriages or other social ceremonies or for other unproductive purposes. But the amounts given for such purposes will depend upon the security offered. Generally money used to be lent on promissory notes, whether it be for long-term or short-term purposes. But now on account of depression security is demanded. It may be land, houses, gold and jewellery, or Government securities. For long-term loans, land and houses are the usual security demanded; gold and jewellery are always acceptable as securities as they are readily saleable. The rates of interest charged by Chettiars vary with the parties, the time of the year, the purpose of loans, the security offered, and the amount of the loan. Except on first class town mortgages, interest is not usually less than 12 per cent per annum.

The Chettiars have no fixed hours of work and are accessible at all times. Their principal holidays are Thaipuzam, Chitra-Pournami and Panguni Uthiram. Accounts are kept in Tamil, on a system of single entry, but two principal books are kept: the 'kurippu' (journal of daily transactions), and 'peredu' (ledger, each page being allotted to one client). The ledger account for the borrower has three cash columns for interest received, credit and debit respectively, and the serial number of the documents also are entered therein. It is also customary to keep 'chittai' books (rough notes), and 'bake' (balance) books. Every month balance sheets are prepared by the agents and, with copies of chittai, are sent to the principal.

The Chettiar's system of accounting is elaborate and

accurate. Without the use of interest tables and calculating machines, they can easily calculate interest to the lowest *immi* (1/3200th).[1] The Chetty boys are trained at an early age to such accurate calculations and they get a wonderful mastery of arithmetic in the course of their office work.

The Chettiars and Joint-Stock Banks

The Chettiars draw a portion of their working capital from the joint-stock banks, especially the Imperial Bank of India. These banks make advances to Chettiars in the form of bills, loans, cash-credits and overdrafts. Loans are made on promissory notes supported by two signatures. Usually two Chettiars combine to borrow funds from the bank, one of them becomes the borrower and the other the guarantor and the loan amount is divided between the two by private agreement. Overdrafts are secured by Government paper; and cash credits are raised by promissory notes strengthened by title deeds of house property as collateral security. In Madras, advances by banks are mostly made by way of loan, and only a small portion by overdraft. The Imperial Bank in Madras charges interest at 1 per cent above the Bank rate, but in Rangoon the charge is usually 1½ to 2 per cent above the bank rate. The Indian Bank charges at the rate of 1½ or 2 per cent above the bank rate in busy season, and ½ to 1 per cent above the bank rate in the slack season. Before the trade depression, the Chettiyars had borrowed large sums from the joint-stock banks, but latterly such loans have dwindled and are not more than Rs. 60 to 70 lakhs. Sir Annamalai Chettiyar, Raja of Chettinad, was for many years a Director, and is now a Governor, of the Imperial Bank of India.

In this connection reference must be made to the only exclusively Chettiyar bank of the modern type that has lately come into existence, the Bank of Chettinad. It is a private limited company and owes its origin to Raja Sir Annamalai Chettiyar. It has a subscribed capital of Re. 1 crore and has already opened 40 branches, which are spread all over India, Burma and Ceylon. It receives deposits, but latterly owing

[1] The fractions in use in S. India are ara (½), kal (¼), arakkal (1/8), makani (1/16), ma (1/10), muntiri (1/320), immi (1/3200).

to the trade slump, not much of deposits is received. It does regular commercial banking business, and an attempt is made to adapt the indigenous banking system of the Chettiyars to the modern system of banking introduced from the West.

Conclusion

This paper deals solely with the banking business of the Nattukottai Chettiyars and it is not proposed in this connection to dwell on their charitable bequests, their munificence to learning, and the increasing part played by them in the public affairs of the country.

I shall, however, offer one hint in regard to the future of the Chettiyars' business. Till lately, moneylending, especially in towns, had been profitable; but it is doubtful if private moneylending will in future be so profitable as it had been in the past. The field that calls for enterprise in the future is industrial investment, and it would be desirable if the Chettiyars will direct their attention to large-scale industry. This is desirable, not only in their own interests but in the interests of the country. An efficient system of large-scale industry is the prime need of India to-day, and who are more competent to organize such industry than these shrewdest of Indian businessmen?

A VIEW OF THE PAMBANAR, ANJANAD

THE VELLĀLAS OF ANJANAD

BY

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CHAPTER I

INTRODUCTION

The Vellālas of Travancore are found as isolated units in Anjanad, Thodupuzha, Rani, Chirakadavu, Shencotta and Nanjanad. There is a general consensus of opinion that they came to Travancore either from Madura or Tinnevelly. It is proposed to treat here of the Vellālas of Anjanad who are found in the hamlets of Marayur Kilandur, Kandalur and Kottathatti.

TRADITIONS OF ORIGIN

The Vellālas of Anjanad trace their migration to Travancore to the story of Kovalan and Kannaka who have been immortalised in the Epic of the Anklet. Briefly told, the story runs as follows: In the city of Pukar alias Kaveripoompattanam lived two merchant princes, Mahasattuvan and Manayakkan. It was arranged between them that Kovalan, the son of the former, should marry Kannaka, the daughter of the latter. The marriage was celebrated with great pomp and ceremony. Some time elapsed, when Kovalan felt a passion for Mādhavi, deserted his home and loving wife, and spent some years with Mādhavi. He lost all his wealth. Wiser counsels prevailed in the end. He went back to his lovely wife and made amends for his past conduct. He proposed that they should go to Madura, the capital of the Pandiyan chief.

The idea behind the move was that Kovalan was to sell one of Kannaka's anklets and retrieve their lost fortune by trade with the proceeds. Kannaka agreed, and they went to Madura. Kovalan left his wife in the cottage of a shepherdess, and walked about the streets of Madura to dispose of the anklet. He met a goldsmith, Vannithattan, who was suspected of complicity in the theft of the anklet from the palace.

Vannithattan was elated with joy on seeing the anklet, for it was a capital opportunity for him to clear himself of the

suspicion against him. He straight went to the palace and informed the king that he had traced the thief who stole the anklet from the palace. The king ordered Kovalan to be beheaded without making any enquiry, and it was done promptly.

On leaving the cottage, Kovalan left a sandal mark on a lime and informed his wife that, if she saw the mark faded, she might infer that some harm had befallen him. Kannaka found it faded, and she forthwith went after her husband. She soon came to know of his death, flung her innate modesty to the winds, went to the palace, and rang the bell of justice.

This alarm aroused the suspicion of the hall-porter that something was amiss. The unusual figure of a young injured woman was reported to the king. Kannaka went before the king and proved to the hilt that the anklet was hers. This statement was corroborated by the queen.

Kannaka then invoked a curse that Madura be consumed with fire. A large number of Vellālas and Kollans are said to have then fled to the Travancore hills via Korangani and the hamlet of Kottathatti marks the signpost of their past migrations. At the instance of the Vellālas, the Kollans were all extirpated, and the Vellālas settled down in all parts of the Anjanad valley.

When the Vellālas came to the hills, they found that tract already occupied by the Muduvans, whom they even now regard with reverence, and call "തമ്പുരാൻ" or ancestors. The turmoil in Madura took Kannan Devan to the hills. He killed the chiefs of the Vellālas, and became the chieftain of 1,000 homes of Vellālas, levying ransom from them. The Vellālas could not for long take this insult lying down and they allied themselves with a chieftain of Chittur (N. Arcot), who came over to the Poonyat chief, and requested him to take over the management of the Anjanad valley. The latter assented and appointed a Mannati, Mantri and Periathanam for each hamlet. The Raja presented a silk and a wristlet to Mannati, a silk and a ring to Mantri, and a silk to Periathanam. The Mannati is responsible for the well-being of the hamlet and for the payment of kist to the chief. The Mannati of Kottathatti

A VELLĀLA MALE GROUP

A VELLALA FEMALE GROUP

The Epic of the Anklet is related in *Chilappathikaram,* which is traced to the first century of the Christian era. It is probable that the Vellālas came to Anjanad in the first century A.D.[1]

Exogamy

There are two exogamous divisions in each hamlet, the Melekuttakar and Kizhekuttakar. The Melekuttakar belong to Kangeyakulam or clan, while the Kizhekuttakar belong to Thondamandalam clan. A man of the former clan cannot marry a woman of the same clan, but can marry one from Thondamandalam clan. Marriage is between cross-cousins, but a man prefers to marry the daughter of his father's sister as it is considered superior to marrying the daughter of his maternal uncle.

If a woman refuses to allow her son to marry her brother's daughter, a panchayat meets, and decides that she should hand over all her ornaments and dowry to her brother. It symbolises a severance of all connection. If she refuses to return the dowry, the panchayat recovers Rs. 7-8-0 from her husband. It is intended to indicate a severance of all worldly connection between them. If, by chance, they return to friendly relations, the amount is not returned.

Marriage

Marriage takes place both before and after a girl attains puberty. Generally, the age of marriage for boys is 18, and 16 for girls. In the case of pre-puberty marriage, a girl is married at the age of 8. Marriage is celebrated in the girl's house, and lasts for 3 days. When a boy approaches the marriageable age, his parents moot the marriage question to the girl's father. In case of agreement, the match is struck. Marriage is generally celebrated in the month of Thye (January to February) as it is the season of plenty with them.

The boy's parents present the girl with a coloured cloth and ornaments to the value of about Rs. 10. On the marriage day, the bridegroom and party go to the bride's house. Prayers are first offered to god Ganapathi. The bridegroom and bride sit in the marriage booth. The bridegroom ties

[1] Chelvakesavaya Mudaliar, *Kannakacharitam*, pp. 122-124.

the marriage badge round her neck. An elderly man then asks them to exchange garlands. This is done. They then sit side by side, when the bride's father joins the small finger of her right hand with that of the left hand of the bridegroom. Then he says in the presence of all "ആകാശമറിയ, ഭൂമിഅറിയ, ചന്ദ്രസൂര്യനറിയ, ശ്രുതിമുപ്പത്തിമുക്കോടി ദേവകൾ അറിയ, 48,000 ഋക്കികൾ അറിയ, ഇന്ത സഭയോർകൾ അറിയ, എൻ മകളെയ് ഇന്ത ആൺമകനുക്കു തന്തിരുക്കേൻ." This means, "I give my daughter to this man with the cognisance of the sky, the earth, the sun and moon, 33 crores of celestial beings, 48,000 sages and this audience." Before the above words are uttered, the couple are covered with a cloth presented by the bridegroom's father. The bride's father then takes a drop of milk and leaves it in the middle of the clasped fingers, saying "milk", and then separates their hands. This means that, as milk is pure, the married couple should lead a clean pure life.

The bride then wears the cloth presented by the bridegroom's father. The married couple are then taken in. All are treated to a feast. The married couple dine separately. The bridegroom then goes to his home with his wife and party. The bride's party are there treated to a feast, and they return home. The garlands of the couple are kept in an earthen vessel.

On the second day, 150 padis of paddy are given to the bride's father and 60 padis are left at Perumpara (a common meeting place). The bridegroom's bestman removes all the husk and sends 14 padis to the bride's house. It is intended for a feast to be given for the bridegroom and family after a month. 14 padis are given to the priest to propitiate seven village gods and goddesses, Ganapathi, Bhadrakāli, Vishnu, Manikuliki Ammal, Ptāri Amman, Arunāchi Amman, and Thenkāsi Amman. The village worthies are given a padi each, and the remaining paddy goes to the barber and others.

The married couple go to the stream to bathe with bestman and then throw the garland into the stream. The bride carries some water in a vessel. They return to the village and worship god Ganapathi, and go home.

Meanwhile a basket of rice and curry is taken from the bride's hut. The husband washes his hands and feet with water brought from the stream. His wife then serves food

for him, who leaves some remnant. This is partaken by his wife. Meanwhile the villagers are treated to a feast and given pansupari. The married couple then come forward and presents of money from 4 annas to one rupee are made to them. All then depart. The married couple are then taken to the bride's hut to the accompaniment of tom-tom. The bride's father presents his son-in-law with a pair of cloths and turban. To these is added the luxury of a coat and shirt. All are treated to a feast. The elders then tender some advice to the couple, who then return to the husband's house. On the third day, those who did not take part in the festivities for the first two days are fed.

An auspicious date is fixed for nuptials after two months. During this period she remains in her husband's home. Since it is small, the parents and other members make room for them by going to other huts leaving the couple behind to enjoy themselves.

Polygamy

A man may marry more than one woman either owing to the sterility of his first wife or to ensure greater gratification for himself. Both wives may remain in the same hut or separately. A man may marry the sister of his first wife. The same ceremonies are gone through. A widow may be married, but there is no ceremony. The man presents a cloth to her, one to her mother and Rs. 2-8-0 to her father. There is tāli-tying, but no joining of hands. All the visitors are treated to a feast.

Polyandry

A cetain amount of reticence is observed, but fraternal polyandry seems to be prevalent.

Levirite

A man may marry the wife of his deceased elder brother, when he becomes the guardian of her children by him.

Sororate

A man may marry the sister of his deceased wife as his second wife. Thus the custom of sororate is practised in conjunction with the levirite among them.

Sexual License

Morality is rated to be very low among the Vellālas. Great freedom prevails within the limits of the caste. The occasion for illicit union arises every day, when women go out every morning to the jungle for collection of fuel after breakfast. They meet each other in their customary places, mate, and depart.

Adultery

If a woman commits adultery, her husband gets relief, only if he catches the culprit red-handed and takes him before the village panchayat. It the offence is proved, the adulterer is fined up to five rupees and is let off with a warning not to commit such offence in future. An oath is also taken from him to that effect. If the offence is repeated the woman is ordered to live with the adulterer, who will have to pay back to her husband the expenses incurred for marriage.

Divorce

A man divorces his wife on grounds of disobedience, indifference or immorality. The woman in such cases prefers a complaint before the panchayat, that she has been wrongly divorced. If the woman is innocent, the husband is asked to give her 4 shalakas of paddy or an acre of land, and a pair of bullocks. If she is declared guilty, no grant is made for her maintenance and she lives with her parents.

CHAPTER II

Puberty Customs

When a girl attains puberty, she is lodged in the Muttu-Veedu (seclusion-shed), where other girls keep company. Pollution lasts for 15 days. From the 5th to the 10th day, relations present her with sweets. On the 16th day, she bathes and goes home. During pollution, she should not see any males.

Menstruation

A woman in menses remains in the seclusion-shed for 3 days. During this period, she is not allowed to go to paddy fields

at the time of harvest, as it is feared that she would blight the crop and Goddess Lakshmi would go away. On the 4th day, she bathes and goes home.

Pregnancy and Child-birth

No ceremony is attached to pregnancy. Women do hard work even at such times and there are instances of child-birth in the field. When a woman is about to become a mother, child-birth takes place in the verandah, where men should not go. Relations assist in delivery. Pollution lasts for 15 days for first delivery and 3 days for subsequent deliveries. On the 16th day she bathes and enters the home with baby.

Naming Ceremony

Naming is done on the 16th day when the Mannati and two others are present. A goat is killed for the occasion to provide for a feast. The uncle brings a cloth 6 cubits long, a bottle of castor oil, and a small iron spoon to heat the oil. The cloth is used for a hammock. The uncle, the girl's mother, and brother-in-law sit together. The grandmother has the baby on her lap. The husband makes a mark of holy ash on the forehead of the baby and his wife. The uncle then repeats the same process followed by other old women. Each one gives a name. If the baby sleeps well when a name is given, it is called by that name. If it cries at that moment, that name is not given. In case a woman sees a Sanyasi putting a mark on her forehead in her dream, and she becomes a mother later, she says that a name after him should be given and the baby is called Palaniappan. If a Brahman is seen in dream, the baby is called Lingappan. All are then treated to a feast. Generally, if a son is born, he is named after his paternal grandfather. In the case of a female, she is named after her maternal grandmother. Any name is given for subsequent children.

Lingappan, Palaniappan, Perumal, Muthu, Nanjappan, Velāndi, Krishnan, Gundappa, Kāliappan, Santhappan are some of the names given to male children. Kāmachi, Mēēnachi, Kāli, Velakka, Thimmakka, Odayakka, Nāchal, and Perumakka are some of the names given to females. Pet names like Ponnamma, Thangamma are also given.

Taboo on Names

A man does not talk with his wife and aunt. He avoids his aunt on the way. A man does not talk with his mother-in-law.

Inheritance

When a man dies, his son inherits his property. If he has no son, his property goes to his younger brothers, who divide it equally among themselves. If there is no younger brother living, the property devolves on his sons. A woman does not inherit any property. She gets such dowry as is given at the time of her father's demise. Property consists of land, live-stock, and ornaments.

In regard to chieftainship, the title goes to the son. In the absence of a son, the title devolves on his brother. It does not go to the nephew.

Funeral Ceremonies

When a man breathes his last, the Mannati, the Mantri, the Periathanam, and the villagers are invited. A small quantity of milk is poured into a brass vessel which is kept in a basket. Some grains of rice are thrown into it. The eldest son dips a gold fanam, and puts it into the mouth of the deceased, saying «പൊൻ പണം പോടാൻ, വായ് പൊളാ, അച്ഛ, which means "open your mouth, father. I am putting a gold fanam dipped in milk." The Mannati, the Mantri, the Periathanam, and all relations pour a drop of milk into the mouth of the deceased. The son then wraps the corpse with a new sheet of cloth. All the relations also throw a sheet of cloth over the deceased. Saffron is smeared over the eyes and mouth, which are then bandaged with a cloth.

At this stage, women raise loud lamentations. The corpse is removed outside the house and placed on a cot. The barber shaves the face of the deceased. Women bring water and wash the corpse. They then smear it with sandal. A small flower garland is tied round the head. The eyes are smeared with collyrium. All the cloths are brought by the youngest son in the case of the father, while the eldest son does so in the case of the mother. This practice is governed by the dictum «തായ്ക്ക തല മകൻ, തകപ്പനക്ക കടമകൻ» The son, nephew,

and grandson carry the cloth on their head in a basket with a handful of rice in it. They go round the corpse thrice and cover it with the cloths. The widow is taken inside and her head is covered with a cloth. She then carries a pot of water on her head and is followed by three or four women. One widow breaks the tāli, and places it in the mouth of the corpse. The tāli is then put into the vessel of milk. The women throw some rice into the mouth of the corpse. The wife of the deceased carries a pot of water over her head and a burning faggot in her hand. The faggot is placed near the head. She goes round the corpse thrice, and falls down, when the pot breaks. She is then removed and all the women sit down. The corpse is then placed on a bier. All sprinkle water over it and pray that the soul may go to Heaven. The corpse is then carried to the burial ground which is about a furlong from the village.

Meanwhile, the grave is dug and kept ready by the Malappulayas. It is breast deep and is dug north to south. The corpse is placed on the ground. Those who carried it have to shave their heads. They again go round the corpse carrying the basket of cloths thrice, and then keep it down. All then take a pinch of rice with crossed hands. It is placed on the cloth and tied. The brother-in-law takes a ball of butter and places it over the region of the heart in the body. The bundle of rice is placed over the breast. The son carries a pot of water on his head and a burning faggot in his hand. He goes round the corpse thrice. The pot is thrown away and the burning faggot is placed near the head. The Malappulaya places it near the feet. He does so out of his reverence for the deceased. All weep. All the cloths are removed. A cubit of cloth is then torn into two and the pieces are used to cover the head and feet. The corpse is then lowered into the grave and covered with earth. The Malappulayas cover it with thorns and a flat stone is placed over it, so that wild animals may not do any damage to the corpse.

Pollution lasts for thirty days. On the 5th day, all the chief mourners are treated to a feast. On the 15th day, a small feast is given to the mourners and oil for all those who go there to bathe. On the 31st day, all are given oil for bathing. A grand feast is given to all in honour of the dead. In

case the widow has no child, she is sent away to her home with all ornaments and dowry she had received from her father at the time of marriage. She is also given thirty vallums of paddy. The brother of the deceased enters the house and becomes the claimant of all properties. He also gives her Rs. 7-8, the basket with vessel of milk and tāli, sickle, and paddy. All these are taken to her father's house by ten or twelve men.

If the widow has male children, they continue to remain there. If she has only female children, they remain with their father's brother and she goes to her parents.

If a man meets with an unnatural death, his corpse gets no decent burial. It is cremated with no ceremonies. There is no pollution in such cases, and the spirit of the dead is not propitiated.

CHAPTER III

KINSHIP

The system of relationship among the Vellālas is of the kind termed "classificatory". An account of the kinship terms as it obtains among them is given below :—

I. RELATIONS THROUGH FATHER, WHETHER MAN OR WOMAN

Serial number.	English name	Vernacular name
1.	Great grandfather	Pāttan
2.	Great grandmother	Pātti
3.	Grandfather	Pērappan
4.	Grandmother	Avāchi
5.	Father	Appan
6.	Mother	Amma
7.	Father's elder brother	Periyappan
8.	Father's elder brother's wife	Periyamma
9.	Father's younger brother	Chittappan
10.	Father's younger brother's wife	Chittamma

Serial number	English name	Vernacular name
11.	Father's elder brother's son	Annan, if elder, and thambi, if younger
12.	Father's elder brother's daughter	Akka, if elder, and thangachi, if younger
13.	Father's sister	Athai
14.	Father's sister's husband	Māman
15.	Father's sister's son	Machinan
16.	Father's sister's daughter	Thangai

II. RELATIONS THROUGH MOTHER

Serial number	English name	Vernacular name
1.	Great grandfather	Pāttan
2.	Great grandmother	Pātti
3.	Grandfather	Pērappan
4.	Grandmother	Avāchi
5.	Mother's brother	Māman
6.	Mother's brother's wife	Athai
7.	Mother's sister	Periamma or Chinnamma

III. RELATIONS THROUGH WIFE OF A MAN

Serial number	English name	Vernacular name
1.	Wife	No name
2.	Wife's father	Māman
3.	Wife's mother	Athai
4.	Wife's brother	Machinan
5.	Wife's brother's wife	Akka, if elder, and thangachi, if younger
6.	Wife's sister	Thangai
7.	Wife's sister's husband	Annan, if elder, and thambi, if younger

IV. RELATIONS THROUGH HUSBAND OF A WOMAN

Serial number	English name	Vernacular name
1.	Husband's father	Māman
2.	Husband's mother	Athai
3.	Husband's brother	Machinan
4.	Husband's brother's wife	Akka, if elder or thangachi, if younger
5.	Husband's sister	Thangai

In discussing the meaning of each term, we shall begin with :—

1. *Father's father, mother's father, father's mother, and mother's mother.* Pērappan and Avāchi are the names given for grandfather and grandmother on both the paternal and maternal sides. Similarly, Pāttan and Pātti are the names given for the great grandfather and great grandmother on both the paternal and maternal lines.

2. *Māman.*—The Vellālas use the word for father's sister's husband, mother's brother, wife's father, and husband's father. Athai is used to denote father's sister, mother's brother's wife, and wife's mother, and husband's mother.

3. *Machinan.*—This word is used to denote wife's brother and husband's brother.

Village Organization.—Marayur forms one of the hamlets of the Vellālas. It has eighty houses. The affairs of the village are administered by a headman called Mannati. He is assisted by a Mantri and Periathanam. The office is hereditary and son succeeds to it. The Mannati holds a large area of land and is held in high esteem so long as he can maintain his position. He presides over marriage ceremonies and other festivities. Mantri is lower in rank. He carries out the biddings of the Mannati. Periathanam is still lower in rank and he carries out the wishes of Mantri.

When any quarrel ensues in a hamlet, the matter is taken to the notice of the Mannati, who sends out a Chakkiliyan

to inform all the villagers. They meet in the village chavadi. Mannati is given a seat of honour. He is seated on a woollen blanket. The Mantri and Periathanam sit behind. The villagers are seated in front. The parties stand with folded hands in front. The aggrieved party makes the complaint and the culprit explains. The Mannati sifts the evidence, and then delivers his judgment. It takes the form of a fine from four annas to one rupee. The amount goes for the propitiation of the village deities. The village dignitaries do not combine in themselves the art of magic. They are now mere shadows of their former selves and do not wield so much influence on their men.

Economic Life.—The Vellālas are agriculturists. The Anjanad valley forms a level terrace, two or three miles wide and five miles long. The valley is an area of isolation remote from the great currents of men and ideas that move along river valleys. Mountain agriculture is necessarily laborious and the paucity of arable land precludes the possibility of land lying fallow. Fortunately for Anjanad, rainfall is scanty and soil is clayey. There is no wash of soil. Marayur, Nachinayal, and Karayur present a vast expanse of terraced cultivation of paddy.

The method of cultivation is to dig and build the side of a hill into terraces of from 30 to 40 feet in breadth. The terraces are irrigated by channels which carry water from the Pambanar from a distance which may be measured in miles. Many rice fields are fed in this way. Each terrace gets its water from the terrace above it. The terraces are so graduated that the water may flow from terrace to terrace. Ownership of land is individual. In their agricultural operations, the Vellālas are assisted by the Karavazhi Pulayas. The yield from cultivation is satisfactory. The Government of Travancore have extended the scope of terraced cultivation in this area by constructing a channel about four miles long along the slope of the hill at a cost of a lakh of rupees, thus ensuring a regular supply of water for about 1,000 acres of land.

In Travancore, terraced agriculture is found among the Muduvans and other literate peoples in mountainous taluks. It is found in the Himalayan uplands of Cashmere, Bhutan,

and Assam. It is found in Tibet, China, Peru and is highly developed in Sumatra, Java, Lambok, Luzon, Formosa and Japan. According to Jenks, the terrace-building culture of the Asiatic islands has drawn its inspiration from one source. It is considered to be a survival of a very early culture which spread from the nest of the primitive Malayan and left its mark.

Agricultural Ceremonies

A man on an average cultivates from one to ten acres. About one-fifth of the area is under cultivation of coffee, onion, and ragi, while paddy is cultivated in remaining area. They plough the land with buffaloes or bullocks in April and manure the soil with cow-dung. Before ploughing, they make an offering to Patti Perumal on an auspicious day. They lead a celibate life for eight days prior to the performance of this ceremony. On the ninth day, the temple is gaily decorated with festoons of *konna flower* (*Cassia fistula*). An offering of rice is made. After propitiation, men and women wear flowers on their head. Woe befalls those who wear it before.

They then proceed to the paddy field and yoke the oxen to the plough. Cocoanuts, plantains, betel and nut are placed on the ground and some milk is poured on the plough. They then make the following prayer, "ഭൂമിദേവി അമ്മേ, എങ്കളുക്കു നല്ല പെരിയ മുന്തുകണം. എങ്കളൈ സന്തോഷമായ് കാപ്പാത്തണം." This means, "Oh Mother Earth, pray give us a bumper crop, and keep us merry". The bulls then make seven rounds of ploughing and they are then unyoked. All then go home and have a hearty meal. They sow seeds in Vaikāsi. Look-outs are put up to guard the crop from wild animals. Women do the weeding.

For one month from the day the paddy crop ripens, women in menses shall not go to the field. A man, who had sexual intercourse the previous night, is prevented from going to the field before bathing. Stakes over which green leaves are tied are driven into the ground to indicate the tabooed area. The above-described persons shall steer clear of the area by taking a tortuous course. If any person breaks the taboo, it will cause damage to the crop.

Before the harvest begins, every man cuts a few blades of corn, and contributes a quarter measure of rice. A pongal is made and a goat is sacrificed in the field. The flesh is then cooked. All partake of the offerings and go home. From next day onwards, harvest is begun.

After harvest, every man gathers his stalks of corn by the field. An offering of bread and fried rice is made. A fowl is sacrificed, and the man goes round the corn stalks letting blood, and places the fowl in the centre. The paddy is then threshed.

An acre of land yields four shalakas of paddy (one shalaka = 100 padis). The expense for cultivation leaves hardly any margin beyond their normal living.

Livestock

The Vellālas keep both cows and buffaloes. Some own up to 50 heads of cattle. They milk cattle once in the morning. The Malappulayas are their grazers. They use milk, butter-milk, and ghee, but keep poor health notwithstanding. Sons inherit cattle. Daughters rely on the pleasure of their parents for any gift.

Religion

The Vellālas have a hierarchy of gods. They worship Thenkasinathan every Sunday in the morning. The Karthika and Sivaratri days are grand festive occasions, when a Muduvan supplies honey for the worship and a man of their own caste is the priest. There is profuse illumination all about the temple at night.

2. *Vigneswara.*—They worship this deity in their own village every Friday, when a member of their own caste officiates as priest. They make offerings of rice and pray for their prosperity.

3. *Krishna.*—God Krishna is worshipped in Mārgali and Chithirai on harvesting and sowing occasions. They make an offering of fruits and milk for their prosperity.

4. *Kāli.*—This goddess is worshipped on both sowing and harvesting occasions, when a goat is sacrificed. They offer rice and cooked meat to the deity and pray for their prosperity and safety from wild animals.

5. *Uchmakāli.*—This goddess is propitiated once a year in Āni on a grand scale, when every man presents a goat or fowl. Every man goes to the temple, prepares pongal, offers it to the deity, and sends same home. Women also go home. All the animals are then sacrificed and every man carries back the carcase of the animal he offered. They enjoy a grand feast. *Māriamma* is also propitiated in a like manner in the months of Ādi.

6. *Arunāchi.*—This goddess is propitiated once in seven years during the month of Mārgali. A buffalo is set apart for the purpose. It is allowed to graze in the paddy fields for fifteen days. On the sixteenth day, the Malappulayas catch it and bring it before the deity. The Malappulaya priest then sacrifices it, and offers it to the deity. The flesh is partaken by all the Malappulayas.

7. *Erumanāchi.*—In Chithirai, the Vellālas offer a she-buffalo to the deity once in ten years. It is penned for fifteen days and given food. On the sixteenth day, it is sacrificed by the Malappulayas and offered to the deity. They then partake of the flesh.

8. *Manikuluki.*—This goddess is propitiated on the sixteenth day after the propitiation of Erumanāchi. The Muduvan of Kudakad brings honey and dammer in a basket. A pit is dug 16 ft.×6 ft.×3 ft. It is filled with vengai fuel (*Pterocarpus marsupium*). When burning is complete, an offering of honey, cocoanuts, plantains, betel leaves and nuts are placed in front and the following prayer is offered. ഈശ്വരി, എങ്കളെ കാപ്പാത്തി രക്ഷിക്കണം. നാങ്കൾ ശെയ്യും വെള്ളാമ, മാടുകന്നുകൾ, കുഞ്ഞുകുഴന്തകൾ നാടെങ്കും നന്നായ് വാഴണം.". This means "Protect us, Goddess. May our crop, cattle, and children flourish throughout our land." Then they go round the fire seven times, and walk through it seven times to the beat of tom-tom. Tender cocoanut water is then poured over their legs. They sit a few yards away. Then a wick dipped in ghee is placed in a lamp filled with water of tender cocoanut and is lit in honour of Velakkunāchi Amman. This is done in perfect silence. The priest is possessed, and he utters some prophetic words. All then pray, partake of the offerings and return home.

9. *Pidari Amman* is propitiated in Mārgali, when a figure of a bhutam, man, and woman is made. This is done by all men remaining celibate for fifteen days. They make pongal. When rice is boiling, a goat is sacrificed and blood let on the image. The carcase is taken round and dropped. The pongal is offered by the priest to the two bhutams or spirits with his own hand. Presents of cloth are made to all relations who are all well-fed.

When offerings are made to Manikuluki and Pidari Amman, all the men remain celibate for fifteen days and sleep underneath a tree. They do not worship ancestor-spirits.

Daily Life.—Women get up early morning, wash their faces, and set the hearth to work. They hull paddy every morning and the rice obtained therefrom is used for cooking. Vessels are then taken, cleansed, and the house and yard swept. Morning meal is prepared. Meanwhile, men attend to their round of duties in the morning and return home at 8 a.m. They have their breakfast. Men then proceed to the field at 9 a.m. and they carry food to the coolies. They work in the fields till 4 p.m. Women go out to the jungle for collecting fuel or for work in the fields. Boys graze cattle, while girls tend the young during the absence of the mother. They bathe in the evening in warm water. They have their supper. Women have their meal last. They take oil bath once a week. Most of them use castor-oil. They cleanse their body and hair with *Unnam fibre* (*Grewia tiliæfolia*). The houses are so huddled together that they are insanitary.

The Vellālas are hospitable to men from other hamlets who may remain with them for ten to twelve days. Such visits are exchanged.

Personal Appearance

The Vellālas have a dark brown complexion with an average stature of 5 ft. 3 ins. They are long-headed, and have an average cephalic index of 73.4. The nose is broad and slightly aquiline. The men have their tuft of hair behind, but cropped head is now becoming common. Women tie their hair into a knot behind.

Dress

Men wear a loin-cloth 5 to 6 cubits long and 2½ cubits broad. They put on an upper cloth 6 × 2½ cubits. They have now begun to wear shirt and coat. Women wear a coloured cloth 15 to 20 cubits long. A knot is tied with the free end over the right shoulder and then the cloth is worn. They do not wear jackets.

Ornaments

Men wear ear-rings of gold, rings on fingers, and bangles round the wrist. Women have ear-rings of gold, but wear no nose-screw. They wear necklace of beads and silver bangles.

Status of Women.—Women are very obedient to their husbands. They attend all religious functions except the one to goddess Manikuluki. They do not inherit any property. Morality is rated to be low, and cases of sterility are found. In a hamlet of 80 houses there were 10 adult females who were sterile.

Vital Statistics.—The Vellālas are declining. In 30 families at Marayur, there are 112 persons, 51 males and 61 females. The average size of the family is 3·7. The average birth-rate is 2·1 and survival rate 1·5. There are 16 children under the age of five, 6 being males and 10 females. Under 20, there are 18 males and 32 females. Judged by their survival rate, they are found to be declining.

Education.—The Vellālas of Marayur have a school at Marayur. Ten boys attend the school from a hamlet of 80 houses. Boys are taught the three Rs. They do not pay much heed for learning. Boys are engaged in grazing cattle, and girls in domestic work. They are very backward in point of literacy.

Conclusion.—Geographical conditions have condemned the Vellālas to a life of isolation, which appears to be the cause of their backwardness in the race for advancement, as it prevents them from contact with other peoples; excessive heat in summer burns out their energy, and makes them slothful. The debilitating effects of heat and humidity aided by malaria have made them economically inefficient. They are gradually declining.

SOME ASPECTS OF THE VĀYU PURĀṆA

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(*Continued from p. 114 of Vol. IV, No. 1*)

SECTION VII

Agastya and Greater India

Among India's sages and seers, Agastya is supposed to have been the L'Indoisateur. From his original abode in Benares, the legends say, he travelled to the far south, made the forest regions of the Dekhan and South India habitable,[1] and established his southern home at the Podiyal hills, a name familiar to the students of Śangam literature. Tradition affirms that this enthusiastic adventurer did not rest content with the cultural conquest of the Dakṣiṇāpatha. He crossed the seas to the Indian Archipelago and pursued his mission with zeal and zest that the cult of Agastya took deep root in the isles of Sumatra, Java and Bali.[2] Scholars who have examined the inscriptions and studied the sculptures with meticulous attention which they deserve, have proved to demonstration that the worship of Agastya is an established fact in these islands.

Tradition handed down by the Purāṇas and the Itihāsas in general and Tamil literary works in particular with regard to Agastya's mission and conquest is corroborated by epigraphic and sculptural evidences not only in South India but in the islands of the Indian Archipelago.[3] Among other Purāṇas the *Skanda Mahāpurāṇa* and the *Agnipurāṇa* furnish us with details as to the mode of worship of Agasteśvara. Confining ourselves to the data furnished by the *Vāyu Purāṇa* we find that Agastya who is celebrated by *Agastya kuṇḍam* in Benares (108, 45), and *Agastya padam* in Gayā (109, 19) and (111, 53) even to this day, visited a number of islands in the Indian ocean. A whole chapter (ch. 48) entitled *Bhuvanavinyāsa* is devoted to an account of what the Purāṇa calls six *anudvīpas*. The geography seems to tally with our knowledge of these

[1] Rāmā : II, 11, 81 : VI, 117, 13–14.
[2] See B. R. Chatterji, *Indian Cultural Influence in Cambodia*. p. 80 (Cal. Univ. 1928)
[3] See the learned paper of O. C. Gangoly on 'the Cult of Agastya and the origin of Indian Colonial Art,' *Q.J.M.S.*, Vol. XVII, 3 : January, 1927

places. The substance of the chapter can be briefly stated. South of the Bhāratavarṣa, there is the *mahārṇava* which we can easily identify with the Indian Ocean. Here are found scattered a number of islands cut off from one another. Among these not far from the Jambudvīpa or the Indian continent lie six small islands. These are Aṅgadvīpam, Yamadvīpam, Malayadvīpam, Śaṅkhadvīpam, Kuśa (Kumuda ?) dvīpam and Vārāhadvīpam. All these are full of different classes of *mlecchas* or the uncivilised. Of these Aṅgadvīpam is said to be a part of the Nāgadeśa and Śaṅkhadvīpam is again a Nāgadeśa where a Nāga king Śaṅkhamukha had his capital. The Malayadvīpam is said to be reputed for sandalwood and for the mountain Mahāmalaya, which is said to be a second *mandara*. It is the residence of Agastya worshipped both by the *devas* and the *asuras*. On the other side of Malaya is located Trikūṭa where is the great city, Laṅkā, the residence of the Rākṣasas. The Malayadvīpa is identified with the modern Sumatra where the chief mountain bears the name Malaya. It is not possible here to enter into a minute discussion of the geography of these islands from indigenous and other sources. Such investigation will neither take us to greater lengths nor produce always certain results.

The Kuśadvīpa is identified with the Sunda Archipelago.[1] The Vārāhadvīpa is possibly the Hog Island near the west coast of Sumatra.[2] The Yamadvīpa, according to Gerini, cannot be Java but can be identified with Yen-mo-na of Hiouen Tsang (629–45 A. D.) which is placed to the south-west of Mahā Campā, and therefore is an island either on the south of the Malaya peninsula or the northern part of Sumatra.[3] The Malayadvīpa which occurs in the Kalyāṇi inscriptions of Pegu of the 12th century[4] is identified with Malaya peninsula forming the southern end of the Indo-China.[5] In the face of the Purāṇa calling it an *anudvīpa* this identification cannot be said to be final. The Aṅgadvīpa is probably Angaman of Marco Polo, and therefore the islands of Andāmān.[6] It is difficult to fix the location of Śaṅkhadvīpa. Gerini evidently has no occasion to examine it. But it may be a reference to Tonkin and Chēhkiang[7] whose early populations appear to have belonged to the same racial stock. The local legends ascribe a Nāga origin to their ancient kings, and further the names of their ancient capitals are connected with the king of the serpents. These remarkably coincide with the Vāyu version. Another interesting feature is that these ancient

[1] Gerini, *Researches on Ptolemy's Geography*, London (1909), p. 237.
[2] *Ibid.*, pp. 448, 677.
[3] *Ibid.*, pp. 464-5.
[4] *Ibid.*, p. 81.
[5] *Ibid.*, p. 102.
[6] *Ibid.*, p. 395.
[7] I have followed Gerini's researches and the authorities cited by him. *Ibid.*, pp. 319-322

capitals are built in the shape of a conch-shell or *śaṅkha*. One of the cities built in this shape in 255 B.C. is Levāthāñ, or Lo-chêng. It also occurs in the inverted form Thāñ-khā-lū, in Chinese, Chéng-kó-lu or Chēng-kó-lou=Śaṅkhala ? Still more interesting is the account of the Mūang yōng chronicle which speaks of the conquest of Yūnnan and Kiao-Chi by Aśoka. Whether this is true or no, the fact is that the Hindu monarchy was established about 258 B.C. in Tonkin, if not earlier. In these circumstances the identification of Śaṅkhadvīpa with Tonkin seems to be satisfactory.

Is Tṛṇabindu Tṛṇadhūmāgni ?

Intimately connected with the legend of Agastya is the episode of Tṛṇadhūmāgni or Tolkāppiyanār the reputed grammarian of the ancient Tamil Land. There is a Tamil tradition, as pointed out by Naccinārkkiniyar in his learned commentary on the *Tolkāppiyam*, that this Tṛṇadhūmāgni was a disciple of Agastya to whom again Tamil tradition assigns a grammar which is now lost. According to this tradition Tṛṇadhūmāgni was the son of Jamadagni, and Agastya married the sister of Pulastya, named Lopāmudrā.[1] Let us turn our attention to the monuments of Java which are full of the portraits of Agastya and Tṛṇabindu. The most interesting of all is the one at Tjandi Redjo, Java, where two small figures in ascetic robes are found on either side of the main figure which is Agastya. Gangoly is of opinion that the two small figures probably refer to his disciples Tṛṇavindu and Marīci.[2] And this is not impossible in the face of a similar portrait in stone where it is inscribed 'Bhagavān Tṛṇabindu maharṣi'.[3] Perhaps Tṛṇadhūmāgni and Tṛṇabindu are identical names.

There is again a Tṛṇabindu tradition in the *Vāyu Purāṇa*. It occurs in more than one place. Among these references, those in the chapters (70, 30 f and 86, 15 f) are important ; while in the former Tṛṇabindu is said to be a son of Dama, who is a grandson of the great Marutta Cakravarti, in the other, Tṛṇabindu is removed from Dama by seven generations. The term *dāyadah* used in this connection is significant.[4] For the term also stands to denote a distant descendant of the family. Having thus reconciled the apparently conflicting accounts, we can proceed to examine the history of Tṛṇabindu. He had a daughter who is named Iḍivilā in one place and Draviḍā in another place. In both places it is said that she was the mother of Viśravas, and also wife of Pulastya. It

[1] *Eluttutikāram Siṛappuppāyiram*, Saiva Siddhanta publication 1923, pp. 14-15.
[2] *Q.J.M.S.*, Vol. XVII, p. 181 and figure (9).
[3] *Ibid.*, p. 185.
[4] Ch. 70, 30.

would then appear that the Vaiśāli dynasty to which Tṛṇabindu belonged, had matrimonial alliance with the Pulastya dynasty of which the great Rākṣasa king Rāvaṇa of Ceylon was fourth in descent from Pulastya. Considering the detailed early history of the Vaiśāla dynasty as narrated in the *Mārkaṇḍeya Purāṇa* which carries the story of its rule to the end of the reign of Dama (ch. 132), it seems that the early kings of this dynasty had to encounter often with southern kings, and the great Marutta had to attack the Nāgas once, against the wish of his father Avikṣit.[1] Connecting these incidents with the matrimonial alliance entered by Tṛṇabindu with king Pulastya, it can be inferred that social and political relations were the order of the day between the ruling families of North India and South India. From the fact that Draviḍā is one of the names assigned to the daughter of Tṛṇabindu, it can be conjectured that Tṛṇabindu's wife was a lady of the Draviḍā country, and the daughter born to them was naturally married to Pulastya who was apparently one of the rulers of Draviḍā-dėsa. The genius of Hindu culture lay in accommodating and harmonising, and therefore when such relationships became an established fact, an Āryan origin of the Pulastya dynasty was apparently invented. Rāvaṇa, according to the *Rāmāyaṇa*, was one well versed in the Vedas and their Aṅgas. The Rākṣasas were either an indigenous South Indian tribe like the Nāgas or were degraded Āryans who have fallen from the path of dharma and who had permanently settled in South India and Ceylon. The latter theory gains some support from the fact that the Rākṣasa clans are said to be seven in number and they are as follows: Yātudhānas, Brahmadhānas, Vārtas, Paulastyas, Nairtas, Agastyas, and Kauśikas.[2] The names warrant the assumption that the Āryas like Agastya, Kauśika, Pulastya settled in South India, for what reason we do not know, and became the progenitors, each in his turn, of a clan of Rākṣasas.

Coming back to the episode of Tṛṇabindu, we find a contemporaneity of Agastya and Tṛṇabindu or Tṛṇadhūmāgni as given in the Tamil tradition.

Agastya had married a sister of Pulastya, and Pulastya was the son-in-law of Tṛṇabindu. The latter had probably an occasion to visit the court of his son-in-law and found Agastya settled in Draviḍa having become an authority of Tamil language. Probably, as most ancient monarchs did, Tṛṇabindu anointed his son Viśāla on the throne and sat at the feet of the old Agastya to learn the beauties of the Tamil language and literature. This is not unnatural as we have

[1] *Vāyu Purāṇa*, ch. 129–131.
[2] *Ibid.*, ch. 70, 55–6.

a similar example of it in the Śangam literature. There once came to the court of Madura a northern king Pirakattan or Brahmadatta by name. Kapilar, the great Śangam poet noticed in him lack of regard for Tamil poetry. Consequently he sang to him the poem *Kuriñjippāṭṭu* after which Pirakattan became a devoted student of Tamil so much so that he became the author of a grammatical treatise. These mythical accounts give the indication to us that they corroborate to a certain degree ancient tradition of the Tamil land. It would appear that these mythical personages became hidden by the mass of obscure tradition and were once again made living personalities when historical persons bearing almost similar names played a glorious part in enriching the Tamil literature and in perhaps carrying their culture to the Far East. Tolkāppiyanār, as I have said elsewhere[1] and his master Agattiyaṇār, probably a historical figure, were contemporaries and could not have lived earlier than the fourth century B. C.

SECTION VIII

Music, Sculpture and Painting

Among the fine arts Ancient India was able to develop, music and dancing claim a large share. Painting and other allied arts are later growths. It has been realised, as is explained clearly in the *Viṣṇu Dharmottara Purāṇa*,—generally regarded as a supplement to the *Viṣṇu Purāṇa*,—that one is dependent on the other. First music, next dancing and then painting are regarded as the process of evolution of the art of painting. Without music dancing cannot exist, and the rules of the art of dancing imply those of the art of painting.[2] We have evidence to indicate that painting was practised in ancient times on a large scale. The *Jātaka* tales speak of portrait sculpture as well as picture galleries.[3] According to Vātsyāyana the painting requisites such as the drawing-board, brushes etc., were in the possession of every citizen, thereby implying that every cultured man was an artist by himself.[4] These references unmistakably bear out that long before the epoch of the *Jātakas* and that of the *Kāmaśūtra*, the arts of music and dancing were in a developed condition. But this development could not be that which witnessed the composition of the *Bharatanāṭya Śāstra*, where perhaps a systematic treatment of these arts was attempted for the first time so far as their secular side was concerned. *Gānam* is the technical

[1] *Studies in Tamil Literature and History*, p. 21.
[2] Pt. III, ch. 2. 5, 6: See also the *Viṣṇudharmottara* by Stella [illegible], Cal. Univ. 1928, p. 31.
[3] *Jātakas*, Vol. VI, pp. 159, 212 and 223.
[4] *Kāmasūtra*, pp. 43–51, sūtras 5–13.

term to denote secular music, while *Gāndharvam* is the expression for divine music.[1] The arts of music and musical compositions are as old as the Vedic times. In fact, the *Sāma Veda* is said to be a musical rendering of the *Rig Veda*. Out of the orthodox school represented by the *Nāradīya śikṣa*, there developed the secular school which catered to the society at large.

In the light of the above remarks we can proceed to an examination of the musical chapters in the *Vāyu Purāṇa*. The latter half of chapter (86) deals with Gāndharvam and the whole of the succeeding chapter is a treatise on the *Gītālaṅkāra nirdeśa* or determination of the characteristics of a musical composition. Taking the first chapter, we find that the rules which are laid down are a mingling of both the schools, orthodox and secular. The *Purāṇa* does not mention either the famous author Bharata or his treatise. We have therefore to credit these portions of the *Purāṇa* as materials of an earlier epoch, earlier than *Bharatanāṭya Śāstra*. It may be noted in passing that in some respects the injunctions agree with those of the *Nāradīya śikṣa*. The texts are usually corrupt and need careful editing. In reviewing the matter contained therein we meet with a technical term *svaramaṇḍalam*. This is constituted by seven *svaras* (notes), three *grāmas*[2] (scales), twenty-one *mūrchanas* (rise and fall of tones), and forty-nine *tānas* (grouping of notes). Analysing these further, every *grāma* has seven *mūrchanas*. The names of these *grāmas* are *madhyama grāma*, *ṣaḍjagrāma* and *gāndhāragrāma*. The seven *mūrchanas* of the *madhyamagrāma* are as follows :

(1) Sauvīrī	(Probably Sāveri).
(2) Harinaśva	Presiding deity, Indra.
(3) Kalopanata	Do. Maruts.
(4) Śuddhamadhyama	Do. Gandharvas.
(5) Śārṅgi (also Mārgi)	Do. Mṛgendra.
(6) Pāvani (also Pauravi)	
(7) Dṛṣṭaka (Hṛṣyaka)	Presiding deity, Nāgas.

Of these, the second is said to be peculiar for the Hari country and the fourth to Marudeśa or desert regions. The *mūrchanas* of *ṣaḍjagrāma* are also seven but mention is only made of four. It is not possible to guess why the last three are omitted. The four are :

(1) Uttaramandra	Presiding deities, Brahmā and Dhruva.
(2) Janani (Rājani)	
(3) Uttarāyatā	Presiding deities, Brahmā and Pitṛis.
(4) Śuddha ṣaḍja	Do. Agni.

[1] cp. M. S. Ramaswami Aiyar : *Svaramelakalānidhi*, Intro. pp. lxxii–lxxiii (Annamalai University, 1932).

[2] The *Paṇ* and *Pālai* of Tamil literature can be equated with *mūrchana* and *grāma*.

Under the categorical list belonging to the *Gāndhāragrāma* occur ten *mūrchanas* instead of seven. Apart from seven, the remaining three *mūrchanas* are to be taken as belonging to the *ṣaḍjagrāma* where we noticed an omission.

This is another piece of evidence to show that the original Purāṇa has been tampered with. The ten *mūrchanas* mentioned are :

(1) Agniṣṭoma.
(2) Vājapeyā.
(3) Pauṇḍarīka.
(4) Aśvamedha.
(5) Rājasūya.
(6) Cakrasuvarṇaka.
(7) Gosavam.
(8) Mahāvṛṣṭikam.
(9) Brahmādānam.
(10) Prājāpatyam.

Among other constituents of the *svaramaṇḍalam* mention was made of the forty-nine *tānas*. While later works on musical science recognise 28 *tānas* to *ṣaḍjagrāma* and 21 *tānas* to *madhyamagrāma*, the *Vāyu Purāṇa* distributes them among the three *grāmas* as follows :

20	*tānas* for	*madhyama grāma*
14	,,	*ṣaḍjagrāma*
15	,,	*gāndhāragrāma*
49	Total	

It is significant to note that the *Gāndhāragrāma* or divine music became lost in course of time. Again the names of the *tānas* which are given in the *Vāyu Purāṇa* are different from those found in extant music works. The matter contained in the *Vāyu Purāṇa* is certainly old, older than any regular treatise on the subject of music. It is not necessary here to give the names of these forty-nine *tānas* as found in the Purāṇa and other later works.

In the chapter entitled *Gītālaṅkāra nirdeśa*, much valuable matter is scattered and affords food for a student of ancient Indian music. As has been already remarked the compiler of the Purāṇa does not mention the name of the authority on which he has based his theory of music. Neither does he claim it as his own ; because he uses the phrase ' *pūrvācārya matam budhva.*' In this respect he has followed the ancient teachers on music. In musical composition the following are to be taken into account : *alaṁkāra* (grouping of notes), *varṇa* (method of pronouncing notes), *padas*, (a priori and a posteriori), *sthānas* (the places from where the notes originate) and *pravicāra* (movements). It is said that the *Alaṁkāras* are thirty in number and

these should follow *varṇas*. This will enable one to fix the *rāgam* or musical modes. The *sthānas* are three and are *udara* (belly), *kaṇṭha* (neck) and *śiras* (head). The *varṇas* are four—*sthāyi*, *prasañjacari*, *avarohaṇam*, and *ārohaṇam*. For the accomplishment of *Lakṣaṇa* there are 103 kinds of what are known as *varṇikas* which take their origin from both nose and mouth. The importance of *Alaṁkāra* is shown in the attainment of *Samsthānam* (form), *Pramānam* (measure), *Vikāram* (modification) and *lakṣaṇam* (definition). The relation of *varṇa* to *alaṁkāra* is comparable to the adornment of different jewels by a woman.

Without entering into further details, we shall take up for examination one or two terms which afford general interest. There is an interesting term *bahirgītam* which is said to be *pañcadaivatam*. This implies a scenic performance on the stage. *Bahirgītam* is the song sung in front of the stage before the regular dramatic performance begins. It is to be regretted that no details of the stage and actions relating to it are furnished by the Purāṇa.

The concluding section of the chapter throws some light on the different kinds of dancing in vogue. Very few details are there connected with the technique of the art of dancing. There is a very corrupted stanza which, if reconstructed in the light of the texts of the *Yāgñāvalkyasmṛti*,[1] would supply important data with regard to ancient musical pieces connected with dancing. The stanza runs as follows:

द्वे चापरान्तिके विद्याद्भयशुल्लाष्टकस्य तु
प्राकृते वैणवैश्चैव गान्धारांशे प्रयुज्यते ॥ ch. 87.34.

As reconstructed:[1]

द्वेपराचान्तिके विद्यादयं उल्लोभ्यकस्यतु
प्राकृते वैणवैश्चैव गान्धारांशे प्रयुज्यते ॥

Among the musical pieces recommended to the ascetics as enabling them to attain *mokṣa* or salvation by Yājñavalkya, some find mention in the *Vāyu Purāṇa*.

[1] Cp. *Yājna*. III, st. 113 and 114.

अपरान्तकमुल्लोभ्यं मद्रकं प्रकरी तथा ।
औवेणकं सरोबिन्दुमत्तरं गीतकानि च ॥
ऋग्गाथा पाणिका दक्षविहिता ब्रह्मगीतिका ।
गेयमेतत्तदभ्यासकरणान्मोक्षसंज्ञितम् ॥

The Purāṇa refers to the dance *Kaiśikam* of which seven varieties are distinguished. *Uttaram* and *Upohanam* are again musical pieces related to dancing. *Yānam* is another kind of dance. In this connection our attention is drawn to another technical term called *vṛtti* which occurs here wrongly as *buddhi*. (*Ibid*. st. 43.) It determines the disposition of the mind as to the mode of singing. There are three kinds—*vārtika*, *dakṣiṇa*, and *samavāya*, determined by two *mātras*, four *mātras*, and eight *mātras* respectively. All these *vṛttis* are used in the *suvira mūrchana*.

We began this section with the statement that painting and probably sculpture are the results of music and dancing. On this very interesting subject the Purāṇa gives nothing by way of information. Incidental references to portrait sculpture and painting are made in one or two places. These lead us to infer that the Purāṇa is aware of the art which was largely in use in the temples dedicated to gods. In the language of philosophy the Purāṇa calls the whole universe a *citra* (picture) as if painted on a wall (*bhittāvivārpitam*) by the mythical artist (*Citrakārani*) who is given the appellation of *Maya*.[1] Bereft of its philosophical aspect, it conveys to us the idea of a picture being painted on a wall by an artist. More interesting is the other reference where mention is made of portrait sculptures. In the temple dedicated to Śiva there were portraits sculptured in the great pillars, of gods and animals which beautified the whole buildings.[2] In the representation of human figures and animal figures as well in sculpture, the Purāṇa aims at lifelike pictures exhibiting sensuous passions. The animals carved here are lions in thousands and the carving of lions is said to be invariably difficult. Both the gods and the lions sculptured are representations of Indian mythology and hence monstrous, and incongruous. Here is a description of the gods of the quarters. They are excellent in form, wearing *cūḍāmaṇi* on their head, attired in clothes resembling the hue of the clouds, lustrous, full of prowess, with a white garland, seeming to roar, and wielding *vajra* and *śula* in their hands. The lions are again represented as being linked one with the other from pillar to pillar by a chain, and as living in comfort.[3]

[1] Ch. 104, 41. [2] Ch. 101, 289-291.

[3] मन्दराद्रिप्रकाशानां बलेनाप्रतिमोजसाम्
हारकुन्देन्दुवर्णानां विद्युत्घन निनादिनाम् ॥
चूडामणिधराणां वै मेघसंनिभवाससाम्
श्रीवत्साङ्कितवक्षाणामङ्कुलीशूलपाणिनाम् ॥

Thus we see that music, dancing and sculpture which are secular arts have been intimately connected with the national religion of the land. For as a great historian has remarked it is mythological poetry that has been the foundation of all national religions both in the East and in the West.

SECTION IX

ASTRONOMICAL AND OTHER DATA

H. H. Wilson depending on Bentley's researches on ancient Hindu astronomy referred to two significant statements in the Purāṇa which supply some chronological clue from an astronomical standpoint. One is the length of a Yuga which is reckoned to be one of five years' duration and of which we shall speak presently, and the second is the date of the commencement of the solar year. It is said that this cycle commences when the Sun is in the Śravaṇa, i.e. when Śravaṇa happens to be the first of the Nakṣatras and Māgha the first of the months. These two are propositions which do not conform to the accepted standards. The Yuga of five years is to be traced back to what is known as the first period of Hindu astronomy, roughly between 1181–961 B.C. The mode of computation with regard to the solar year is possible only in the age between 204 B.C. and 44 A.D. It is further significant to note that this mode of reckoning the solar year was abandoned after 538 A.D.

The above statements must either take us to a period between 1181 and 961 B.C. or 204 B.C. and 44 A.D. The compilation of the Purāṇa could not be so early as the first though it may contain such old material. The more reasonable date will be the latter, i.e. somewhere between 204 B.C. and 44 A.D. But taking into consideration other circumstances, the date of the compilation may be pushed back to two or three centuries. It may be, however, pointed out that some portions of the Purāṇa were added at the period between B.C. 204 and 44 A.D., and some more during the Gupta epoch as we shall presently see.

Besides these there are many details of astronomical interest, so much so that the Purāṇa is an invaluable treatise on ancient astronomy.

एवं दिशानां देवानां रूपणोत्तमशालिनाम्
तस्य प्रासादमुख्यस्य स्तम्भेषूत्तमशोभिषु ॥
संयताग्नि मयोभिस्तु शुङ्खलाभिः पृथकपृथक् ।
मायासहस्रं सिंहानां सुखं तत्र निवासिनाम् ॥
स्तम्भेऽप्यपासृताषष्टं त्रयम्बकस्य निवेशने ।

We have details regarding the various planets, stars and the milky path in respect of their size and locale, their cars and steeds.[1] The interrelation between the Pole or the Dhruva and these, is further treated as being attached to it by ropes of air.[2] The role played by this Dhruva in the various planetary *maṇḍalas* or orbits is something unique and incomprehensible. It is said every movement and every action are to be traced to this.[3] On it depends the rainfall also.[4]

Other interesting details of an astronomical character are that Māgha is the first of months and that Śraviṣṭa is the first of Nakṣatras.[5] While we are familiar with Uttarāyaṇam and Dakṣiṇāyanam commencing with Puṣyam (Tamil, *Tai*) and Āṣāḍha or (Tamil, *Ādi*) months the Purāṇa rules that the months of *Tapa*(next to Puṣyam and Nabha (next to Āṣāḍha) (*Maśi* and *Āvani* of Tamil) commence the two *ayanams* respectively.[6] Again in the account of the planets (*grahas*) though all the nine are mentioned by name, still only seven are treated as if they are orthodox *grahas*. The two that have been left as unorthodox are *kētu* and *rāhu* and tradition has it that these two are of āsuraic nature. Among the seven again a distinction is made as *mandavicāriṇaḥ* (slow-moving ones) and *śīgragāḥ* (quick-moving ones). To the first category belong the Saura (Saturn), Aṇgiras (Bṛhaspati) and Vakra (Śanaiścara). To the second category belong the four big *grahas* Sūrya, Candra, Budha, and Śukra.[7] It may be pointed out here that Varāhamihira, the reputed astronomer, who lived at the commencement of the sixth century A.D., continues this tradition, but after him the *navagraha* theory came to stay.

There is a wealth of material on astronomical and astrological modes and methods. In fact the Purāṇa itself says that they are so much that they defy all knowledge and erudition. It states that one must get acquainted with the theory and then put it into practice. By observation one must draw one's own inference. But in recommending this mode of study of the subject, the Purāṇa speaks of five means which would render the approach to it easy. These are cakṣu (eyes), śāstram (science), jalam (water), lekhyam (written document) and gaṇitam (calculation).[8] But the Purāṇa is in correspondence with the injunctions of the *Dharmaśāstra* when it condemns those who embrace astrology as their profession. It is said that these find a place only in hell.

नक्षत्रैर्जीवते यश्च नरोगच्छत्यधोमुखम् ।

[1] Chap. 50–53.
[2] Chap. 51–9.
[3] Chap. 51, 6–11.
[4] *Ibid.*, 52; Chap. 52, 90–99.
[5] 53–112–3.
[6] Chap. 50, 201.
[7] Chap. 53, 71–72.
[8] Chap. 53, 121–3,

The *Arthaśastra* denounces the person who consults the stars too much.[1]

But these are common details which are ordinary and do not break new ground in respect of chronology.

On time

The Purāṇa contains an ancient account on the division of time. There are several chapters [2] where a reference is made to *Saṅkhya* and *Saṅkhyavid* or expert in calculations. The division of time begins with the smallest unit *nimeṣa* [3] and goes to that which is beyond reckoning. Though we are apt to regard the mode of computation crude, still it proves to demonstrate the genius of the Hindus in mathematical science. The Purāṇa bears ample testimony to this. Among the various terms, the word *yuga* is of special import. Besides mention of the ordinary four *yugas* and their characteristics [4] and a measure equal to Dhanur daṇḍa [5] we have the *yugam of Ravi* (ch. 50, 184) and the *Saptarṣi yugam.*[6] But what is more important here is the yugam of five years (*vatsaras*).[7] These five years are Samvatsara, Parivatsara, Idvatsara, Anuvatsara and Vatsara. Their presiding deities are the fire, the sun, the moon, the wind, and Rudra respectively.[8] It is said that this cycle happens with Śraviṣṭha and ends with Śravaṇa, both lunar asterisms, and it revolves like a wheel according to the movement of the Sun :

' sravaṇāntam sraviṣṭhādi yugam syāt pañcavārṣikam |
bhānorgati-viśeṣena cakravatparivartate || 53, 116.

In this connection, mention may be made of a statement in the Purāṇa that a Saṃvatsara or a year is reckoned to be of five parts :

यश्चैव पञ्चधात्मा वैप्रोक्तः संवत्सरो द्विजैः ॥

In this and in the following statement that the sons of the *Ṛtus* are called *ārtavas* and are five in number, the Purāṇa re-states the Vedic idea of the seasons. According to the *Kṛṣṇa yajus Saṃhitā* (*Kaṇḍa* VI, I *Praśna* II and 11th *Anuvāka*) and the *Taittirīya Brāhmaṇa*,[9] there are only five *prayājas* recognised. The *Prayājas* is only a Vedic term for the *Ṛtus*. The Vedic calendar which knows the six Ṛtus or seasons makes the *Hemanta* and *Śiśira Ṛtus* as constituting one *Ṛtu*.

A word in this connection may be said about the concept of Brahmā's day and night and that of the *Manvantaras*. While the

[1] Ch. ix, 4.
[2] Ch. 31, 24 f ; Ch. 50 esp. 169 ; 101. 93 ff.
[3] Ch. 53, 115.
[4] Ch. 7, 22 ; 23, 83 ; 31, 21.
[5] Ch. 101, 125.
[6] Ch. 99, 419.
[7] Ch. 31, 28 ; 50, 183, etc.
[8] Ch. 56, 20-21.
[9] Anand series, p. 722.

period of the creation is said to be Brahmā's day, the period of deluge is his night. The following table is given :

1000	Kalpas	=1 Abda (of Brahmā).
8000	Abdas	=1 Yuga.
1000	Yugas	=1 Savana.
6000	Savanas	=1 Life of Brahmā.
Crore × 1000	Crores	=1 Parārdha.
2	Parārdhas	=1 Param.

In this connection the Purāṇa makes a remarkable statement that there is neither day nor night for Brahmā. It is *upacāra* (complimentary) and is intended for the sake of the welfare of the world.

We can now proceed to an examination of the *manvantarams*. A *manvantaram* rests on the saptaṛṣis, devas, pitris, manus, and prajas. These are created at the beginning of the Creation and destroyed at the commencement of the Dissolution. The devas are sons of ṛṣis and ṛṣis are also sons of the devas. Pitris are also sons of devas. The fourteen *manvantarams* are represented by respective Manus who represent again the fourteen faces of Brahmā which are said to be fourteen vowels. The term Manu stands for resolution as the term Dakṣa for prāṇa or life. This is what we may term to be the philosophical explanation of the *manvantaras*.

SECTION X

Genuine Historical Tradition

That myth has been mixed up with genuine history in the Purāṇas as a whole, goes without saying. In spite of that curious mixture of facts and fiction, ceaseless investigation calls attention to certain features of genuine history. It must be remarked at the outset that whatever is spoken of as belonging to the kingdom of gods is legendary, and notwithstanding the elaborate genealogies it would be waste of time to go into a searching examination of mythical personages and their descendants. But the sections dealing with the *vaṃśa* or genealogy of ṛṣis and kṣatriya kings are worth investigating by a student of traditional history. The following is a categorical list of the sages whose genealogies are given to some extent in the *Vāyu Purāṇa* : Aṅgirasa, Vasiṣṭha, Kaśyapa, Bhṛgu, Atri, Kaṇvā, Viśvāmitra, Agastya, Pulastya, Pulaha and Kratu. Of these the *vaṃśas* of the last four are not furnished. Even that of Viśvāmitra is meagre.[1] The *vaṃśa* of Pulastya is connected with the royal line of Vaiśāli of which Marutta Cakravarti was an honoured

[1] Ch. 91, 96-102.

monarch.[1] Even with regard to the genealogy of Atri[2] and Kaṇvā,[3] there is only a bare outline. Leaving out of our account the mythical Atri, Prabhākara can be claimed as a historical person.[4] It is said that he married the ten daughters of Bhadrāśva and Ghṛtāci. Dattātreya [5] is a semi-legendary figure and he is looked upon as an incarnation of Viṣṇu.[6] The Ātreyas are mentioned as hymn-makers.[7]

With regard to the Kaṇva *vaṃśa*, two different origins are furnished in the Purāṇa. The earlier origin traces the genealogy from Medhātithi, a son of Kaṇvā.[8] The later origin ascribes the beginning of the *vaṃśa* from Ajāmiḍha.[9] It is significant to note that the Purāṇa misreads Kaṇvā and Kāṇvāyaṇa as Kaṇṭha and Kāṇṭhāyaṇa. Both accounts agree that Kaṇvā had a son Medhātithi to whom the Kāṇvāyanas trace their descent. The difficulty lies in the fact that in one place Kaṇvā is the son of Apratiratha, a son of king Matinara, and in another place a son of Ajāmiḍha, a king who was Matinara's successor by some 32 generations,[10] thus indicating a great discrepancy in time.

The genealogies of Aṅgirasa, Vasiṣṭha, Bhṛgu and Kaśyapa are given in detail.[11] The Āṅgirasas claim their descent from Atharvan Aṅgiras who is apparently a mythical figure.[12] A number of distinguished sages figure in this line. Some of them are Bharadvāja, Dīrghatamas, Vāmadeva and Śaradvant. A sage of the line is mentioned Ayapya[13] and the same is corruptly named Ajasya in the *Matsya Purāṇa*.[14] The correct reading, as pointed out by Pargiter, seems to be Ayasa. Bharadvāja is the son of Bṛhaspati, the Purohita of gods. Another name of Dīrghatamas is Gautama.[15] Śaradvant is the paternal cousin of this Dīrghatamas.[16] We have again a Śaradvant who is the son of a Gautama whose line is given in the North Pāñcala dynasty.[17] In all, thirty-three important personages are mentioned, all of them being hymn-makers.[18]

The genealogy of Vasiṣṭha next claims our attention.[19] The *vaṃśa* of this seer is rather difficult to work up. We meet with Āpava Vasiṣṭha, son of Varuṇa. Arjunakārtavīrya got his

[1] Ch. 70, st. 29-56.
[2] Ch. 70, 67-78.
[3] Ch. 99.
[4] Ch. 99, 123-27.
[5] Ch. 94, 10-11.
[6] Ch. 98, 89.
[7] Ch. 59, 104.
[8] Ch. 99, 130-1.
[9] Ch. 99, 169-70. (Cp. *Matsya P.*, Ch. 49, 46-7 and Ch. 50-5).
[10] See Pargiter, *An. His. Trad.*, p. 225.
[11] For the genealogy of the Āṅgirasas see Ch. 65, 97-108.
[12] Cp. *Matsya*. Ch. 196.
[13] Ch. 59, 101.
[14] Ch. 196, 4.
[15] Ch. 99, 47-61 and 88-92.
[16] *Ibid.*, 48 and 57-62.
[17] Ch. 99, 201-5.
[18] *Ibid.*, 102.
[19] For the genealogy of the Vāsiṣṭhas see Ch. 70, sl. 79-90.

hermitage burnt down and was consequently cursed.[1] In one place Vasiṣṭha and Arundhatī were the parents of a hundred sons, of whom Śakti was the eldest.[2] Vasu or Vasumān is said to be a son of Vasiṣṭha and is one of the seven sages in heaven.[3] Aśmaka is said to be the son of Vasiṣṭha by appointment by the queen of Kalmāṣapāda to continue Ikṣvāku's line.[4] Another Vasiṣṭha is mentioned as a contemporary of Nemi, king of Videha. This king became Videha (bodiless) on account of the sage's curse.[5] Vasiṣṭha again appears as a contemporary and Purohita of Ikṣvāku, the celebrated king of Ayodhyā. Under orders from Vasiṣṭha, Ikṣvāku banished his son Vikukṣi, for having taken unclean meat in a śrāddha.[6] We have Vasiṣṭha as Purohita of Daśaratha and his son Rāma, according to the *Rāmāyaṇa*. It cannot be that the same Vasiṣṭha continued to live for ages together. The truth seems to be that there were a number of persons who apparently belonged to the family of the mythical sage Vasiṣṭha.

Turning our attention next to the *vaṃśa* of the Bhārgavas, there is as usual the confusion arising from the fact that genuine tradition is mixed up with myth.[7] Bhṛgu Prajāpati is the progenitor of this line. His son is Uśanas Śukra who is identified with the planet Venus. Śukra is the Purohita of the Asuras.[8] Elsewhere he is claimed as the son of Umā and Śiva.[9] Other seers of this line are Cyavana[10] and his son Ātmavāna or Ātmavant who[11] is mentioned as a hymn-maker among eighteen others. He is probably Apanavāna of the *Ṛgveda*. Other names of this *vaṃśa* are Ṛcika, Gṛta-Samada, Pṛthu, and Mārkaṇḍeya.

The last important Brahman family is that of Kaśyapa.[12] It is said that the Progenitor Kaśyapa had two sons Vatsāra and Asita. Vatsāra had in his turn two sons Nidhruva and Raibhya. While the latter was progenitor of the Raibhyas, the former was that of the Kuṇḍapāyins. The genealogy further shows that Asita's son was Devala connected with the Śāṇḍilyas. We hear of these in the reign of Dilīpa Khaṭvāṅga, King of Ayodhyā.[13] Thus Raibhyas, Śāṇḍilyas, and Nidhruvas or Kuṇḍapāyins come under the category of Kaśyapas. Kaśyapa, Vatsāra (also Vatsara), Vibhrama, Raibhya, Asita and Devala are all said to be Brahmavādins.[14]

[1] Ch. 94, sl. 40, 45.
[2] Ch. 2, 10.
[3] Ch. 64, 27.
[4] Ch. 88, 177.
[5] Ch. 89, 4.
[6] Ch. 88, 12-20.
[7] See *Vāyu P.*, Ch. 65, 72-96; Cp. *Matsya* 195, 11-46 and *Brahma* III. 1. 73. 100.
[8] Ch. 62, 80: 97, 94, etc.
[9] Ch. 72, 15.
[10] Ch. 86, 1-2 and 23.
[11] Ch. 59, 96.
[12] For genealogy see *Vāyu P.*, Ch. 70, 24-29.
[13] Ch. 73, 41-2.
[14] Ch. 59, 103.

More important for historical purposes are the Kṣatriya genealogies, or broadly, genealogies of different ruling dynasties. All these are derived from the primeval Manu Vaivasvata, son of the Sun God. According to the version of the *Vayu Purāṇa* Manu had nine sons and a daughter Ilā. Purūravas was born to her by Budha. Then she was turned into a man by name Sudyumna.[1] He had three sons Utkala, Gayā and Vinatāśva who got three kingdoms respectively.[2] The nine sons of Manu were Ikṣvāku, Nahuṣa, Dhṛṣṭa, Saryāti, Nariṣyanta, Prāṁśu, Nabhagoriṣṭa, Karūṣa and Pṛṣadhra.[3] The eldest Ikṣvāku was the progenitor of the solar race which ruled from Ayodhyā. He had a hundred sons of whom Vikukṣi was the eldest and successor. Of the other sons, 50 were entrusted with small states in the north and 48 in the south (Dakṣiṇāpatha).[4] Vikukṣi was succeeded by Kakutstha. The two remaining sons of Ikṣvāku were Nimi (also Nemi) and Daṇḍa. Nemi in his turn became the progenitor of a separate dynasty with its capital at Videha. This line is to be traced from his son Mithi, and hence the country of Mithilā. He was also called Janaka, and must be distinguished from Śirādhvaja Janaka, the father of Śītā and father-in-law of Rāma.[5] Daṇḍa was the other son of Ikṣvāku who was in charge of the region which came to be known as the Daṇḍaka.[6]

Passing on to the other sons of Manu, nothing is known about Nahuṣa. Pargiter substitutes Nabhaga for Nahuṣa. Dhārṣṭakas sprang from Dhṛṣṭa,[7] Kārūṣas from Kāruṣa[8] and Śaryātas from Śaryāti.[9] Nariṣyanta and Prāṁśu are of the Vaiśāla dynasty[10] as also Nābhāgoriṣṭa. Pargiter substitutes Nabhanediṣṭha.[11] Pṛṣadhra[12] was cursed for having killed his teacher's cow.

We have then the glowing history of the Aila line which had its capital at Pratiṣṭhāna. While Āyu succeeded Aila, a brother of his, Amāvasu established himself at Kanyākubja (Kanuj). Kṣatravṛddha, a son of Āyu, founded the kingdom of Kāśi (Benares). Under Yayāti the kingdom grew into an empire and four of his sons were appointed over the conquered territories, the fifth Pūru succeeding him. The Haihayas and Yādavas are offshoots of the line of Yadu, son of Yayāti occupying the southern and the northern half of the original kingdom. When the power of the Pauravas began to decline, the Yādava king Śaśabindu made headway into their territory.

[1] See the whole of ch. 85.
[2] Ch. 99, 266.
[3] Ch. 85-4.
[4] Ch. 88, 8 ff.
[5] For details, see the whole of Ch. 89.
[6] Cp. *Rāma* VII 81, 18-19.
[7] Ch. 88, 4-5.
[8] Ch. 86, 2-3.
[9] *Ibid.*, 23-9.
[10] *Ibid.*, 12.
[11] *Ibid.*, 3, 22.
[12] *Ibid.* 1, 2.

The next important king of this traditional history is Māndhātṛ. He was a great conqueror and brought under his sway the kingdoms of Kanyākubjas, of Druhyus, and also of Ānavas. The progenitors of the Druhyus and Ānavas are Drahyu and Anu, sons of Yayāti. A Druhyu king Aruddha was killed by Māndhātṛ and his successor Gāndhāra was confined to the north-western province, the then Gāndhāra country.[1] Mucukunda a son of Māndhātṛ built Māhiṣmatī which soon took the place of Ayodhyā in political importance.

The following are other important dynasties which were more or less branches of the existing stocks. Mention was already made of the kingdom of Kanyākubja. One of its earlier kings was Jahnu about whom legends are narrated. Under him it attained some prominence.[2] The next important king is Amṛtarayas who is said to have founded the Magadha.[3] Secondly were Tālajaṅghas who were Haihayas whom Sagara defeated and extended his empire.[4] Coming to Ayodhyā we find some of its great kings were Dilipa, Raghu and Daśaratha. The reign of Rāma, the son of Daśaratha gives us a peep into the ancient history of the Dekhan. The other sons of Daśaratha and their sons are mentioned with their respective kingdoms to which they were appointed.[5] With them the traditional history of the Ayodhyā kings ends.

The history of the Vaiśāli dynasty is given in two places and much of it is corrupt. A good account of the early history of this dynasty is furnished by the *Mārkaṇḍeya Purāṇa* to which a reference has been made before.[6] The Ānava kingdom became split into five, of which Aṅga was one. Others were Vaṅga, Kaliṅga, Puṇḍra, and Brahma. Their capital was Mālinī which became Campāvati or Campā under the rule of a member of this line, by name Campā. The dynasty of the Aṅgas came to an end practically with Karṇa.[7] Then the genealogy of Pūru is given commencing with his son Janamejaya.[8] Duṣyanta's son Bharata is a member of this line. Another descendant of this stock, Hasti, founded the city of Hastināpuram. A branch of this stock came to be known as the Nīpas who reigned from Kampilya. The dynasty which is now known as south Pāñcala dynasty came to an end with Ballāla's son.[9]

Passing on to the history of the Kurus, from Janamejaya, son of Parikṣit, the account is continued to the reign of Adhisīmakṛṣṇa when the Purāṇa is said to have been narrated.[10] From this medley of traditional history of the lunar and solar races the Purāṇa takes

[1] Ch. 99, 7-9.
[2] *Ibid.*, 62.
[3] Ch. 88, 87-190
[4] pp. 67-119.
[5] *Ibid.*, 174-182.
[6] Ch. 91, 54-8.
[7] Ch. 88, 167-9.
[8] See above p. 60.
[9] *Vāyu P.* 176-73
[10] *Ibid.*, 229-259.

us to the 'future' and begins to narrate the story of other ruling dynasties in a prophetic tone. These Pargiter calls the dynasties of the Kali Age.

The following is a categorical list of other ruling dynasties mentioned in the *Vāyu Purāṇa*. (1) The Pauravas from Adhisīmakṛṣṇā to Kṣemaka were twenty-five in number.[1] (2) The Aikṣvāku dynasty begins with Bṛhadratha and ends with Sumitra[2] consisting altogether of 31 kings. (3) The Māgadheyas commence with Somādhi who ruled at Girivraja, and ends with Ariñjaya. The reigning members of this dynasty were thirty-two and the duration of their respective reigns is also given.[3] Then the Pradyotas, the Śiśunāgas, the Nandas, the Mauryas, the Śuṅgas, the Kaṇvas (wrongly mentioned as Kaṇṭāyanas), and the Āndhras, and the Guptas are given,[4] followed by Śakas and other foreign and indigenous tribes which the Purāṇa styles as *mlecchas*. Some of these are mentioned by name: Ābhīras, Gardabhins, Yavanas, Tuṣāras, Maruṇḍas, Maunas, Vṛṣalas, Vaideśikas, Vāhnikas, Meghas, Naiṣadhas, and Nāgas.[5] Contemporaneous with the Gupta rule is mentioned the rule of Manidhanamjaya, Devarakṣita, Guha, and Kanaka. A description of the country at the commencement of the Gupta epoch is then furnished. Such condition is supposed to be that of the Kali era.

SECTION XI

Date of the Purāṇa

It will be interesting to turn our attention to fixing the probable date of the composition of the Purāṇa and see how far our study of the Purāṇa enables us to arrive at some definite conclusion. As has been already remarked, while some portions of the Purāṇa can go back to the 5th century B. C., other portions must have been added or revised at the end of the third or fourth centuries of the Christian era. The data furnished in the preceding pages and especially the section entitled *Religion and Philosophy of the Purāṇa* may lead us to postulate the theory that the Purāṇa may find a place among the earliest of the existing Purāṇas. In examining the date of the composition we have briefly to recall some statements already made.

1. The Purāṇa is the typical representative of the transformation from the old *Yoga* school to the *Advaita* school incorporating into it the salient features of both the *Yoga* and the *Saṅkhya*. This metamorphosis took place, to

[1] Ch. 99, 270-282. [2] *Ibid.*, 280-92.
[3] *Ibid.*, 296-308. [4] *Ibid.*, 309-361.
[5] *Ibid.*, 362-395.

venture a conjecture, in the period of the *Upaniṣads* which may be dated roughly the 5th and the 4th centuries B. C. It may be noted in passing that the *Vāyu Purāṇa* does not preach exclusive worship of a particular deity.

2. The Purāṇa is an ardent advocate of the ancient *Yoga* theory inasmuch as its injunctions regarding the practice of *Yoga* can be traced back to the chalcolithic period of Indian History as evidenced by 'the *yatis* of the proto-historic and prehistoric Indus Valley' in sculptures.
3. The Purāṇa nowhere makes even an allusion to the religious sects Buddhism and Jainism which came to stay in the fourth century B.C., if not earlier.
4. The Purāṇa prescribes feeding of *Yogis* and ascetics for the *śrāddha* which has long fallen into disuse. The fact that the Purāṇa is full of it bears ample testimony to its antiquity.
5. In its recommendation of particular kinds of dancing accompanied by music to the ascetics as a means of attaining salvation, the Purāṇa is on a par with the *Yājñavalkya smṛiti* where similar prescriptions are found.[1] The late Gaṇapati Śāstri has justification to assign the law-book of Yājñavalkya to an epoch earlier than the *Kauṭalīya* for which the generally accepted date is the fourth century B. C.
6. The epic *Mahābhārata* and its supplement the *Harivaṁśa* definitely quote a *Vāyu Purāṇa*. The epic knows the existence of the *Vāyu Purāṇa* in an independent form.[2] This shows that the Purāṇa is much anterior to the didactic epic.
7. The artificial style of the Purāṇa recalls the language of the plays of the famous dramatist Bhāsa. The discoverer and editor of these plays assigned, on substantial grounds, fifth century B. C. for Bhāsa, which still holds the field, notwithstanding the controversy that has raged about it. The common feature of the plays and of the Purāṇa is the use of a large number of archaic (*ārṣa*) words such as paśyate, paśyeta, gṛhya, nāma ityuktaḥ, nāmmāsi-ityuktaḥ, siṃhavāhinī, āptoryāmānām etc. Besides, there are a large number of grammatical irregularities and these suggest a period when the canons of the grammatical treatise were still in the making. This points to another circumstance that the Purāṇa was not very much tampered with.

[1] *Vāyu*, ch. 87, *Yāj.* III, 11. [2] III, 194, 15.

8. The reference to Vyākaraṇa, Bhāṣya, and Dharmaśāstra in a single line does not help us much in our enquiry. That and the succeeding stanzas of the Purāṇa are an interpolation. This is a copy of the more elaborate rules laid down in the *Mahābharata*. The omission of these portions does not affect the sense nor the continuity of the Purāṇa in the least.
9. There is no reference in this Purāṇa to the *Tantric* system of worship which consists of Devī being regarded as Śakti. Though we do not know for certain when this particular form of worship came into being we know this for certain that it was not popularly prevalent in the age when the *Vāyu Purāṇa* was composed.[1]
10. According to its own version in the later chapters dealing with royal dynasties the scene of the Purāṇa is laid in the reign of the Paurava King Adhisīmakṛṣṇa[2] who is supposed to have lived before the commencement of the Kali age. His contemporaries are Senajit of Magadha and Dīvākara of the Aikṣvāka dynasty.[3] According to Prof. Rapson the genealogy assigned to him indicates a more definite date; for 'of his immediate forbears Aśvamedhadatta, Śatānīka, Janamejaya, Parīkṣit all but the first, his father Aśvamedhadatta, are no doubt to be identified with kings of the same names who appear in the *Brāhmaṇas*.'[4] Therefore we have to look for a date prior to 1110 B. C. for Adhisīmakṛṣṇa. Not only is this king mentioned but also his contemporaries by the significant term *sāmpratam* in these places under reference. From this we cannot imagine that the Purāṇa was composed as early as 1100 B. C. First, the historicity of these personages must be proved on more substantial evidence. Secondly, some of the Vedic compositions which the Purāṇa cites are much later and consequently the Purāṇa must be later. It may be that a particular teacher narrated the ancient Purāṇa when Adhisīmakṛṣṇa was ruling. The same version was continued in much later times when it was reduced to writing. In other words, the old materials handed down by oral tradition were allowed to exist as they were.

[1] For an outline of the history of the *Tantras*, see Farquhar *Religious Literature of India*, p. 199 ff.
[2] Ch. 99, 258–9 and 270.
[3] See *C. H. I.* Vol. I., p. 302; Pradhan, *Chronology of Ancient India*, p. 254, Pargiter, *Ancient Historical Tradition*, p. 182.
[4] *Ibid.*, Vol. I.

11. The portions dealing with dynasties of the Kali Age take us to the reign of Candragupta I of the Gupta dynasty and give an elaborate description of the period 320–330 A.D. It also gives the names of contemporary monarchs. The reference to the Huns who invaded India in the fifth century A. D., shows that the last revision of the Purāṇa ended somewhere about 500 A.D. At the least the lower limit cannot be later than 625 A.D., when Bāṇa in his historical romance, the *Harṣa Carita*, definitely stated that he attended a *Vāyu Purāṇa* reading in his village by a *pustakavācaka*, Sudṛṣṭi by name. [Gītya Pavamāna proktam Purāṇam papāṭa.]

    If the Purāṇa has become so popular then we have to conclude that it attained celebrity in a much earlier period.
12. According to the astronomical data the Purāṇa may be placed at a period between B. C. 204 and A.D. 44.[1]

The foregoing results may be summarised. Inasmuch as there are almost *verbatim* quotations from the *Upaniṣads* the upper chronological limit will be somewhere about the 5th century B. C., the period immediately succeeding the epoch of the early *Upaniṣads*. Also the lower limit can be fixed about 600 A.D., as the *Harṣa Carita* knows it fairly full. From this we have to infer that the Purāṇa compilation extended over a number of centuries. Most of the portions were reduced to writing about the fifth and fourth centuries before Christ, and other portions were added now and then until it reached its present form somewhere between 350 and 500 A.D.

SECTION XII

General Remarks and Conclusion

A study of the Purāṇa and a survey of its contents lead us on to the conclusion, to advert to what has already been said, that this Purāṇa can be recognised as one of the earliest of the existing Purāṇas. The merits of the Purāṇa to warrant this conclusion are a cosmopolitan view of religion and philosophy, few portions of which can be definitely marked sectarian, a detailed description of cosmogonical parts, fewer legends and more facts. The remarks of Prof. Wilson are here apposite: 'There is altogether a copiousness and consistency of system which is not common in the Purāṇas. One feels an air of originality and antiquity about it, not perceptible in others.'

[1] See above sec. IX.

Reference has already been made as to the typical prologue furnished by this Purāṇa as also on the valuable astronomical data. Mention was also made of the theology of the Purāṇa more agreeing with the school of the Vedānta, but not failing to omit the principles and practice of the Yoga school, thus pointing out to the revival of the Yoga period represented by the Yatis of the Pre-Rig-Vedic and early Rig-Vedic period. The Purāṇa soars high in the realm of an extreme form of the *advaita* where the Supreme Being is treated as *Nirguṇa* or void of attributes.[1]

As was pointed out, the Purāṇa does not sacrifice Karma at the altar of Yoga. It makes us understand that Karma is the ladder to attain the top flat of Yoga. Then one can understand why the Purāṇa lays so much stress on the *śrāddhas* and frequentings of sacred *tirthas* or places of pilgrimage. The rituals laid down are in the manner of the followers of the various schools of the Rig Veda, especially the Āśvalāyana section. The several chapters then on the *śrāddhakalpa*, (in all twelve), with elaborate details as to their technique and form, indicate that the compiler of the section was a Rig Vedin. It may be remembered that even today we maintain this distinction of the three Vedas. Either one is a Rig Vedin, Yajur Vedin or a Sāma Vedin though a *dvija* is expected to study all the three Vedas.

In the same way the chapters on places of pilgrimage are not without interest. They tell us of the geography of the land—the names of cities, hills and rivers, lakes, temples, caves, then existing or known to exist. For example the following names among others occur. Rivers: Tāmraparṇi, Kāveri, Amarāvati, Ganges, Sindhu. Towns: Gokarṇa, Prabhāsa, Kurukṣetra, Prayāga, Kalañjara, Vāraṇasi and Gayā—(Ch. 77). To pass on, the relevant portions dealing with the historical period of Indian history as noticed in the preceding pages, are too valuable to be ignored. An attempt has been made to compare the different lists and to reconstruct a continuous history of the different dynasties, major and minor, and it must be said to the credit of Pargiter that it has proved fruitful.[2]

No doubt the lists contain a mere catalogue of names with the respective lengths of each member of one dynasty after the other. There are indeed very few details with particular reference to the events of each period, which is indeed a regrettable defect. Fortunately for us, independent sources such as the Buddhist books, the *Kauṭalīya Arthaśāstra* and other literary sources, the inscriptions of Aśoka, Puṣyamitra and others corroborate the account contained in

[1] Ch. 20-31.
[2] See for lists The *Dynasties of the Kali Age*.

the Purāṇa, and credit the latter with genuineness and reliability. It sets forth a fairly good description of the Gupta rule at the commencement. The power of the Andhras has declined. Foreign dynasties of Śakas and other tribes have established kingdoms. No outstanding personality is on the scene. A century of dark period sets in. The good people resort to hills and caves to find safe and secure abodes. A number of kings set up independent states and encroached on their neighbour's territory.[1]

Though it can be said without any fear of contradiction that much of the material contained in the Purāṇa is original and deserves our careful scrutiny, still we must proceed in this examination of the materials with caution and discrimination and in a purely scientific spirit. If we attack the various topics recurring in the Purāṇa with a historical and scientific eye then we can be sure of fair and fairer results. Among others the etymological interpretation of various proper names such as Vyāsa,[2] Sūta,[3] Rudra,[4] is important but is unfortunately interspersed with fiction. The etymological interpretation is specially mentioned here as it throws a flood of light on the names which are otherwise mystic, mysterious and inexplicable. Of these we shall take for examination here Vyāsa, and conclude this essay.

Orthodox tradition has attributed all along to the same Vyāsa the division of the Vedas and the compilation of Itihāsas and all Purāṇas, perhaps including the very late Upapurāṇas. The etymology of the term means arranger or compiler, meaning thereby a general editor for various works. The works were there in a disorderly and ill-assorted fashion, and it was given to the wisest of the individuals to arrange them in proper form. Whoever arranged such mutilated texts and recovered them from oblivion went by the title of Vyāsa so far that particular work was concerned. But latter tradition knew well of one prominent figure Vyāsa, the son of Parāśara, and, by sheer confusion, attributed all the different Vyāsas' works to one Vyāsa. That a number of Vyāsas were even then distinguished and recognized, and that the term is only a generic title, are evident from the Purāṇa itself. In chapter (23) *Maheśvarāvatāra yoga*, twenty-eight *yugas* are distinguished from Vaivasvata Manu to Kṛṣṇa, and for every *yuga* there was a Vyāsa who went by the different names such as Vasiṣṭha, Bharadvāja, Parāśara, etc. The Vyāsa of the twenty-eighth yuga is said to be Kṛṣṇadvaipāyana, the son of Parāśara.[5] Thus there was a group or a class of Vyāsas who bore various titles in various *yugas*, and who perhaps were

[1] Ch. 99, 383 ff.
[2] 77-75.
[3] I, 28.
[4] 9, 80.
[5] *Ibid.*, 205.

responsible in their own way to editing and collating corrupted texts of the sacred books. Thus the Purāṇa contains many such valuable information, which if tackled in the right spirit, will shed much light on otherwise inexplicable problems and factors in the history of Ancient India. From the historical point of view this Purāṇa, as others, can remove the chronological difficulties of the history of Northern India during some centuries preceding and following the Christian era. The more do we exploit them, the more are we introduced to the culture and civilisation of Ancient India.

THE SUVARṆASAPTATI

(Continued from Vol. IV, No. 1.)

XLIII. The three states of being are the state acquired by goodness, the state acquired by Nature, and the state acquired by a product. One has seen that they depend on the internal organs ; those which depend on the subtle (body) are the kalala *and the others.*

Sanskrit Kārikā.

Commentary.

' *The three states of being are the state acquired by goodness . . . .* '. The three states of being comprehend all the objects. All the objects are of three sorts : (1) what is acquired by goodness ; (2) what is acquired by Nature ; (3) what is acquired by a product. ' *Acquired by goodness :* ' that was the case with the *ṛṣi* Kapila, who possessed the four faculties from his birth. These four faculties are : (1) virtue ; (2) knowledge ; (3) absence of passion ; (4) power. As it is by goodness that one obtains these four faculties, one calls them the faculties acquired by the good (done in a prior existence). What does ' *acquired by Nature* ' mean ? As is said in the Vedas, the Lord Brahmā had of yore four sons: (1) Sanaka ; (2) Sanandana ; (3) Sanātana ; (4) Santakumāra. These four sons, furnished with organs and their functions[1], had spontaneously, at the age of sixteen years, the four faculties all present: virtue, knowledge, absence of passion and power. As in the case of a man who finds a treasure unexpectedly, the four conditions cannot be obtained by one cause ; that is why one calls them ' obtained by Nature '. ' *Acquired by a product* '. The corporeal form of a master is called a product. Because it is the corporeal form of the master, the disciple approaches it with respect, listens to it and acquires knowledge therefrom ; by knowledge, one acquires absence of passion ; by absence of passion, virtue ; by virtue, the eight-fold power. Thus the four faculties are obtained by the corporeal form of the master ; that is why one says

[1] I do not see quite well what Paramārtha wishes to say by the phrase . . . . [rendered as : ' furnished with organs and their functions ']. It ought, however, to translate a phrase parallel to this, found in the corresponding passage of Gauḍapāda : teṣām utpannakāryakāraṇānām śarīriṇām ṣoḍaśvarṣāṇām ete bhāvās catvāraḥ samutpannāḥ. [M. Takakusu shows that the components of the Chinese phrase used by Paramārtha correspond to the components of the above citation from Gauḍapāda. Cf. also Māṭhāra: teṣām utpannakāryakāraṇānām śarīravatām ṣoḍaśavarṣāṇām evai 'te catvāro bhāvā akasmād evo 'tpannā].

that they are acquired by a product. These four faculties exercise their influence on the internal organs, the Mahat and the others, and they produce migration through existences. There are the four faculties and their contraries, eight in all. Where do these eight categories live? Reply :

'*One has seen that they depend on the internal organs*'. The internal organs are the Mahat and the others. Mahat possesses the eight faculties, that is to say, the four faculties produced by dharma and four produced by adharma live in the Intellect, as has been said higher up (v. XXIII): 'The determinative Intellect, that is Mahat; virtue, knowledge, absence of passion and power are its characteristics, where it is affected by *sattva*. Their opposites (are its characteristics) where it is affected by *tamas*.' These eight sorts of conditions can be realised by the internal organs, and since these eight categories can be seen by a sage endowed with divine vision, one says 'One has seen . . . .'

'*Those which depend on the subtle body are the* kalala *and the others.*' Eight stages are spoken of: (1) kalala; (2) arbuda; (3) peśī; (4) ghana; (5) infancy; (6) adolescence; (7) youth; (8) old age. These eight stages are nourished by the four sorts of food; (1) the four stages (of the embryo) are nourished by the six sorts of food and drink absorbed by the mother; (2) infancy, by the milk of the mother; (3) adolescence, by the nourishment one procures it; (4) youth and old age, by independent absorption of nourishment. These eight stages owe their existence to the subtle body. The sixteen categories (dharma, 4; adharma, 4; kalala—old age, 8) influence the internal organs and cause migration through existences. One may ask: 'You have declared higher up (v. XLII) that, by reason of the cause and the consequence, the subtle body takes on varied forms, like a dramatic actor. What are "the cause" and "that which depends on the cause" (the consequence)?' We reply in these lines:

XLIV. By virtue one mounts to heaven, by vice one descends into the lower regions. By knowledge and aversion one gains final Deliverance; bondage by their contrary.

Sanskrit Kārikā.

Commentary.

'*By virtue . . .*' If in the world a man practises goodness, *yama* and *niyama* (v. XXIII) his subtle body will mount on high, in such a way that at a (fresh) birth, it will be re-born in one of the eight regions, that is to say, as (1) Brahmā; (2) master of the world (prajāpati); (3) god; (4) gandharva; (5) yakṣa; (6) rākṣasa; (7) yamarāja; or (8) demon.[1] These eight regions can be gained by virtue. But if one practises the contrary of the ten good actions (*yama* and *niyama*), that is to say, if one gives oneself up to vice, the subtle body descends into the lower regions and is re-born in one of the five regions, that is to say, as (1) quadruped; (2) bird; (3) serpent; (4) amphibian;[2] or (5) being without movement (the vegetable and mineral kingdom). The five regions are the product of vice.

'*By knowledge and aversion, one gains final Deliverance.*' By the subtle body one gains knowledge, by knowledge aversion (for transmigration); because of the aversion the subtle body is abandoned and the true Self (Spirit) remains isolated. That is what one calls '*final Deliverance.*'

'*Bondage, by their contrary*'. The contrary of knowledge is called ignorance. Thus, a man says: 'I am to be pitied', or: 'I am lovable'; when he says: 'I am lovable,' that is the effect of the Sentiment of self. That is what one calls 'ignorance'. That ignorance enchains the body and obliges it to remain among men, gods or animals. This bondage is of three sorts: (1) bondage by Nature; (2) bondage by a product; (3) bondage by sacrificial gift. These three modes will be explained lower down (v. XLV). It is said (v. XLIII) 'by reason of the cause and the consequence'. Good actions are considered as being the cause and birth in the higher regions as the consequence; evil actions are the cause, and descent to the lower regions the consequence. Even so, knowledge and aversion being the cause, final Deliverance is the consequence; ignorance and attachment being the cause, bondage is the consequence. By the side of these four causes and the four consequences that we have just explained, there are four other causes and consequences; we pass on to expound them :—

XLV. Because of the absence of passion, there is absorption in Nature; because of passion tainted by rajas, *there is birth and death. Where there is power, there is absence of obstacle; where there is the contrary, there are obstacles.*

Sanskrit Kārikā.

Commentary.

'*Because of the absence of passion, there is absorption in Nature.*'— Suppose a brāhmin who leaves his family, studies the path, controls his eleven organs, rejects the eleven objects (of sense and of action)

[1] Nos. 3 and 7 differ in Gauḍapāda; god (*deva*) is probably for *devānām Indra* (see v. LIII,) commentary. [Māṭhara agrees with Gauḍapāda except for reading 'pitryam' in the place of 'saumyam', both possibly meaning the same, since the fathers belong to somaloka; both of them read 'aindram' thus supporting M. Takakusu's conjecture about the meaning of 'deva'.]

[2] See v. XXXIX, commentary.

and observes the ten laws of *yama* and *niyama*; he will be filled with aversion (for the world); by the aversion he will deliver himself of passion; but, not having knowledge of the twenty-five truths, he does not attain final Deliverance. When he dies, he will be resolved into the eight elements (of Nature): Nature, the Intellect, the Sentiment of self, and the five subtle elements. By the resolution into the eight elements of Nature, he does not attain Deliverance, though he may imagine himself to attain it. For, later, at the moment of transmigration, that man receives a-fresh a gross body in the three worlds. That is why one says that because of aversion (for the world), one is resolved into Nature. That is '*bondage by Nature*'.

'*Because of passion tainted by* rajas, *there is birth and death.*'—'Passion tainted by *rajas*'. Suppose a man who thinks thus: 'I have made great gifts, I have celebrated great sacrifices, I have served the gods and I have given *soma* to drink; I shall be happy in the future world.' By the desire tainted by *rajas* he will submit to a new birth in the region of Brahmā . . . or among the animals. That is '*bondage by sacrificial gift*'.

'*By power there is absence of obstacle.*'—'Power'; there are eight kinds (of powers) endowed with *rajas*: minuteness, lightness etc. Because of power, there are eight kinds of absence of obstacles in the world of the king Brahmā. The eight-fold power is associated with the Intellect; that is why one speaks in this case [of] *bondage by a product*'.

'*When there is the contrary, there are obstacles*'.—The contrary of power is impotence. Because of the impotence there are obstacles everywhere. Those obstacles too are a 'bondage by the product,' for they pertain also to the category of *tamas*.—This verse explains then the four causes and consequences. The absence of passion is called the cause and absorption in Nature the consequence; passion endowed with *rajas* is the cause, birth and death the consequence; power is the cause, absence of obstacle the consequence; impotence is the cause, obstacles the consequence.

One has then explained the sixteen products: the eight causes and the eight consequences. One may ask: 'As for the sixteen kinds of creation from causes and consequences, what are their constitutive elements?' We reply in these lines:

XLVI. Creation derives in its Nature from the Intellect; it is (of four sorts): doubt,[1] *incapacity, contentment and perfection. Considering the disparity of the* guṇas, *there are fifty divisions in the Intellect.*

[1] 'Doubt', but as the Sanskrit has 'viparyaya' it is perhaps necessary to read 'obstacle'; Gauḍapāda interprets, however, (as) 'saṃśaya.'

eṣa pratyayasargo[1] *viparyayaśaktituṣṭisiddhyākhyaḥ |*
guṇavaiṣamyavimardāt[2] *tasya ca bhedās tu pañcāśat ||*

Commentary.

'*Creation derives in its nature from the Intellect*'.—Creation is (the aggregate) be it of the sixteen (causes and consequences), be it of eight consequences. The sixteen—the eight causes and the eight consequences—have the Intellect as the common base. The eight consequences are called the 'creation'; in this case, the eight causes are the base. That is why it is said that the sixteen kinds of creation have the Intellect as base. It has been said higher up (v. XXIII.): 'The determinative Intellect, that is Mahat; virtue, knowledge, absence of passion and power are its characteristics, when it is affected by *sattva*. The opposites (are its characteristics), when it is affected by *tamas*.'

It is of four sorts: doubt, incapacity, contentment and perfection.—'The sixteen kinds of creation are further divided into four categories: (1) doubt; (2) incapacity; (3) contentment; (4) perfection. Here is an example: A brāhmin, with his four disciples, returns from a great kingdom in his country. On the way, before the rise of the sun, one of the disciples says to the master, 'Great master: I see an object on the way; I do not know if it is a post or a man having evil intentions.' This disciple has doubt on the subject of the post. The master says to the second disciple: 'Go to assure yourself if it is a man or a post.' This disciple, according to the words

[1] *Pratyayasarga*, 'intellectual creation'; *pratyaya* signifies 'notion' and *pratyayasarga* is 'creation of which one has only a notion' as opposed to the *bhūtasarga* 'the organic creation' that we perceive by our senses. Intellectual creation is of sixteen kinds:

Causes.	*Consequences.*
POSITIVE.	
1 virtue (dharma);	1 elevation (gamanam ūrdhvam);
2 knowledge (jñānam);	2 deliverance (mokṣa);
3 absence of passion (vairāgyam);	3 absorption (prakṛtilaya);
4 power (aiśvaryam);	4 absence of obstacle (avighāta).
NEGATIVE.	
5 vice (adharma);	5 degradation (gamanam adhastāt);
6 ignorance (ajñānam);	6 bondage (bandha);
7 passion (avairāgyam);	7 transmigration (saṃsāra);
8 impotence (anaiśvaryam);	8 obstacles (vighāta).

The Chinese text seems to admit of two interpretations of *pratyayasarga*; (1) the sixteen creations in their totality; (2) the eight creations of the consequence. In both cases, the Intellect is their base or their nature. This verse is not easy to comprehend.

[2] *Vimardāt* is rendered by Mr. Davies: 'out of hostile influence'; and by Mr. Garbe: 'since the guṇas find themselves against their dissimilarity.'

Paramārtha has: 'considering the disparity of the guṇas.' It seems that in his text he may have had a variant, perhaps *vimarśāt*, 'by the consideration of'; Gauḍapāda gives no clear explanation.

of the master, looks from afar, but does not go near, and says to his master: 'Great master, I am incapable of going near.' This second disciple is *incapable*. Then (the master) addresses himself to the third disciple: 'Go to see with care what that is.' The disciple looks at it and says: 'Great master, of what good is it to examine it now? At the rise of the sun a great caravan [1] will pass by here, to which we can attach ourselves.' This third one, though he be not still sure if it is a man or a post, does not worry about it (*contentment*). Then the master addresses himself to the fourth disciple: 'Go to examine the thing.' This one, who has a good vision, sees a liana embracing that object and some birds perching on it; he approaches it, touches it with his foot and returning towards his master, says to him: 'Great master, that object is a post.' The fourth disciple has then attained *perfection*.[2] The sixteen kinds of creation are thus grouped in four classes.

'*Considering the disparity of the* guṇas'.—There are three *guṇas*: *sattva*, *rajas*, *tamas*. They exclude one another; if *sattva* predominates, *rajas* and *tamas* are hidden; just as the rays of the sun hide the stars, fire etc.; and so too for *rajas* and *tamas*. Considering the disparity of the three *guṇas*, it is necessary to recognise fifty divisions of the Intellect. We pass on to explain these fifty divisions:

XLVII. There are five sorts of doubt and error and twenty-eight sorts of incapacity, because of the imperfection of the organs. Contentment is divided into nine, perfection into eight.

SANSKRIT KĀRIKĀ.

Commentary.

'*There are five sorts of doubt and error.*' 'Doubt and error' have been explained higher up (v. XLVI). We now pass on to explain these five divisions. They are: (1) darkness (*tamas*); (2) stupidity (*moha*); (3) great stupidity (*mahāmoha*); (4) profound darkness (*tāmisra*); (5) blind darkness (*andhatāmisra*). Before explaining *incapacity*, we pass first to examine the five sorts of doubt:

XLVIII. Darknesses are considered as divided into eight kinds, stupidity into eight and great stupidity into ten, profound darknesses are divided into eighteen, even so the blind darknesses.

[1] The text has * * * ; that might signify 'a crowd of adherents of one sect'; my translation is hypothetical.

[2] This parable is given by Alberuni, 1, 84. See also Garbe, *Sāṁkhyaphilosophie*, p. 65. It appears higher up, v. XXX, even as in Gauḍapāda. See my Introduction.

SANSKRIT KĀRIKĀ.

Commentary.

'*Darknesses are considered as divided into eight kinds.*' If a man attains absence of passion without having knowledge, he is absorbed in the eight primary elements, that is to say, Intellect, the Sentiment of self, the Manas and the five subtle elements. Though not having attained final Deliverance, that man thinks to have attained it, because he does not see the eight kinds of bondage. Not to see these eight kinds, that is what is called 'darkness'. 'Darkness' is the synonym of ignorance.

'*Stupidity into eight.*' We have explained higher up (v. XXIII) that power is of eight sorts. To these eight, gods etc. are bound by attachment and cannot attain final Deliverance; being bound by attachment to their power, they migrate through existences. That is why one says that stupidity is of eight kinds. The first eight (that is to say, the kinds of darkness) are called 'bondage by Nature,' and the last eight (that is to say, those of stupidity) 'bondage by a product'.

'*Great stupidity into ten*'. There are five subtle elements which are endowed with *sattva* and which serve as objects to the gods. The five (subtle) objects are associated with the five gross elements (which are the objects of men and animals, and which are) endowed with the three *guṇas*. It is to these ten objects that Brahmā, men, animals, etc. are bound by attachment; and they feel that there are not better objects beyond them. Because of that attachment, one realises neither knowledge nor the law of final Deliverance; one does only attach oneself to the objects, without seeking final Deliverance. That is whence comes the name of 'great stupidity'.

'*Profound darknesses are divided into eighteen.*' When the eight kinds of power and the ten objects fall into decadence, the poor man thinks thus: 'I am now poor, without power, and I have lost all the objects (in my power).' Thinking thus, he experiences eighteen kinds of misery. These miseries are called 'profound darkness.'

'*Even so, the blind darknesses*'. As has been said higher up, power is divided into eight kinds, and objects into ten. A man who possesses these eighteen kinds will think thus at the moment of his death: 'I have lost now the eight-fold power and the ten objects (of perception and action). The messengers from Hell come to bind me and hurry me near the king Yama.' Thinking thus, he experiences misery and he is incapable of listening to the doctrines of the Sāṁkhya. That is whence comes the appellation 'blind darkness'.

Thus, the five kinds (of doubt) are sub-divided a-fresh into sixty-two kinds. We now pass on to explain the divisions of incapacity:

XLIX. Destruction of the eleven organs and lesion of the Intellect are called 'incapacities'. Lesion of the Intellect is of seventeen kinds, by opposition to contentment (= 9) and to perfection (= 8).

SANSKRIT KĀRIKĀ.

Commentary.

'*Destruction of the eleven organs*'. This means: deafness, blindness, loss of the olfactory organs, loss of the organ of taste, paralysis, insanity, aphasia, mutilation, infirmity, the state of a eunuch, constipation; these are the defects of the eleven organs. Why does one call that 'incapacity'? Because (where one is afflicted with these defects), one cannot hear . . . and one cannot attain final Deliverance. Thus, a deaf man—and, if you wish, give him another malady too—consults his good friend: 'I am miserable; what ought I to do?' The good friend tells him: 'Acquire the knowledge which the Sāṁkhya gives and thou wilt attain the exhaustion of misery, the shore of misery; thou wilt be delivered.' The man replies: 'I am incapable of acquiring the knowledge which the Sāṁkhya gives, for I shall not hear the words of the master; not hearing him speak, whence will knowledge come to me?' The case is the same for the blind and the others. Because of the destruction of the organs, they are not capable of acquiring knowledge; by that, they are incapable of attaining Deliverance.

'*Lesion of the Intellect is called incapacity.*' The seventeen kinds of lesion of the Intellect come to be explained ultimately.

'*By opposition to contentment and to perfection.*' These are the opposites of the nine divisions of contentment and the eight divisions of perfection, which are the lesions of Intellect. The eleven defects of the organs and the seventeen lesions of the Intellect are called the twenty-eight (incapacities). What are the nine divisions of contentment? We pass on to explain that in this verse:

L. There are four sorts of internal contentment: those connected with Nature, with the necessaries,[1] *with time, and with destiny.*[2] *The external contentments are to the number of five, because they result from the renunciation of objects. In all, there are nine (contentments).*

SANSKRIT KĀRIKĀ.

Commentary.

'*There are four sorts of internal contentments.*' 'Internal', because the four contentments are produced in the Intellect, the Sentiment of

[1] . . . 'to take', 'what ought to be taken', 'needs', 'the necessary' (upādāna).
[2] 'influence', 'the fruit of acts committed in prior existence' (bhāgya).

self and the Manas: contentment (1) relating to Nature; (2) relating to needs; (3) relating to time; (4) relating to destiny. To make clear the four contentments, we give the following parable. Some brāhmins have renounced the world and left their families. Some one asks one of them: 'What knowledge have you, thanks to which, you have been able to renounce your family?' He replies: 'I know that Nature is the real cause of the three worlds and that is why I have become an ascetic.' This man knows only that Nature is the cause, but he does not know permanence and impermanence, knowledge and ignorance, possession of *guṇas* and lack of *guṇas*, universality and non-universality (of the twenty-five principles). Knowing only existence and its cause, he is content. Such a man does not attain Deliverance. One asks of the second brāhmin: 'What knowledge have you, thanks to which, you have been able to become an ascetic?' He replies: 'I know that Nature is the cause of the worlds and that the needs are the cause of Deliverance. Though Nature be the real cause, one does not attain Deliverance without the "necessaries"; that is why I am provided with the necessary (objects). The "necessaries" are the objects of which the ascetics have need when they acquit themselves of their religious tasks. They are to the number of four: (1) the triple staff (tridaṇḍa); (2) the pot of water to wash (kamaṇḍalu); (3) the kāṣāya; (4) the five beneficent (maṅgala) objects; (*a*) the pouch of ashes; (*b*) the solar crystal (perhaps, sūryakānta); (*c*) the sacred thread; (*d*) the charms (magical words); (*e*) a long stalk of herb placed on the tuft of hair and called the beneficent herb (auspicious herb, kuśa). Those are the five objects necessary for the study of the way. They are called the beneficent objects, because they drive away impurity. With the three other objects, they form the eight necessary (objects). They make us attain Deliverance, and that is why I have left my family.' That is why the second contentment is called 'the contentment of the necessary.' For that reason (our man) is not capable of attaining Deliverance, for he knows only that Nature is the cause and does not know the rest. One asks of the third brāhmin: 'What is the knowledge on account of which you have become an ascetic?' He replies: 'What can Nature and the necessaries do? I know that they cannot procure Deliverance (and I think that it will come with time). That is why I have desired to become an ascetic.' This third brāhmin cannot attain Deliverance any more [than the others]. Why? Because he is ignorant of the sense of the twenty-five categories (padārthas). That is 'the contentment relating to time.' The same question is put to the fourth brāhmin; he replies: 'Nature, the necessaries or time avail nothing; it is only by destiny (that one is delivered). I know that one is delivered because of destiny, and that

is why I have become an ascetic.' No more has this man the knowledge; in consequence, he does not attain Deliverance. That is 'the contentment relating to destiny.' These four contentments are produced within [us].

'*The external contentments are to the number of five, because they result from the renunciation of objects.*' External contentment is of five kinds, according to the renunciation of the five objects. For example, a man seeing five brāhmins renounce their families, asks first of the first: 'What is the knowledge on account of which you have become an ascetic?' That man replies: 'In the world, there are five objects (of sense). All the occupations to acquire the objects (ārjana) are difficult to practise: tillage (kṛṣi), the business of a shepherd (paśupatya), service of the king (sevā), commerce (vāṇijya); besides these occupations one may practise theft;[1] but this mode of acquiring objects cannot be practised, because it injures him who does it and others. Seeing these facts, I have thought to become an ascetic.' This fifth (counting the four of the preceding example) person will not attain Deliverance, because he has not true knowledge. One asks of the second: 'What law do you know on account of which etc.?' He replies: 'I know that one can acquire objects only if one looks for them. But when one has acquired the objects by means of tillage etc., then protection (rakṣaṇa) is difficult. Why? Because the five sorts of occupations are in conflict one with another. In protecting the acquired objects, one exposes oneself to injury to oneself and to others. Seeing that that protection gives birth to misery, I have renounced the acquired objects and I have become an ascetic.' No more does the sixth person attain Deliverance, because he does not have the true knowledge. Then the same question is put to the third, and he replies: 'I have been able to seek and obtain what I had not obtained; what I had obtained, I have protected it, in order not to lose it. But I have seen that the five objects, by the very fact that one enjoys them, diminish; when they diminish, one experiences a great misery therefrom. Seeing that they imply that fault of diminution (kṣaya), I have thought to become an ascetic.' No more will the third one attain Deliverance, because he does not have the true knowledge. The same question is put to the fourth. He replies: 'I have found the objects; those which I have not, I can obtain them; what I have obtained, I can protect it: what I have lost by diminution, I can find it a-fresh. Why have I become an ascetic? Because the five organs of sense are never satisfied and because they seek without cessation something better. Seeing that they imply this defect, I have sought to become an ascetic.' No more will this fourth one be delivered,

Gauḍapāda has only *parigraha*,' accepting alms '.

because he has not the true knowledge. Finally, the same question is addressed to the fifth, and he replies: 'I sought, I obtained, I preserved without loss; if there was loss, I sought the object a-fresh; I sought the better, and I obtained it. Why have I become an ascetic? Because the four (permitted) occupations by which one acquires the objects can injure others. If one does not injure others, one has no success in one's business. Tiller, he should cut the herbs and the trees; soldier, he should kill men; thief, he should cause loss to others; (merchant), he should lie. These evils and all the others from which the world suffers proceed from (the acquisition of) objects. Seeing that they imply that fault, I have sought to become an ascetic.' No more will the fifth one attain Deliverance, because he has only external aversion and he has not the true knowledge.

The four first [mentioned] sorts of contentment come from within the five others come from without; there are nine in all. To these nine sorts of contentment, the Sages have given nine names. As they are capable of clearing the dust and the impurity, the epithets of water are given to the nine contentments: (1) lubricating water; (2) moving water; (3) running water; (4) lake-water; (5) water [which has] well penetrated; (6) water easy to cross; (7) water which gushes well; (8) transparent water; (9) excellent and pure water.[1] The opposites of the nine kinds of contentment form the nine kinds of incapacity, to wit: non-lubricating water . . . up to: water [which is] not excellent and pure.

One may ask: 'The three categories (doubt, incapacity, contentment) differ from perfection. What is that last category?' We reply in this verse:

LI. Reasoning, hearing, reading, the three modes of preventing misery, what one obtains from friends and the effects of gifts, those are the eight kinds of perfection. The three first-mentioned acts are the curbs to perfection.

[1] Here are those which are the names in Gauḍapāda: (1) ambhas; (2) salilam; (3) ogha; (4) vṛṣṭi; (5) sutamas; (6) pāram; (7) sunetram; (8) nārīkam; (9) anuttamāmbhasikam. Fujii, the Japanese commentator, gives the following explanation: (1) 'lubricating water,' because *Nature* penetrates all, as water lubricates all; (2) 'moving', because by the *necessary* objects one purifies oneself as water which is moving and of little depth purifies all; (3) 'running', because with *time* a river joins the ocean; (4) 'lake-water', because the *influence* of the acts committed in other existences is like the water of the lake which the rain refills; (5) 'well penetrated', because one renounces the *acquisition* of riches, as a desiccated ground is irrigated by water; (6) 'easily crossed' because one has not to occupy oneself any more with *protecting*, as [in the case of a piece of] water that has been crossed; (7) 'which gushes well', for there is nothing to fear the *loss* of, like water which gushes without ceasing; (8) 'transparent,' for there is no more *attachment*; (9) 'excellent and pure', for not to *injure* others is like water of the purest and most excellent quality.

SANSKRIT KĀRIKĀ.

Commentary.

'*Reasoning, hearing, reading . . . the effects of gifts, those are the eight kinds of perfection.*' These are the eight sorts of capacity by which one may accomplish the six practices (for which, see lower down 'the six sorts of contemplation'). Thus, a brāhmin, becoming an ascetic and following the path, thinks thus: 'What is it that is excellent? What is it that is true? Which is the final conclusion? By what practices does one attain the knowledge which manifests (the objects)?' Having reflected thus, he attains the knowledge; in him arises the knowledge of the twenty-five truths: Nature is different (from the other principles), the Intellect, the Sentiment of self, the five subtle elements, the eleven organs, the five gross elements are different one from another, and the true (paramātmā) is itself different from all the others. Because of that knowledge the six kinds of contemplation are born: (1) the contemplation of the defects of the five gross elements; in observing their defects, aversion is produced and one renounces these elements; this stage is called '*reasoning*'. (2) The contemplation of the defects of the eleven organs; when one sees their defects, aversion is produced and one renounces the organs; this stage is called '*holding*'. (3) The contemplation of the defects of the subtle elements: when one sees their defects, aversion is produced and one renounces the five subtle elements; this stage is called '*similitude*'. (4) Contemplation of the defects of the Sentiment of self and the eight kinds of power: when one sees their defects, aversion is produced and one renounces the Sentiment of self etc. This stage is called '*arrival*'. (5) The contemplation of the defects of the Intellect: when one sees its defects, aversion is produced and one renounces the intellect. This stage is called '*contraction*'. (6) The contemplation of the defects of Nature: when one sees its defects, aversion is produced, and one renounces Nature; this stage is called '*isolation*'. Thus, this brāhmin obtains Deliverance because of his reasoning. Perfection is obtained by reasoning, that is why one calls it 'perfection by reasoning'.

Having explained 'perfection by reasoning', we pass on to speak of 'perfection by hearing'. A brāhmin hears another read these words: 'Nature is different, the Intellect is different . . . the true itself is different.' Hearing that voice, he comprehends the twenty-five truths and he enters on the stage called 'reasoning', in which he renounces the five gross elements. Then, entering on the stage called 'holding', he renounces the eleven organs; entering on the stage called 'similitude', he renounces the five subtle elements; in the stage called 'arrival', he renounces the Sentiment of self etc.;

in the stage called 'contraction', he renounces the Intellect; finally, in the stage of 'absolute isolation', he renounces Nature, and that is what one calls final Deliverance.

Having explained 'perfection by hearing', we pass on to explain 'perfection by reading.' There are eight sorts of knowledge by which perfection is attained. Here is what a brāhmin does who comes to the house of his master: (1) he listens with joy; (2) he listens with exclusive attention; (3) he seizes (what is said); (4) he guards it in his memory; (5) he comprehends the principles; (6) he makes arguments; (7) he makes his choice; (8) he seizes the reality. Those are the eight constitutive parts of knowledge. By these constitutive parts of knowledge, one comprehends the sense of the twenty-five truths, and, entering on the six stages of contemplation, one attains final Deliverance.

'*The three modes of preventing misery.*' (1) Renunciation of internal miseries: a brāhmin suffers from internal miseries, headache etc., and goes to a physician to cure himself. Because of his internal misery, he desires to acquire knowledge; desiring to acquire the means of destroying the misery, he betakes himself to a master, from whom he obtains the eight constitutive parts of knowledge; he seizes the sense of the twenty-five truths; entering at last on the six stages of contemplation, he attains final Deliverance. That perfection has its origin in internal pain and one ought to consider the spiritual misery as identical with the corporeal misery. (2) Renunciation of external misery: a brāhmin suffers from an external pain, that is to say, caused by a man, a beast, a bird or even a mountain, a tree, a rock etc.; not being able to support the suffering, he desires to know the means of destroying the misery. He goes to a master, in whose house he practises the eight divisions (of knowledge); he seizes the sense of the twenty-five truths, and, entering on the six stages, he attains final Deliverance. That perfection has then its origin in external misery. (3) Renunciation of misery caused by natural phenomena: a brāhmin is afflicted by misery caused by a natural phenomenon, cold, heat, rain etc.; incapable of supporting it, he goes to a master to seek the eight-fold knowledge, by which he seizes the sense of the twenty-five truths: then, entering on the six stages of contemplation, he attains final Deliverance.

'*The perfection which one obtains from friends.*' In this case, knowledge is attained purely by means of the 'good friend' (kalyāṇamitra) and not by the eight constitutive parts of knowledge. Having gained the full knowledge, one gains final Deliverance.

'*The effects of gifts.*' A brāhmin is hated by others, and as he sees it, he becomes an ascetic; when he has become an ascetic, his master and his fellow-disciples also hold him in hatred and do not communicate

knowledge to him. Conscious of his little chance, he betakes himself to a distant village to remain there, saying to himself: 'In this village, there are no brahmins; I can pass there my summer (varṣa)[1] retreat.' During his sojourn, one makes him many gifts. He gives the superfluous to his friends and to his acquaintances. He gives of it even to women and to shepherds. All the inhabitants of the village cherish him. At the end of the summer-retreat, everybody makes gifts to him: the triple staff, the water bowl, clothes etc.; at the approach of a festival of Śakra, he says to the villagers: 'Who wishes to accompany me to my native country to be present there at the festival? Those who wish to accompany me should bring each one a gift for me'. Arrived at his place, he betakes himself to his old master. Choosing the best gifts, he makes an offering of them to him; the rest he distributes to his fellow-disciples. Then, the master, the fellow-disciples and the others commence to love him. His master, by way of gift, communicates knowledge to him. By that knowledge he arrives at absolute knowledge and final Deliverance. That perfection then is acquired by gifts.—These eight sorts of perfection are also called by the sages of antiquity: (1) crossing by oneself; (2) crossing well; (3) crossing all; (4) crossing with joy; (5) crossing with an excessive joy; (6) crossing with full joy; (7) crossing by love; (8) crossing by universal love.[2]

[**Sub-commentary**[3].—'*The sages of antiquity also call them*:' (1) 'Crossing by oneself.' A man of that class is very intelligent. By his own reasoning he obtains wisdom (*prajñā*)[4]. One calls that wisdom 'perfection by the act of crossing oneself,' because it is not due to the teaching by another. For that reason, the act of crossing by oneself is not (one) other than *prajñā*. As *prajñā* makes us escape from this shore and arrive at the other, one calls it 'that which crosses'. The act of arriving by crossing is called final Deliverance, that is to say, perfection. Relatively to its cause, *prajñā* is called 'that which crosses', and relatively to its effect it is called 'perfection'. This perfection by the act of crossing is obtained by our own reasoning; that is why one calls it 'crossing by oneself'. The sense of the seven other perfections is not different; the names alone differ.—(2) 'Crossing well'. *Prajñā*

[1] [The French reads 'retraite d'été (summer-retreat)'; but M. Takakusu inserts 'varṣa' within brackets after 'été'. One wonders what the Chinese text supports. It is difficult in any case to understand the equation of summer with the rainy season.]

[2] . . . . .Gaudapāda gives the following names: (1) tāram; (2) sutāram; (3) tāratāram; (4) pramodam; (5) pramuditam; (6) pramodamānam; (7) ramyakam [mis-spelt in the *Bulletin* as vamyakam]; (8) sadāpramuditam.

[3] This *tīkā* seems to be by Paramārtha himself.

[4] ...*po-jou*, 'prajñā', 'wisdom'. The conception is the same as that of the *prajñāpāramitā*, 'the perfection of wisdom' of the Buddhists.

and Deliverance are obtained, be it by our own power, be it by that of another. A man of this (second) class has intellectual organs a little inferior [to the first] and he ought to profit by the instruction of another; but nevertheless his spirit is very active and by that he attains Deliverance. That is why one speaks of 'perfection by the act of crossing well'.—(3) 'Crossing all'. One calls (this class) 'crossing all,' because the men of this class, having intellectual organs doubly feeble, ought to rely uniquely [solely] on instruction by others.—(4) 'Crossing with joy.' A man of this class, suffering from an internal misery, headache or something else, goes to find the physician and asks him to treat it; he can thus escape for a certain time from internal misery. That is a joy for him. But he thinks later that it is not final Deliverance; knowing that final Deliverance is attained by absolute isolation, he betakes himself to a master of Sāṁkhya to learn *prajñā* and to attain Deliverance. Thus he experiences another joy. The expression 'crossing with joy' derives from the double joy which we have just explained.—(5) 'Crossing with an excessive joy.' A man of this class afflicted with internal and external miseries goes to seek a master, and asks him to cure him. Cured temporarily of the two sorts of misery, he experiences directly the double joy. But knowing that it is not yet final Deliverance, he goes to seek a master (of the Sāṁkhya). Having studied perfection, that is to say, the means of crossing, he experiences an excessive joy. That is why one speaks of 'the excessive joy'.—(6) 'Crossing with full joy'. A man of this class suffers from three sorts of misery: internal misery (headache etc.); external misery caused by the sword, the whip etc.; natural misery caused by the wind, rain, cold, heat etc. He goes to seek a master to find a remedy. When he is cured, he is in the state called 'full joy'. But knowing that it is not yet final Deliverance, he goes to seek a master (of the Sāṁkhya) for instructing himself; thus he attains perfection. That is why one says 'crossing with full joy'.—(7) 'Crossing by love'. By the love and the pity of the master a man learns how one realises perfection. Thus it is attained, thanks to the love of the master.—(8) 'Crossing by universal love'. A man of this class, after having been hated by all, gives in alms all his goods and thus makes himself loved by all. Since all wish him to attain Deliverance, one says in this case 'crossing by universal love.']

The opposites of the eight classes of perfection are called 'the eight kinds of incapacity,' i. e., not crossing by oneself . . . universal non-love. There are then twenty-eight incapacities, eleven which are caused by the defects of the organs, and seventeen which are caused by the corruption of the Intellect. We have in this way

shown that doubt, contentment, incapacity, and perfection are subdivided into fifty categories in all.

[**Sub-commentary.**—The incapacities caused by the defects of the organs are to the number of eleven ; those produced by the corruption of the Intellect are to the number of seventeen : that makes twenty-eight. The number fifty is reached (in adding to this number) the five doubts, the nine contentments and the eight perfections. That is their complete explanation.]

'*The three first-mentioned acts are the curbs to perfection.*' As an elephant in a rage, when it is well checked by the hook [goad], cannot move as it pleases, so a man, when he is checked by the five doubts, the twenty-eight incapacities or the nine contentments, cannot obtain true knowledge. Outside of true knowledge, there is not the eight-fold perfection; that is why one says that 'the three first-mentioned acts are the curbs to perfection.' That is why one ought to reject doubt, incapacity and contentment to practise the eight sorts of perfection.

[**Sub-commentary.**—'*The three first-mentioned acts are the curbs to perfection.*' The five doubts, the twenty-eight incapacities and the nine contentments are the curbs of the elephant of the eight perfections. The eight perfections are capable of realising Deliverance, but because of the three curbs, they do not succeed in it. Even so a furious elephant is prevented from running as it pleases, because of the *aṅkuśa* [goad] which checks it. It is certainly by the eight perfections that one obtains true knowledge, but when they have for curb the three acts, one does not obtain true knowledge. One ought then to reject the three first-mentioned acts to be able to practise the eight sorts (of perfection).]

One may say: 'It has been explained higher up (v. XL) that the corporeal form, influenced by the states of being, migrates through the existences. There are two corporeal forms: (1) the subtle body which exists at the moment of conception ; (2) the body given by the parents. These two bodies, united to the eleven organs, are influenced by the eight states of being, and thus is caused migration through the existences. Here, there is a doubt. Which is born first, the corporeal form or the state of being (the disposition)?'

[**Sub-commentary.**—The words, '*One may say . . .*' introduce a new question. First, one recapitulates the preceding exposition, then one puts the question of priority.—'*The corporeal form, influenced by the states of being, migrates . . .*' That has been explained higher up (v. XL). The states of being are of eight sorts: four virtues and four vices (v. XLIV). The four virtues are: (1) virtue ; (2) knowledge ; (3) absence of passion ; (4) power. The contraries of the four virtues form the four vices. These eight states are called the

states of being, for he who is under the influence of virtue can gain the path to heaven, while he who is under the influence of vice ought to fall into the path of men and of animals. 'What is it that they influence in the corporeal form?'—'*There are two corporeal forms.*' The aggregate of Nature, the Intellect, the Sentiment of self and the five subtle elements is called '*the subtle corporeal form.*' That which is produced by the five subtle elements, united to the eleven organs, is called '*the gross corporeal form.*'—Which has the priority in birth, the eight states of being or that which ought to be influenced by them, the two corporeal forms? That means to say: 'At first were there the eight states or were there at first the two corporeal forms?']

We reply in this verse :

LII. Without the states of being, there would not be the (subtle) form distinct ; without the subtle form, there would be no state of being. There is what is called the form, and there is what is called the state of being ; creation then is of two sorts.

SANSKRIT KĀRIKĀ.

Commentary.

'*Without the states of being, there would not be the (subtle) form distinct*'. Without the states of being the (subtle) corporeal form cannot be established, even as without heat there is no fire.

'*Without the subtle form, there would be no states of being*'. Without the subtle form, the states of being cannot be established even as without fire there is no heat. These two categories are associated as fire and heat, and co-operate like the two horns of a buffalo.

'*There is what is called the form and there is what is called the state of being ; creation then is of two sorts*'. One gives two names to the products of Nature: (1) the form of creation; (2) the conditions of creation. At the moment of entering into life, (the product) possesses the two.

[**Sub-commentary.**—In the reply, two examples, fire and the horns, prove that priority pertains neither to the states of being nor to the corporeal form ; the two are associated together like fire with heat, or they are of a simultaneous production like the two horns of a buffalo, which originate always at the same time. Even so, from the time that there exists the subtle corporeal form composed of Nature, the Intellect etc., there is necessarily also one of the eight states of being ; they are never separated from the corporeal form. The gross body too, which is produced by the parents, is never separated from the states of being.]

One may ask: 'Is there only a double creation or is there still another name [mode]?' We reply: 'There is a third creation endowed with two series of four states of being and (its products) are called "the beings endowed with Sentiment"', as is said in this verse:

LIII. The way of the gods is divided into eight; the way of the brutes into five; the way of men is one. (All these beings) are called briefly 'beings endowed with sentiment'.

SANSKRIT KĀRIKĀ.

Commentary.

'*The way of the gods is divided into eight*'. Here are the births: (1) King Brahmā; (2) the master of the world (Prajāpati); (3) the master of the devas (devānām Indra); (4) Gandharva; (5) Asura; (6) Yakṣa; (7) Rakṣas; (8) Piśāca.[1]

'*The way of the brutes is divided into five*'. The births are: (1) quadrupeds; (2) birds; (3) reptiles; (4) those which have a horizontal form; (5) those which have no movement.[2]

'*The way of men is one*'. For in the human world there exists only one class. The creation of beings endowed with sentiment is said to be divided into three categories; these three categories are: (1) gods, men and animals; (2) the subtle corporeal form; (3) the states of being.—One may ask: 'In the three worlds, what is it that predominates in each place?' We reply in this verse:

LIV. On high, sattva *predominates; at the root,* tamas *predominates; in the middle,* rajas *predominates; Brahmā is at the commencement and the pillar at the end.*

SANSKRIT KĀRIKĀ.

Commentary.

'*On high*, sattva *predominates*'. In the region of Brahmā etc., *sattva* predominates; there are also *rajas* and *tamas* there, but they are hidden by *sattva*. Brahmā and the other gods live in happiness.

'*At the root*, tamas *predominates*'. That is the lowest of the three creations; that is why one calls it 'that which is at the root'.

'*In the middle*, rajas *predominates*'. The human world is given up for the greatest part to *rajas*. *Sattva* and *tamas* though they exist too, are hidden by the predominance of *rajas*; it is thus that

[1] . . . 'sand-spirit'; cf. the Pāli *paṃsupiśāco*. This enumeration differs from those given in vv. XXXIX and XLIV. See my Introduction.
[2] Compare vv. XXXIX and XLIV Commentary.

men are given for the most part to misery. The way of men is called 'that of the middle', because it is found in the middle of the three creations. Why is the last of all the creations called 'pillar'? Because the herbs, trees, mountains, rocks etc. support the three worlds; that is why one calls it 'pillar'.

We have then minutely explained the creation of the (subtle) form, the creation of the states of being, and the creation of beings endowed with sentiment. The triple creation is the product of Nature; it is thus that the end of Nature is fulfilled, that is to say, that it produces the world and realises Deliverance.—One may ask: 'In the three worlds, among men, gods or animals, which is it that suffers, which is it that enjoys? Is it Nature or is it one of its products: the Intellect, the Sentiment of self, the five subtle elements or the eleven organs etc.? Or is it Spirit?' We reply in this verse:

LV. Among them, the conscious Spirit alone suffers the misery born of old age and death, so long as it is not separated from the corporeal form. That is why it is said briefly that it is (in) misery.

SANSKRIT KĀRIKĀ.

Commentary.

'*Among them, the conscious Spirit alone suffers the misery born of old age and death*'. In the three worlds, there is misery caused by old age. (It manifests itself by) wrinkles, grey and falling hair, short respiration, the act of leaning on a staff and being disregarded by one's clan [family?]. Those are the miseries caused by old age. As for the miseries caused by death, here they are. Suppose a man who has acquired the eight powers or the five subtle elements or the five gross elements; at the hour of death that man is marked out [branded?] by Yama. The miseries which he suffers at that moment are called the miseries caused by death. Further, there are miseries of the intermediary period (between birth and death; cf. v. I and LI). It is the conscious Spirit which suffers these miseries; Nature and the gross body, being unconscious, do not suffer them. That is why it is said that Spirit ought to suffer misery and not Nature or the others.—One may ask: 'How much time does Spirit suffer misery?'

So long as it is not separated from the corporeal form. That is why it is said briefly that it is (in) misery.' So long as the Intellect etc. and the subtle form are not separated (from the Spirit), the Spirit suffers misery. When the subtle form is separated from the gross form, Spirit is delivered at one stroke, and, in the state of Deliverance, it does not suffer the miseries of which we have spoken.

So long as it has not renounced forms, subtle and gross, it cannot be delivered from misery ; that is why one says briefly (that associated with) forms, subtle and gross, it ought to be considered as overwhelmed by misery. One may ask : ' Is that the sole function of Spirit ? Or is there still another ? ' We reply in these lines :

LVI. There are the functions of Nature (explained), from the Intellect up to the five gross elements. She acts with a view to deliver the souls of the three worlds ; she performs the work of another as if it were her own work.

SANSKRIT KĀRIKĀ.

Commentary.

' *There are the functions of Nature, from the Intellect up to the five gross elements.*' What is the subject of this verse ? The most important points of the seventy verses have been fully explained. How is that ? Because we have already rendered manifest the double function of Nature (bondage and final Deliverance) : (1) birth and death succeed one another ; in other words, Nature makes Spirit, associated with the matter of the three worlds, pass through a gradual development. First she produces the Intellect, from the Intellect the Sentiment of self, from the Sentiment of self the subtle elements, from the subtle elements the eleven organs and the five gross elements. In the body which consists of these twenty-three products, the Intellect is the first, and the five gross elements the last.

' *She acts with a view to deliver the souls of all the three worlds ; she performs the work of another as if it were her own work.*' In order to deliver the souls, [who belong to] the way of the gods and to those of men and animals, she gradually causes the eight perfections (v. LI). When she makes (Spirit) see the difference between Nature and Spirit, she acquits herself of her double function to the profit of another and not for herself ; like a man who occupies himself in the affairs of his friend and not in his own, Nature acts for another (i.e. for Spirit) not for herself.

One may ask : ' You say that Nature, having realised the end of Spirit, is free to separate herself from Spirit. But Nature is unconscious and Spirit alone is reasonable [rational]. How can Nature intentionally make another associate itself with matter, migrate through the three worlds, and finish by being delivered ? If she is endowed with that intention, she is not unconscious.' We reply : ' In observing unconscious things, we find that they unite or separate themselves (i.e. act or cease to act), as is said in this verse :'

LVII. In order to nourish the calf, an unconscious (substance) becomes milk; thus is it with Nature, who, though unconscious, acts to deliver Spirit.

SANSKRIT KĀRIKĀ.

Commentary.

' *In order to nourish the calf, an unconscious substance becomes milk.*' Thus, in this world, water and herbs, unconscious substances eaten by the cow, become (milk) to nourish the calf. In this case, milk is produced during [the period of] a year. But when the calf is older, capable of browsing on the herbs by itself, the cow, its mother, though absorbing herbs and water, gives no more milk.

' *Thus is it with Nature, who, though unconscious, acts to deliver Spirit.*' Unconscious Nature operates Deliverance. Nature and Spirit unite themselves and separate themselves ; separated, they no more unite. Then, a verse says :

LVIII. As in the world the accomplishment of a work has for end the suppression of incertitude, so the actions of the non-evolved principle have for end the Deliverance of Spirit.

SANSKRIT KĀRIKĀ.

Commentary.

' *As in the world the accomplishment of a work has for end the suppression of incertitude.*' As in the world, a man who finds himself in incertitude bestirs himself on all sides to rid himself of that feeling, ' *so the actions of the non-evolved principle have for end the Deliverance of Spirit.*' Because of Spirit, Nature is, so to say, in incertitude, and desires to act for the profit of Spirit ; in the first place, she makes it seize the objects, that is to say, sound and others ; in the second place, she makes it comprehend the difference between the three *guṇas* and Spirit. When the feeling of incertitude has been suppressed, Nature and Spirit can separate themselves, once for all. ' Non-evolved principle ' (avyaktam) is another name for Nature, for she is above the domain of the organs of sense. For the same reason, one calls her also ' the obscure '.[1] If it be thus with her, how does one know that she exists ? We know the real existence of Nature for the five reasons explained higher up ; it is said in a preceding verse (v. XV) : ' Because the specific classes are finite ;

[1] . . . that is to say ' tamas '. For this name of *prakṛti*, cf. Garbe, *Sāṁkhya-philosophie*, p. 205 ; Max Müller, *Six Systems*, p. 322.

because there is homogeneity ; because there is production effectuated by energy ; because there is difference between cause and effect ; because there is no distinction in the form of the universe ': for these reasons it is said that Nature exists. Then, a verse says :

LIX. As an actor appears on the scene, and having represented some one, disappears, thus Nature retires after having obliged Spirit to manifest itself.[1]

SANSKRIT KĀRIKĀ.

Commentary.

'*As an actor appears on the scene, and having represented some one, disappears.*' An actor shows himself to the spectators, in dance and song ; when one has seen him and he has finished, he disappears behind the curtain. Even so Nature : she shows herself in the three worlds, bound be it to the Intellect, be it to the Sentiment of self, be it to the five organs of action, be it to the five gross elements, be it to the three *guṇas*. After having shown herself, she retires and ceases to suffer the three heats (miseries) [tāpa]. That is why it is said : '*Thus Nature retires after having obliged Spirit to manifest itself.*'

One may ask : 'How many means does Nature possess to manifest herself ?' We reply in this verse :

LX. By multiple means she (Nature) gives services to that (Spirit) which does not render them to her ; endowed with the guṇas, *she gives to that which has no* guṇas ; *she does the work of another without profit to herself.*

SANSKRIT KĀRIKĀ.

Commentary.

'*By multiple means she gives services to that which does not render them.*' The objects of sense, sound, touch, form, taste, odour etc. manifest themselves to Spirit. It realises, so to say, this fact in saying : 'I am different from these objects.' Spirit, having received these services from Nature, gives her nothing in return.

'*Endowed with the* guṇas, *she gives to that which has no* guṇas ; *she does the work of another without profit to herself.*' Nature is endowed with the three *guṇas* : *sattva*, *rajas* and *tamas* ; but Spirit has not these *guṇas*. Just as a man does good to his friends

[1] The text has . . . : ' having obliged Spirit to be itself manifested '. But it is probable that the translator has ill understood ' puruṣasya . . . ātmānam prakāśya ' : ' having shown herself to Spirit ' ; cf. v. XLII.

without awaiting a recompense, so Nature, from the beginning, does the work of Spirit, according to the will of that one, until it shall have attained Deliverance. Spirit never returns the service received : that is why it is said : 'She does the work of another without profit to herself.'—One may ask : 'Spirit after having seen Nature fully and adequately, finishes by attaining Deliverance. Is it that after that Spirit sees Nature only confusedly ?' We reply in this verse :

LXI. Extremely delicate is Nature ; I think there is nothing (as delicate) as she. 'I have now been seen' : then she hides herself and does not show herself any more.

SANSKRIT KĀRIKĀ.

Commentary.

'*Extremely delicate is Nature ; I think nothing is (as delicate) as she.*' Thus in the world a man sees a woman endowed with excellent qualities ; then he sees another who is most excellent of all ; he thinks : 'This is the most excellent and the one who is without rival.' Even so Nature is the (most) delicate of the twenty-four principles. How do you know that ? Because she does not bear the look (is invisible).

One may say : '[This opinion is not correct, because the isolation of Spirit does not come from [the fact] that it sees Nature. For, the master who considers Īśvara as the cause of the world says : " Spirit, ignorant and separated from Nature contents itself with miseries and with joys ; Īśvara can send it into heaven or into hell."[1] Because of that, Nature cannot be liberated, even when Spirit has seen Nature. The delicacy of Nature cannot be proved. Then, the master who considers spontaneity as the cause (of the world) says " The opinion which asserts that in seeing Nature one obtains Deliverance is not correct, for Deliverance is obtained spontaneously ; it has been said higher up (v. XXVII) : what produces the white colour of the haṃsas, the green colour of the parrots, and the variegated colour of the peacocks, it is from that that I too am created. Thus spontaneity is the cause of the entire world ; Deliverance is effectuated then spontaneously and not by Nature." Then, a master (who adheres to the theory of the Spirit) says : " It is not correct to say that in seeing Nature one obtains

[1] Gauḍapāda gives thus the original of this verse :
ajño jantur anīśo'yam ātmanaḥ sukhaduḥkhayoḥ |
īśvaraprerito gacchet svargam narakam eva vā ||
[The *Bulletin* version contains several misprints.]

Deliverance, for Deliverance is effectuated by means of the Spirit,' as is said in these lines: The hymns of the four Vedas exalt the souls (puruṣas) of the past and of the future who have power over life and death, whose acts have been accomplished, and are not repeated any more.[2] It is by that cause that Deliverance is effectuated and not by the act of seeing Nature.'' '

Replying to all, we say: 'You consider Iśvara as the cause, but your opinion is not correct. Why? Because he has no *guṇas*, while the world possesses them; cause and effect would then be dissimilar; for that reason Iśvara cannot be the cause. Nature alone is endowed with the three *guṇas*; as the world is endowed with them too, we know that Nature is the cause.

'For the same reason, Spirit ought not to be considered any more as being the cause, for it has no *guṇas*.

'It is not any more correct to consider spontaneity as the cause of the world, for it is beyond the domain of perception and inference. By perception we see first the cause and then the effect. By inference we avail ourselves of what has been seen by perception to calculate the past and the future that we know by this means.

'If you say that we can know it by *āptavacana* (that is to say, by the lines cited higher up), that is still incorrect, for the opinion that is expressed there is completely erroneous; it is not then an *āptavacana*.'

One may say: 'There are yet some other opinions. There are men who consider time as the cause; thus it is said in a verse: "Time matures all that exists, it destroys all that exists; when the world sleeps, time is awake; who can elude time?" [3] All things derive from time; that is why one attains Deliverance without the vision of Nature.'

We reply: 'The opinion which considers time as being the cause is erroneous, for time is not found among the three categories, Nature, its products and Spirit, which include all things that exist. Outside the three categories there is nothing; they do not include time; we know then that time does not exist. What one calls time

[1] The master who considers Spirit as the cause of deliverance belongs to the Vaiśeṣika school.

[2] The last phrase of the verse is not quite clear to me; one might translate also: 'who, having gone everywhere, go no more anywhere'. The Chinese has: . . . . The Japanese commentator says: 'who have accomplished their religious acts and who have to suffer no more misery on the earth'.

[3] The text of Gauḍapāda is:

kālaḥ pañcāsti bhūtāni kālaḥ samharate jagat |
kālaḥ supteṣu jāgarti kālo hi duratikramaḥ ||

Paramārtha has read then *pacati* in the place of *pañcāsti*. [At least one edition of Gauḍapāda reads *pacati*. Māṭhara reads thus:

kālaḥ sṛjati bhūtāni kālaḥ samharate prajāḥ |
kālaḥ supteṣu jāgarti tasmāt kālas tu kāraṇam ||]

is the modality of a product; time past, that is a past product, and the present and the future are, even so, present and future products. We know then that "time" is only an epithet of products. For that reason, we consider Nature as being the true cause'. A man, who has acquired that true knowledge, comes to see Nature well and fully, after which she hides herself and separates herself from Spirit, operating thus the Deliverance of Spirit. That is why it has been said: 'Excessively delicate is Nature; I think there is nothing (as delicate) as she.'

One may ask: 'When Nature has been seen, why does she retire?' We reply:

'"*I have now been seen*": *then she hides herself and does not show herself any more.*' Just as a lady of a good family virtuous by nature, is covered with confusion and hides herself when a man has seen her unexpectedly, even so, Nature,[1] when Spirit has seen her well and fully, retires and hides herself, and Spirit rests completely isolated.

One may say: 'The men of the world, even sages, are accustomed to talk thus: "the Spirit is bound, the Spirit is delivered, the Spirit migrates through the existences." These words, are they correct or false?' We reply: 'They are false.' 'How do you know that?' It is said in this verse:

LXII. Spirit is not bound, is not delivered, does not migrate through the existences; Nature alone is bound, delivered, [*that*] *alone migrates.*

Sanskrit Kārikā.

Commentary.

'*Spirit is not bound, is not delivered.*' Spirit is not bound. How is that? Because it has not the three *guṇas*, because it is omnipresent, because it is not a product, because it is incapable of action. Enchainment takes place because of the possession of the three *guṇas*; it is subjected to 'natural bondage'.[2] (It is not bound), because it is omnipresent. In speaking of bondage, we distinguish *here* from *there*. What is *here* is not *there*; there is then bondage *here*. But for Spirit there is not *here* or *there* (since it is omnipresent); it is not then bound. (Spirit is not bound), because it is not a

[1] The example of the lady of good family (kulavadhū) is given in the *Sāṁkhyatattvakaumudī*, p. 142 of the Calcutta edition; Garbe, *Mondschein*, p. 619. 'Kulavadhūvat' is also found in the *Sūtra*, III, 70.

[2] It is necessary to recall here the 'three bondages' enumerated in v. XLV: (1) bondage by Nature (prākṛta); (2) bondage by a product incidental (vaikārika); (3) bondage by sacrificial gift (dākṣaṇika).

product : the products—from the Intellect up to the five elements—pertain to Nature and not to Spirit; Spirit then is not subject to ' bondage by a product.' (Spirit is not bound), because it is inactive. Spirit is not an agent, it is then incapable of action. To offer gifts and all other actions are appropriate to Nature; Spirit then is not subject to ' natural bondage.' If Spirit is not bound, it follows of itself that it is not delivered. However, we say for convenience that Spirit itself is delivered.

' *It does not migrate through the existences.*' Spirit is omnipresent. Where could it migrate? To migrate would be to say : go there where one actually is not. But there is no place where Spirit may not be present; there is then no transmigration for it. Only a man who does not know this truth says that Spirit is bound, that it migrates. One may ask : ' If it is thus with it, what is it that is bound and that migrates? '

' *Nature alone is bound, delivered, [that] alone migrates.*' Nature is bound by the triple bondage : natural, incidental, ritual. The subtle body, which consists of the five subtle elements and which is united to the thirteen organs, is bound by the triple bondage and migrates through the three worlds. When one obtains the true knowledge, the triple bondage is suppressed, one is delivered from transmigration and one attains final Deliverance. That is why it is said that the three worlds act by the support of Nature. If then you say that Spirit is bound in the worlds or that it is delivered from death and birth, that is not correct. Another verse says :

LXIII. rūpaiḥ saptabhir eva tu badhnāty ātmānam ātmanā prakṛtiḥ |
sai'va ca puruṣārtham prati vimocayaty ekarūpeṇa ||

By seven modes (v. LXVII) Nature binds herself; by one mode she delivers herself, in accordance with the desire of Spirit.

Note.—This verse is lacking in the Chinese text. That is perhaps an interpolation posterior to the time of Paramārtha (546), though I cannot give the special reason for it. One may, however, affirm that the original of the Chinese translation did not contain that verse, for there is no room to suppose that the translator had by error jumped over this verse and the commentary, if all the time there had been one. This verse is found in the *Sūtra*, III, 73.

LXIV. }
Ch. LXIII. } *When one has meditated frequently and up to the end the sense of these truths, one obtains an infallible knowledge, pure and absolute, to wit : that there is no Me, that there is no Mine.*

Sanskrit Kārikā.

Commentary.

' *When one has meditated frequently . . . the sense of these truths.*' The truths are the twenty-five principles of which we have often spoken. ' Meditated frequently and up to the end ' : in the six processes of contemplation (see v. LI, commentary), these principles are often studied. ' Up to the end ' means that the study is exhaustive.[1] By this means one attains knowledge. Because of that knowledge one destroys completely the three (false) ideas *completely* : ' that there is nothing,[2] that the Self [Me] exists, that Mine exists ', and the five doubts (explained in v. XLVII). All the functions of all corporeal existences are caused by Nature; there is not ' Nothing ', there is no Me, there is no Mine; because all pertain to Nature. By this practice, the knowledge becomes pure and absolute, and by that knowledge Spirit obtains final Deliverance.—One may ask : ' That knowledge, for what does it serve [of what service is it to] Spirit? ' We reply :

LXV. }
Ch. LXIV. } *By that knowledge, (Nature) ceases to produce and finishes by abandoning her functions, in accordance with the desire of Spirit. Spirit looks at nature, as a man seated tranquilly looks at a play.*

Sanskrit Kārikā.

Commentary.

' *By that knowledge (Nature) ceases to produce.*' By that true knowledge, Nature does not produce any more the Intellect, the Sentiment of self, the five subtle elements etc. It is said in a verse : ' Just as the decorticated rice sprouts no more in the water or in the earth, so Nature ceases to be prolific, when she is mastered by knowledge.'[3]

' *She finishes by abandoning her functions, in accordance with the desire of Spirit.*' After having acquitted herself of the two functions to the profit of Spirit—to make Spirit seize the objects; to show it the difference between Nature and Spirit,—she abandons all her functions.

' *Spirit looks at Nature, as a man seated tranquilly looks at a play.*' Just as the spectator of a play sits there tranquilly, so Spirit looks at Nature in all her functions without ever being moved and makes, so to say, this reflection : ' She binds all men, and she finishes by unbinding all men.'—One may ask : ' What does knowledge accomplish between Nature and Spirit? ' We reply in this verse :

[1] The Chinese take *apariśeṣam* as an adverb and not as an adjective of *jñānam*.
[2] The first false idea, . . . , ' there is not ', ' nothing ' is strange. The Bombay edition of Wilson's text has *nāsti* in the place of *nāsmi*. But the act of isolating *nāsti* and making of it the first false idea is a misconstruction of Paramārtha's.
[3] This verse comes without doubt from the *Pātañjalayogasūtra* ; the idea of it is also given in Alberuni, *Indica*, I, p. 55.

LXVI.
Ch. LXV. ' *I have seen her*' (*says Spirit*) *and holds itself apart.* ' *I have been seen*' (*says Nature*) *and she retires to hide herself. Nature and Spirit may meet again, but there is no more creation, because there is need for it no more.*

SANSKRIT KĀRIKĀ.

Commentary.

'" *I have seen her*" (*says Spirit*) *and holds itself apart.*' In this world a man sees a play executed by different actresses; he thinks: 'I have seen them sufficiently', and he ceases to look at them. The actresses think: 'Our play has been seen', and they retire from the scene. Even so, after having seen Nature, Spirit ceases to look. Nature too holds herself apart, saying: 'I have been seen'. One may ask: 'Spirit, even like Nature, is omnipresent. When the one and the other are united, that state will endure for ever, and they will no more be disunited. How is it that that union does not cause the production of a body?' We reply:

'*Nature and Spirit may meet again, but there is no more creation, because there is need for it no more.*'—You affirm that Spirit and Nature are omnipresent, and that for that reason, they are united for ever. That is true in effect. But why then is there no more creation? Because there is no more need for a creation. The end of creation is double: (1) to make Spirit seize the objects; (2) to show to Spirit the distinct existence of Nature. This double end once accomplished, there is no more need for a creation.—One may ask: 'If it is thus with it, the end is uncertain, since the union of the two is its cause.' We reply: 'Because of the power of perfect knowledge, Spirit seeing the mature [elderly; rotten] state of Nature, is disgusted with her, and contents itself with looking at her.' Even if they united once again, it can no more result in creation. Thus a creditor and a debtor have relations together on the subject of the debt; but the debt paid, the two men have relations no more, though they may meet again; it is the same with Spirit and Nature.—One may ask: 'If by knowledge one gains final Deliverance, you who possess that knowledge and I who possess that knowledge, why are we two not yet delivered?' We reply in these two verses:

LXVII.
Ch. LXVI. ***Because of perfect and full knowledge,*** dharma ***etc. have influence no more. Transmigration is arrested, like the body of the wheel (of the potter), the movement of which one interrupts.***

SANSKRIT KĀRIKĀ.

Commentary.

'*Because of perfect and full knowledge,* dharma *etc. have influence no more.*' 'Perfect knowledge' means the real knowledge of the twenty-five principles. 'Full knowledge' means the knowledge of the twenty-five principles without augmentation or diminution. By the power of that knowledge one destroys and parches the seven modes: (1) virtue; (2) vice; (3) ignorance; (4) absence of passion; (5) passion; (6) power; (7) impotence. Just as grains parched by fire germinate no more, even so the seven modes (sapta-rūpa), seized by knowledge, have no more influence. We other men migrate without cessation. This transmigration in the seven spheres [1] is caused by virtue and the other (modes) obtained in prior existences. But by reason of knowledge, these causes cease to bear their fruit. Just as, without an umbrella, one has no shade, so without an antecedent cause, there is no corporeal form. Then a man who possesses knowledge and on whom, for that reason, the acts committed in prior existences have no more influence, stops (in transmigration); like the wheel (of the potter) the movement of which one interrupts.

One may ask: '(But finally), having obtained knowledge, at what moment is one delivered?' We reply in this verse:—

LXVIII.
Ch. LXVII. *When* (*Spirit*) *abandons the body and when, having shown the objects to it, Nature quits Spirit, the final and definitive* [2] *isolation is accomplished.*

SANSKRIT KĀRIKĀ.

Commentary.

'*When Spirit abandons the body.*' That is the moment when the influences of prior actions, virtue and vice, is exhausted, that is to say, just the moment when we quit this body. At this moment the earth element which is in our body returns to the general element of earth, the ether in us returns to the element ether, the five organs are absorbed by the five subtle elements, even so the Manas.

[1] These are the places corresponding to the 'consequences' enumerated in v. XLVI; it is naturally necessary to except final Deliverance therefrom.

[2] [In the Sanskrit, the same words 'aikāntika' and 'ātyantika' appear in v. I and v. LXVIII, indicating that what was sought has been found and that the quest is at an end. In the Chinese there seems to be a slight difference, judging from M. Takakusu's translation. The words used in v. I are 'ni defini ni definitif', 'neither definite (certain) nor final'; but in v. LXVIII, we find 'final' alternating with 'definitif', the latter word meaning nothing more than 'definite' to judge from the commentary. The difference is, perhaps, hardly significant].

'*Having shown the objects to it, Nature quits Spirit.*' That is to say, having fulfilled the double end—the creation of all and final Deliverance,—Nature quits Spirit. In the two cases, definitive and final isolation is accomplished. 'Definitive isolation' means: because of the true knowledge we reject the indefinite remedies and the opinions of the different schools. 'Final isolation' means: for that we abandon the chain of causes and effects taught in the four Vedas (cf. v. I), even the fruits promised for the absence of passion, fruits not caused by true knowledge. Final isolation is 'definitive' because it is not followed by another. 'Final' would be to say 'without end' (eternal). Isolation takes place in the two cases explained above.—One may ask: 'Of what service is the true knowledge?' We reply in these lines:—

LXIX.
Ch. LXVIII. *That knowledge adapted to the end of Spirit (and which is) secret has been explained by the great* ṛṣi; *by it the production, the duration and the destruction of the world can be measured.*

Sanskrit Kārikā.

Commentary.

'*That knowledge adapted to the end of Spirit.*' 'That knowledge' is the perfect knowledge of the twenty-five principles. 'Adapted to the end of Spirit': this end is isolation and Deliverance.

'(*That*) *secret* (*knowledge*) *has been explained by the great* ṛṣi.' 'Secret': that which is hidden by all sorts of erroneous opinions, that which is difficult to manifest, can be obtained only by a perfect master. That which is secret is that which can be transmitted to a brāhmin endowed with the five qualities, but not to any other; that is why one calls it 'secret'. What are the five qualities? (1) Good place of birth; (2) good family; (3) good conduct; (4) capacity; (5) desire to obtain that knowledge. Those are the qualities which make [one] fit to receive the Law; no one else is capable of it; that is why one calls that knowledge 'secret'.

'*Explained by the great* ṛṣi.' The principles have been explained one by one by the Sage Kapila—One may ask: 'In what inquiry do they serve?' Reply:

'*The production, duration, and destruction of the world can be measured by that knowledge.*' The 'world' is all that exists from Brahmā up to the pillar; for all that there is a creation, a duration and an end. Creation: Nature produces the Intellect etc., up to the five elements. Duration: this is all the time [during which] the subtle

body, influenced by the states of being, migrates through the three worlds. End: by means of the eight perfections (v. LI), (Spirit) rests for ever isolated. The conditions of the three (periods) can be manifested by that knowledge; since it manifests nothing outside of these three, one calls it absolute knowledge.—One may ask: 'From whom proceeds that knowledge?' We reply in this verse:

LXX.
Ch. LXIX. *That excellent and beneficent knowledge has been communicated through compassion by the* muni, *first to Āsuri, who, in his turn, communicated it to Pañcaśikha.*

Sanskrit Kārikā.

Commentary.

'*That excellent and beneficent knowledge*'. That knowledge was established for the first time before the four Vedas had appeared. It is by that knowledge that the four Vedas and all the religious schools have been established; that is why one calls it excellent (agrya). It is by that knowledge that Spirit is delivered from the triple misery, from the principal misery caused by the twenty-four (products), as well as from the triple bondage; by that is obtained isolation of Spirit or its Deliverance. That is why one says that that knowledge is 'beneficent'.

'*It has been communicated through compassion by the* muni.' Who has first possessed that knowledge? The great Sage Kapila possessed at his birth the four qualities, virtue, knowledge, absence of passion and power. Having realised that knowledge, he explained it through compassion. Desiring that that knowledge should not be lost and that it should be communicated to another, he taught it through charity to Āsuri, who explained it, in his turn, to Pañcaśikha and to Vindhyāvāsa; Pañcaśikha and Vindhyāvāsa [1] treated that doctrine at full length, in sixty-thousand verses in all. The Sage Kapila explained it briefly to Āsuri as follows:

'At the first beginning there was nothing but darkness. In that darkness there was a "field of knowledge". The "field of knowledge" was the *puruṣa*. The puruṣa existed, but no knowledge existed. That is why one called (the puruṣa) "field". Then came evolution

[1] There is here a variant. Three texts out of four read: . . . 'In his turn, he explained it to Pañcaśikha and to Vindhyāvāsa; Pañcaśikha and Vindhyāvāsa have treated this doctrine at full length.' But the Korean text reads: . . . . 'In his turn, he explained it to Pañcaśikha and Pañcaśikha had treated this doctrine at full length.' The Korean text then does not speak of Vindhyāvāsa. Cf. my Introduction.

and modification; thus was originated primordial creation by evolution etc., up to final Deliverance'.[1] The Sage Āsuri, in his turn, explained that knowledge briefly and in identical terms to Pañcaśikha, who explained it at full length in sixty-thousand verses; thus the doctrine was transmitted up to Īśvarakṛṣṇa, the brāhmin, whose family-name was Kauśika; that one explained the system in seventy verses, as is said in this verse:

LXXI. }
Ch. LXX. } *Some disciples, coming one after another, transmitted the knowledge taught by the great Master. Īśvarakṛṣṇa expounded it briefly, knowing the fundamentals of the truth.*

SANSKRIT KĀRIKĀ.

Commentary.

'*Some disciples, coming one after the other, transmitted the knowledge taught by the great Master.*' That knowledge came from Kapila to Āsuri, who transmitted it to Pañcaśikha; Pañcaśikha gave it to Ho-kia,[2] Ho-kia to Ulūka,[3] Ulūka to Po-p'o-li,[4] Po-p'o-li to Īśvarakṛṣṇa. By that transmission Īśvarakṛṣṇa obtained the knowledge. He saw that the great treatise (of Pañcaśikha) was difficult to keep in the memory and consequently he reduced it to seventy verses which we have just commented on, and which commence with 'By reason of the torment caused by the three sorts of misery, the inquiry into the means of destroying them is necessary' (v. I). That is why it is said:

'*Īśvarakṛṣṇa expounded it briefly, knowing the fundamentals of the truth.*'—An intelligent man of this (school) has composed this verse:

LXXII. }
Ch. LXXI. } *This treatise in seventy verses exhausts that of the sixty-thousand verses; it explains (the sorts of) creation which proceed from (eight) causes,*[5] *up to the fifty categories (relating to the Intellect).* [6]

[1] . . . . 'field of knowledge' seems to correspond to 'kṣetra-jña' one of the names of Spirit; cf. *Buddhacarita*, XII. 20. For some term borrowed from the Purāṇas by Sanskrit terminology, cf. Garbe, *Sāṁkhyaphilosophie*, pages 205, 293; Max Müller, *Six Systems*, page 322.

[2] . . . Ho-kia; *Jap.*, Kat'-kia; very probably Gārgya.

[3] . . . Yeou-leouk'a; *Jap.*, U-lo-kia; *Sk.*, Ulūka.

[4] . . . . Po-p'o-li; *Jap.*, Bat'-ba-li. It is difficult to get back to the original. I am of opinion that it is a mistake for . . . Po-li-so; *Jap.*, Bat'-li-sha; *Sk.*, Vṛṣā (cf. Vārṣagaṇya). Cf. my Introduction.

[5] Cf. XLVI, note.

[6] One sees that in this verse and in the corresponding verse of Gauḍapāda the first hemistiches alone correspond. But see the end of the commentary.

SANSKRIT KĀRIKĀ.

Commentary.

The subjects of this treatise do not differ from those of that treatise; [1] a preceding verse explains them thus (v. XLVI): 'Creation derives in its nature from the Intellect; it is of four sorts: doubt (5), incapacity (28), contentment (9), and perfection (8). Considering the disparity of the *guṇas*, there are fifty divisions in the Intellect. Besides these fifty divisions, there are ten other categories as is said in the verse: '(1) The existence (of Nature), (2) the fact that she is unique, (3) the end of Spirit, (4 and 5) the five reasons (by which one establishes the existence of Spirit and of Nature, (6) the isolation of Spirit, (7) union,' (8) separation, (9) the multiplicity of spirits, (10) the duration of the body; those are the ten categories. [2]

(1) 'Existence' means the existence of the effect in the cause (v. IX). (2) 'Uniqueness': Nature is one and she evolves for the profit of numerous Spirits (v. XVI). (3) 'The end of Spirit' (accomplished by Nature): this means that Nature makes Spirit capable of associating itself with objects and seeing later the distinction (between Spirit and Nature) (cf. v. XLII).

(4 and 5). 'The five reasons': by five reasons one establishes the reality of Nature (v. XV), and even so the reality of Spirit (v. XVII). (6) 'Isolation': by perfect knowledge Spirit attains definitive and final isolation (vv. LXVII, LXVIII). (7) 'Union' (of Spirit and Nature) takes place because both are omnipresent (v. LXVI). (8) 'Separation' takes place, as we have seen it (v. LXVIII). (9) 'Multiplicity of Spirits': because life and death are not the same (for every individual), as we have explained it (vv. XVII, XVIII). (10) 'Duration of the body': it is made by the subtle body so long as knowledge is not acquired (v. XLI).

[1] This phrase is the translation of the first hemistich of the last verse of Gauḍapāda. It says that what the *Ṣaṣṭitantra* contains is also contained in the *Sāṁkhyakārikā*. To illustrate this point still better, the commentary enumerates the fifty subjects of the two treatises. This commentary gives us the almost complete certainty that the great lost work of Pañcaśikha on the Sāṁkhya system contained fully 60,000 verses, and that it is identical with the *Ṣaṣṭitantra*, of which we know the existence from yet other sources (Gauḍapāda, v. XVII; the same, Paramārtha; Vyāsa, *Yogabhāṣya*, *Sūtra*, IV, 13; cf. Garbe, *Mondschein*, p. 627, note 3).

[2] This verse is given in the *Rājavārttika* according to Vācaspati Miśra (S.T.K., v. LXXII); it is further cited in the *Sāṁkhyakramadīpikā* (n. 68) of Kṣemānanda. Here it is:

pradhānāstitvam (1) ekatvam (2) arthavattvam (3) athānyatā (?) |
pārārthyañ ca (?) tathānaikyam (9) viyogo (8) yoga (7) eva ca |
śeṣavṛttir (10) akartṛtvam (?) nanulikārthāḥ smṛtāḥ daśa |

. . . . . *Anyatā*, *pārārthya* and *akartṛtva* do not seem to be found in the Chinese text. Perhaps, has Paramārtha read *pañcārthya* in the place of *pārārthya*? Thus would be explained his 'five reasons' (4 and 5).

These ten, with the fifty categories, form the subjects of the sixty-thousand verses (of Pañcaśikha); the treatise in seventy verses is thus identical (as for subjects) with the treatise of sixty-thousand.

One may ask: 'What is the difference between the great treatise and the little one in seventy verses?' Reply: 'The traditions of the ancient Sages and the refutations of the opinions of others are found in the great [treatise], but not in this one. That is the difference.'[1]

[1] This is the translation of the last hemistich of Gauḍapāda, v. LXXII: 'Ākhyāyikāvirahitāḥ paravādavivarjitās cā 'pi.' The commentary reproduces then what the text has omitted. It was, perhaps, impossible for the Chinese translator to enclose within the twenty characters of his verse the entire sense of the Sanskrit verse. Paramārtha seems to have been often obliged to skip in the translation of the text this or that word, free to take it up again in the commentary.

PRELIMINARY OBSERVATIONS ON SOME POLYCHÆTE LARVÆ OF THE MADRAS COAST

AND

A Note on the Occurrence in Tow-net Water of the Larvæ of Chætogordius, Moore

Introduction

The Polychæte larvæ which form the subject of these studies were all obtained from the Madras coast within a couple of miles from the shore. The collection was made fairly systematically and extended over a full year. A surface tow-net of fine bolting silk was used and the net was worked from an ordinary catamaran so common on the Madras coast. On arrival at the Laboratory the larvæ were isolated and picked out and kept in separate glasses of sea-water which was renewed practically every alternate day. The larvæ developed fairly well and in a few cases lived for over a fortnight. A pipetteful of the minute fresh plankton characteristic of the season was now and then given and apart from this no attempt was made at regular feeding of the organisms. The greatest difficulty was to keep the temperature constant. This was done by keeping the dishes with the larvæ in other larger dishes of water. This prevented, to some extent, too rapid a rise of temperature during nights when the Laboratory doors were closed.

This systematic collection of the plankton extending over several months has made it possible to make certain observations of a very general nature. In the actual collecting of the plankton it has been found repeatedly that some organisms occur in patches, that is, they may be found quite in abundance at one part of the coast but practically absent a hundred or two hundred yards away. To mention a typical case in point, post larval stages of *Loimia medusa*, which were obtained in incredible numbers on 16-6-30, were not encountered a day later, but turned up in crowds in the next collection. This is by no means a new observation, but has been pointed out by Herdman (1923) and others in the Irish Sea. In coming therefore to any generalisation regarding the seasonal vari-

ation of these larval forms this fact was fully remembered and only when forms failed to turn up for days was any importance attached to such absence. The following table gives an idea of the seasonal variation in the occurrence of the more common forms.

In point of numbers *Miltaria* larvæ stand out first. They have a short sharp maximum in August. *Spionids* come next. They are very abundant in the months of November and December, less so in January. During February and March they again become numerous but not to the same extent as in November and December. *Terebellids* are very common in November and once again in June. *Nephthyds* are common in November, December and February; *Phyllodocids* in December and January. *Eunicids* and *Polynoids* occur in March and April generally, while *Nereids*, never very numerous, occur in February and March. *Chætosphærids* and *Chætopterids* have for their favourite months November and March while *Magelonids* are of frequent occurrence in November and January. It will be seen that November to March are crowded months and this is the period when the Phytoplankton is also abundant. This is only a very general scheme and should not be taken to mean that stray individuals cannot be picked out in months other than those stated. A few important families such as *Nereidae*, *Polynoidæ* and *Polydoridæ* have been left out. An account of their larvæ will follow.

Family PHYLLODOCIDÆ, Grube.

Long slender worms with numerous segments. Prostomium is distinct, conical, oval or heart-shaped with 4-5 antennæ. Two eyes are present. There is an unarmed pharynx. The first three segments carry tentacular cirri. The succeeding segments have uniramous parapodia with foliaceous dorsal and ventral cirri. The setæ are composite. There is a fairly prolonged pelagic larval stage.

Two forms of larvæ occur in large numbers usually in the months of November, December and January.

Phyllodocid with one hook.—Several advanced trochophores were obtained (Fig. 1). The larva is very contractile and measures 380 μ long and 145 μ broad. There is no

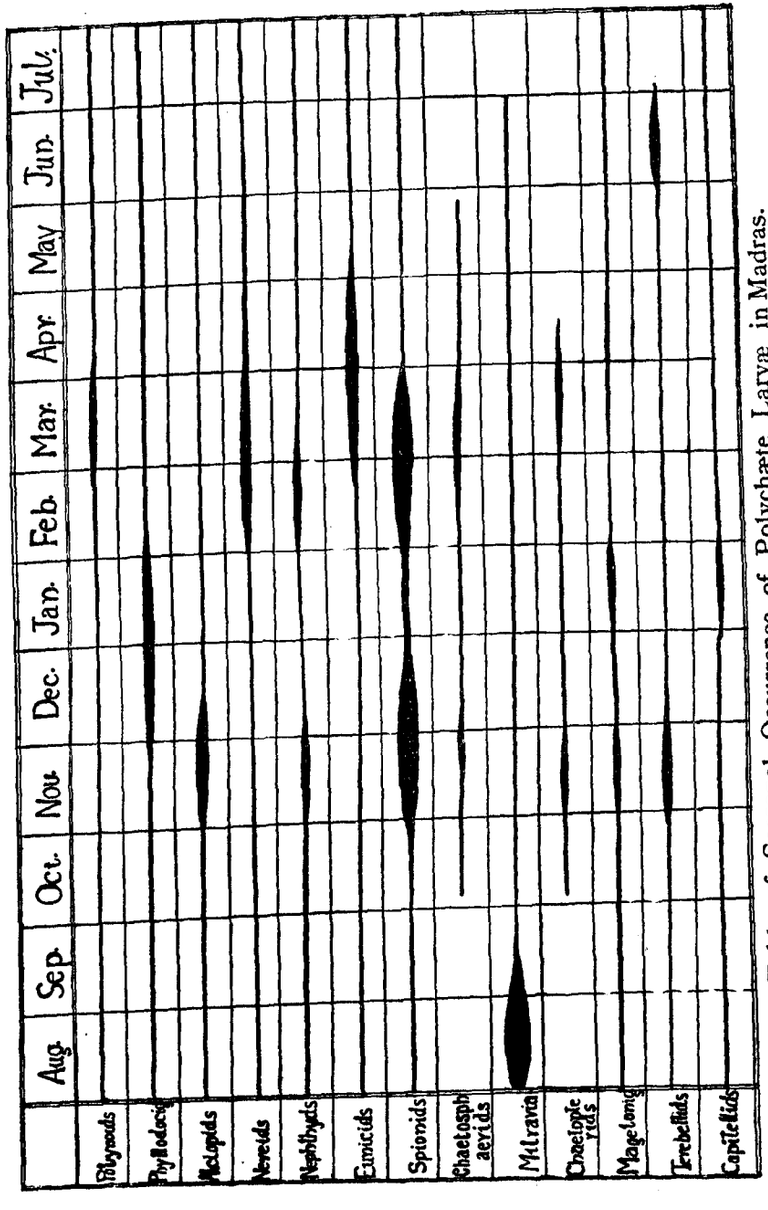

Table of Seasonal Occurrence of Polychæte Larvæ in Madras.

characteristic pigmentation, but the body is of a dirty yellowish green colour. Preoral part is very contractile so much so that it becomes now and then obliterated. Two reddish eyes are present on the prostomium. In relation with each eye, for a similar larva, Hacker (1896) mentions a small group of cilia. Such a group is not present in this form. The prototroch is placed in the first half of the larva but the appearance greatly varies according to the state of contraction of the larva. The cilia of the anterior row are much shorter than those of the posterior. In front of the prototroch on the ventral middle line is the characteristic 'hook'. It is difficult to make it out fully as it is often laid close against the body in which position it becomes practically invisible. The posterior cilia of the hook are the longest; the anterior cilia get gradually shorter and merge with the hind end of the akrotroch in front. A small patch of minute cilia is present at the anterior end.

The mouth is placed behind the prototroch and is surrounded by cilia slightly longer than the short cilia forming the neurotroch which commences behind the mouth and is continued quite to the posterior end and is not observed to widen out into a diamond-shaped patch as stated by Gravely (1909) for his Port-Erin *Phyllodocid* A.

The front part of the alimentary canal projects into the prostomium and then curves backwards and is continued to the anus. Yellowish nutrient globules fill the anterior part.

Telotroch is present but is poorly developed as compared with the prototroch. Anal region is distinctly yellowish green. Segmentation has commenced but there is no indication of appendages.

Phyllodocid with two hooks. (Fig. 2). Several advanced metatrochophores were captured. The larva, like the one-hooked form described, is also very contractile and measures 700 μ long and nearly 400 μ broad. Two eyes, rather large, are present. Prototroch is well developed and is formed of an anterior row of long cilia of about 80 μ and a posterior row of shorter cilia. No cilia are observed at the apical pole. Two hooks with a very small interval between are present on the ventral side of the prostomium. The cilia of the hooks are as long as those of the prototroch. In front of the hooks

there is a distinct akrotroch of small cilia but this does not reach the front end. Behind the prototroch there is a band of brown pigment. The mouth is placed some distance behind the prototroch on the ventral side and is surrounded by a ring of small fine cilia working inwards. Continuous with the posterior part of the mouth is the median neurotroch of minute cilia running to the hind end with two small interruptions in its course. The cilia of the neurotroch are slightly smaller than those of the akrotroch. Anus is surrounded by minute cilia.

Twenty-four hours later the body has undergone elongation and traces of segmentation have appeared. No other changes are noticeable. A day later the body has elongated still more. Segmentation has become much more pronounced. Seven pairs of parapodia have appeared. Anterior parapodia show greater differentiation. Dorsal lobe is broader than the ventral. The rudiments of two pairs of tentacular cirri are visible. Prototroch and telotroch persist as also the two hooks, the akrotroch, and neurotroch. The alimentary canal is still filled with yellow globules. The larva now and then ceases to swim and rests at bottom of the glass.

A day later a pair of tentacles and a pair of anal styles have put in their appearance. The telotroch shows considerable reduction and is on the point of vanishing though the prototroch continues to be vigorous and active (Fig. 3).

Larvæ of *Phyllodoce maculata*, Müller have been described by Agassiz (1867) and McIntosh (1869). Claparëde and Mecznikow (1869) describe *Phyllodocid* larvæ from Naples Bay: Leschke (1903) describes larval stages of *Phyllodoce maculata*, *Eteone flava*, Oerst, *E. pusilla*, Faber, *Eulalia bilimbata*, Johnston and *E. sanguinea*, Oerst and Gravely (1909) describes larvæ of *Mystides* (Phyllodocid A) and two other *Phyllodocids* B (*Eulalia?*) and *Phyllodocid* C.

Hacker (1896) was probably the first to point out the occurrence of a 'hook' as characteristic of *Phyllodocid* larvæ. He also thought the presence of a row of cilia behind each eye in the trochophore and metatrochophore stages of general occurrence. Gravely (1909) has already pointed out its absence in the Port-Erin *Phyllodocids* and my observations of Port-Erin *Phyllodocid* larvæ while I was there in April 1929

as also my examination of Madras *Phyllodocids* point to the conclusion that this feature cannot be regarded as characteristic of *Phyllodocid* larvæ in general.

There is a great similarity, particularly in the trochophore and metatrochophore stages, between all *Phyllodocid* larvæ. They differ only in details. Generic and specific differences show themselves only in the later stages.

Family NEPHTHYDIDÆ, Grube.

These are worms with numerous segments. The prostomium is small, quadrangular, with four antennæ usually. The mouth leads into an eversible pharynx with papillæ. Two chitinous jaws are present. Parapodia are biramous with simple barred setæ. Dorsal and ventral cirri are present. First parapodium is rudimentary. Branchiæ are present. The body ends in a single anal cirrus. There is a fairly prolonged pelagic larval period.

Genus Nephthys, Cuvier.

Nephthys larvæ are very common during the months of November and December and they are best studied during this period.

Nephthys. Metatrochophore.—(Fig. 4). Youngest stage obtained measures 180 μ long and 110 μ broad and is already provided with seven distinct segments followed by an unsegmented region. Prototrochal region is the broadest part of the body and the prototroch is well developed. The cilia are about 20 μ long. A telotroch of smaller cilia is present. Two well-developed reddish eye-spots are present. The larva is of pink colour in front of prototroch and also in front of the telotroch. There is no trace of parapodia.

Alimentary canal extends into prostomium. Mouth is transverse and is placed behind prototroch on the ventral side. There is a circle of minute cilia surrounding it. There is no trace of papillæ or jaws at this stage. Greenish vacuoles almost fill up the digestive tract. The most important feature of the colouration is the presence of two patches of bluish green pigment in the middle of the body. Anus is surrounded by cilia. The median style has not yet appeared.

The larvæ swim in large circles and are very active.

Young Nectochæta.—(Fig. 5). The next stage examined is already provided with eight segments and an unsegmented posterior region. Six of the segments are provided with rudiments of parapodia. The umbrella is still broad but has already commenced to diminish and now is slightly narrower than the part following. The pigment in the posterior unsegmented part has deepened. Prototroch is strongly developed and seems to be formed of several rows of cilia. Cilia of the prototroch and telotroch are very similar. Eyes have not changed. Parapodia have commenced to show differentiation. Notopodial and neuropodial portions are now distinct and a few barred and simple setæ have appeared. This stage is very similar to the oldest stage described and figured by Claparede and Mecznikow (1869).

In the next stage examined there are seven pairs of parapodia. Umbrella is still rounded but is smaller than in the preceding condition. The pigment in front of and behind the prototroch is less intense. The first pair of parapodia have also appeared and are very minute. Gravely for an almost corresponding stage of *Nephthys* describes the prototroch as being composed of a row of short anterior 20 μ cilia, and a posterior double row of 80 μ and 30 μ cilia. It is very difficult to make out any such arrangement in the present form.

Alimentary canal is still bluish green with numerous yellowish vacuoles in the anterior part and the posterior portion comparatively free from them.

The pinkish pigment in the unsegmented region persists. The single anal style has appeared. As the Nectochæta grows, more segments and parapodia are added. When the 12 setiger condition is reached the umbrella has still more contracted and instead of being rounded is almost quadrangular (Fig. 8). Telotrochal and prototrochal cilia circlets still persist. Parapodial cilia can now be observed in segments 3-6. Anteriorly a hook seta is often found imbedded at the base of the barred setæ. Barring appears to be fainter in the setæ of the posterior bundles.

Alimentary canal has now become fully differentiated. Numerous papillæ and a pair of chitinous jaws are clearly visible. Hind end of the jaws extends up to the

commencement of the sixth parapodial segment. Anterior part of stomach is now conspicuous by two patches of blue green pigment. As the larva grows the head becomes more and more quadrangular. Prototroch and telotroch continue to function but the prototroch already shows signs of disappearing. Indeed at this stage the telotroch is more active. Soon the larva is provided with 17 pairs of parapodia. Two tentacles have appeared. Prototroch and telotroch have both disappeared. The anal style has grown slightly longer.

Nephthys larvæ have been encountered in all seas. Hacker (1896) describes two metatrochophore stages of *N. scolopendroides,* Delle Chiaje, one a six-segmented non-setigerous condition and the other a later 6-7 setigerous stage. A detailed account of the larval stages of *Nephthys* is given by Fewkes (1883). He traces the development from the trochophore stage with large preoral lobe to the ten-segmented condition in which the two pairs of tentacles have just commenced to form and the parapodia are provided with dorsal and ventral cirri. In the late development of the tentacles the Madras form markedly differs from the corresponding larva of Fewkes.

Claparede and Mecznikow (1869) describe the development of a *Nephthys* ascribed by them to *N. scolopendroides,* a form common in the Bay of Naples. At the 8th setiger condition, which is the oldest larva described by them, there is no indication of the tentacles. The parapodia are however provided with cirri. Leschke (1903) describes a six-segment achætous stage from Kiel Bay. He mentions the occurrence of a ring of brown pigment in front of the anus and he considers the ring as characteristic of *Nephthys* larvæ. A pigment ring occurs in the Madras form also but is of a different colour.

Gravely (1909) describes from Port-Erin a metatrochophore with seven segments and six very minute appendages. He also describes Nectochæta stages, the oldest having nine intertrochal segments and with rudiments of a pair of appendages. Fuchs (1910) has also described the larval development of *N. hombergi.* From a comparison of the descriptions of the larvæ of various authors it seems that *Nephthys* larvæ are monotrochal, later telotrochal. The telotrochal larva is

provided with a large preoral lobe and 5-6 segments. There is then reduction of the preoral lobe and the assumption of a quadrangular shape. Setæ at first appear almost simultaneously in 2-7 segments, followed by considerable differentiation. The first parapodium is minute and develops its setæ some time after the development of the setæ in the succeeding segments. Prototroch disappears first, followed soon by the telotroch and the creeping habit is assumed.

Family EUNICIDÆ, Grube.

Elongated worms with distinct prostomium with 1-7 antennæ. First two segments are achætous. Sometimes a pair of nuchal cirri are present on the second segment. Parapodia are uniramous; simple, compound and pectinate setæ are present. Branchiæ are very commonly present, and are usually branched. There is a complicated system of jaws in a separate pouch below the gullet. *Eunicids* are mostly burrowers and inhabit littoral regions. Eggs are either scattered or laid in a jelly. Often the worms, as in the Paola, rise up to the surface to swarm. Pelagic period of larval life is rather curtailed. A modified trochophore with a broad band of cilia instead of the typical prototroch.

Genus Eunice, Cuvier.

Eunice A. Young Nectochæta.—(Fig. 9). Several early Nectochæta were obtained on 22-2-30. They all settled down at the bottom of the glass and were very sluggish in their movements. Body is ovate and measures 325 μ long and 185 μ broad. Anterior end is rounded while the posterior is slightly narrowed. Two pairs of eyes are present, the anterior being larger and farther apart than the posterior; both pairs of eyes are reddish in colour. There is a thick cuticle over the body. The larva is provided with three distinct setigerous tufts with a fourth rudimentary tuft just budding out. There are two bands of cilia which could only be observed with considerable difficulty. The anterior of these bands is broad, 100 μ long, and extends from the level of the eyes to the first pair of parapodial tufts. The cilia are very minute. The second band is narrower and is only one-fourth the total extent of the anterior, though the cilia are slightly longer.

In addition to these two bands there is a fine apical tuft consisting of a few flagella at the anterior end.

The first three pairs of setose tufts are quite distinct and can be retracted almost completely into their setigerous sacs. The first pair consists of one aciculum, two jointed setæ, and one simple seta; the second pair of an aciculum, and three jointed setæ; the third is similar to the second in its composition; the fourth parapodial tuft is rudimentary at this stage but indications of a single jointed seta and an aciculum can already be seen. The acicula do not pierce the skin. All the compound setæ are very similar in appearance; the basal shaft is dilated at its end and the terminal blade is now rather short, stout, and does not appear to be toothed.

The alimentary canal is quite clear and broad in front and rather abruptly narrowed behind. The dental pouch has already made its appearance though, as yet, no indications of jaws could be seen. The sides of this part of the alimentary canal are filled up with large vacuoles, while behind, it is green and is packed with nutrient globules. The digestive tract undergoes sudden narrowing behind and ends in the terminal anus. There are, as yet, no anal cirri.

Next Nectochæta Stage. (Fig. 10). In the next two days the larva has grown longer and slightly broader and measures 500 μ long and 250 μ broad. Four distinct pairs of setigerous tufts and a fifth indistinct rudimentary pair are present. Differentiation of parapodia has progressed and a dorsal cirrus has appeared in relation with the first parapodial tuft. The setigerous tufts have now a greater number of setæ and are composed of:—

1st tuft	... ...	1 aciculum, 3 jointed setæ, 2 smooth capillaries and also a dorsal cirrus.
2nd tuft	... ...	Same as in the first but with no dorsal cirrus.
3rd tuft	... ...	1 aciculum, and 3 jointed setæ, one of which is very small.
4th tuft	... ...	1 aciculum and 1 jointed seta.

The ciliated bands and the apical tuft of cilia undergo

gradual reduction as the foundations of the fifth and the sixth parapodial tufts are laid down. The eyes persist now without having undergone any change. This stage seems to be a sort of resting period when there is no quick addition of new segments. The larva crawls about in the bottom. Constrictions appear in front of the first setigerous tuft. The vacuoles in the anterior region of the alimentary canal have disappeared; the middle and rectal portions remain green.

There is, as yet, no trace of jaws or tentacles. All the compound setæ have now slightly larger terminal blades which do not appear to be toothed. As the larva grows, greater differentiation of the parapodia becomes discernible. The dorsal and ventral cirri of the second and third segments commence to form. Two days later a median tentacle has appeared in between the posterior pair of eyes. The anal cirri have undergone greater elongation (Fig. 12). The setigerous bundles clearly show now grouping into an upper group of jointed setæ and a lower of capillary setæ in the first segment. There are only six segments with setæ, the last of which has imperfect and indistinctly formed setæ only. In the last two segments simple setæ are not present.

Eunice B.—Several atrochal larvæ of this type were noticed in the early part of March 1930. Many of these were picked out and placed in separate glasses and an almost continuous series of stages was obtained.

Atrochal Stage. (Fig. 13). The larva is very slightly broader in front than behind and measures 260 μ broad. The body is uniformly clothed by one broad band of cilia extending from almost the front end to the anus. Anteriorly there is a fine tuft of 75 μ cilia. The anus is free from cilia. A thick cuticle covers the body. A pair of eyes are present close to the anterior end. The alimentary canal is broad in front and filled with large nutrient globules; it is narrowed behind and terminates at the anus. The mouth opening can be made out with difficulty as a small circular opening on the ventral side about 1/3 of the distance from the anterior end but cannot be used as it is filled up with large food globules.

The larva passes rapidly into the next stage (Fig. 14) in about twelve hours. The single band of cilia becomes broken into a broad anterior band extending from the level of the

eyes to a little less than 2/3 of the length of the body and a narrow band encircling the body at the hind end. Minute cilia encircle the anus.

The unciliated gap slightly increases and in this gap parapodial rudiments appear. Approximately, three days after the restriction of the general ciliation to 2 bands of cilia, three pairs of setose bundles and a fourth rudimentary bundle have appeared, in regular order (Fig. 15).

In the fourth setiger condition the larva measures 385 μ long and 180 μ broad (Fig. 15). The prostomium is bluntly tapering. The anterior band of cilia extends from level of eyes to first pair of setigerous tufts. On the ventral side about half-way down the anterior band of cilia the circular mouth could be seen still in an occluded condition. The apical tuft has disappeared but the posterior narrow band of cilia still persists. In addition, distinct nototrochs of minute cilia occur. Anal styles have not yet appeared. In the interval between the two bands of cilia four setigerous tufts can be seen. The first pair are already well developed. Indications of a dorsal and a ventral cirrus can be seen. The other tufts have as yet no parapodial projections. This stage is very peculiar in the setæ not showing any indication of being jointed. The first tuft possesses three setæ. Fig. 16 shows the first parapodium of a slightly earlier stage. The succeeding tufts have three setæ. Fig. 17 shows the 2nd parapodium. Alimentary canal is broad in front, full of globules and narrowed behind. Already the dental pouch has made its appearance but there are no traces of jaws at this stage.

The 5-setiger condition marks an important stage in the development. All the 5 tentacles appear almost simultaneously. A pair of anal styles put in their appearance. Traces of jaws consisting of the mandibles and the great toothed plates can now be clearly seen. The jointed nature of the setæ is not yet quite evident. The tentacles grow very rapidly. A sixth setiger is soon added. The dental pieces are clearer and are jet black. Prostomium becomes more rounded. The already existing setæ have all become jointed (Fig. 18). In addition, a single capillary seta has appeared in the upper bundle of the first and second setose tufts.

Another pair of anal styles appear later internal to the

already existing styles. The intermediate tentacles have outstripped the others and now project well beyond the rest (Fig. 19).

In the ninth setiger condition remnants of front and hind bands of cilia still persist. Dorsal and ventral cirri have appeared in all the anterior appendages. The jointed setæ of the first setigerous tuft have large blades with 2, sometimes 3 teeth (Fig. 20). Those of the succeeding tufts have dilated ends and short blades. In each bundle one of these setæ is stouter and longer than the others of the same bundle.

By the time 12 setigerous tufts have formed the intermediate tentacles have grown much longer, are double the length of the other tentacles and extend up to the third setigerous segment. Now all the cilia have practically disappeared and the inner anal urites carry a few minute bristles. Alimentary canal has become much clearer. The larvæ creep about at the bottom. But no attempt is made by them to build tubes. Development hereafter is very slow. No more segments had been added a fortnight after the 12th setiger condition.

Hacker (1896) has described the Metatrochophore and Nectochæta of a *Eunicid* from Naples Bay. The most complete account of larval development of *Eunice harassii*, Audouin and M. Edwards has been given by Herpin 1926. There is a marked similarity between the Nectochæta stages of the Madras forms and those of *E. harassii*. Pelagic phase is very short. Even at the third setiger condition the larva has practically ceased to swim. Both the forms resemble each other in having an aciculum supporting the three setigerous bundles. In the present form, however, two pairs of eyes (Eunicid A) are present even at the fourth setiger condition and no trace of jaws could be seen and there is only one pair of anal styles even though the median tentacle has already appeared.

An account of the more advanced larval stages of *Marphysa sanguinea*, Montagu has been given by Webster (1879) and a complete account of larval development of *Marphysa gravelyi* has been given by Aiyar (1931) and the early stages of *M. teretuiscula* by Borraidaile (1900). A comparison of the larval development of *Eunice* and *Marphysa* is

very instructive. In the former up to the development of the fourth or fifth setiger, growth is rapid but then there follows a pause during which the addition of new segments is very slow and the Nectochaeta is mainly occupied with the differentiation of the parapodia and the development of the tentacles. In *Marphysa* there is a fairly rapid formation of segments while the differentiation of parapodia and the formation of the tentacles lag behind. At the 18th setiger condition in *M. sanguinea* the first tentacle alone has appeared and the intermediate tentacles appear when about seventy segments have been laid down. The same is very nearly true of *Marphysa gravelyi* also. It is a remarkable illustration of how environment can deeply influence the larval development of two closely related genera.

The early development of *Eunicid* larvæ has been described by several authors. A trochophore stage is usually omitted. There is an atrochal condition. This is followed by the restriction of the cilia to two bands, a broad anterior and a narrow posterior. In the unciliated gap between the two bands the first traces of setæ appear. Gravely (1909) however figures a Port Erin larva with the setæ showing out of the broad band of cilia.

Amongst other Eunicid larvæ described mention may be made of *Diopatra cuprea* the development of which has been described in detail by Wilson (1882), of a larva of *Lumbriconereis* by Fewkes (1883) and *Ophryotrocha* by Bræm (1893) and Korschelt (1893). *Ophryotrocha puerilis* is exceptional in being polytrochal.

Family GLYCERIDÆ, Grube.

A small family of a few genera only. They are elongated worms with numerous segments which are often bi-or tri-annulate. Prostomium conical, annulate, terminated by four small antennæ. Pharynx eversible with papillæ and with few or more chitinous teeth. Parapodia biramous except those at the anterior end which are uniramous. Branchiæ simple or branched or absent altogether. Dorsal setæ simple, ventral compound. Two anal styles. *Glycerids* are mostly creeping forms found mostly under rocks and amongst dense weeds.

There is a well developed trochophore stage followed by a nectochæta stage.

Genus Glycera, Savigny.

Glycera sp.—(Fig. 21). Trochophores generally occur in the month of January. A few only were obtained. The larva has an almost oval body, the anterior end slightly narrower than the posterior and both are blunt. The prototroch is well developed, and is placed nearer the anterior end than to the posterior. The prototrochal cilia are 28 μ long. A telotroch is present but the cilia are much less prominent than those of the prototroch. No ciliary tuft could be noticed at the front end but there is a patch of minute cilia. There is a similar but smaller patch round the anus at the posterior end. The two eyes are conspicuous and are red in colour. The mouth is very prominent on the ventral side and is placed about midway between the prototroch and the anal end. The alimentary canal is very spacious and extends into the prostomium. Two days later the larva had grown visibly larger. The patch of cilia at the anterior end has become larger and the prototroch has added to itself a few more cilia. The larvæ feed actively. And one or two were noticed to contain in the alimentary canal Coscinodisci. Development was unfortunately not traced further. Fuchs (1910) has described in detail the early development of *Glycera convoluta* obtained by artificial fertilization at Plymouth Laboratory and the Madras larva is almost identical with the one described by Fuchs. I have therefore no hesitation in referring this larva to the same genus.

Genus Eone, Malmgren.

Eone sp.—(Fig. 23). A few advanced nectochæta were obtained in the middle of the month of November 1929 and they again appeared about the same time in 1930 also. The larva measures 1,000 μ long and 350 μ broad. The prototroch still persists and the cilia are 25 μ long. Two reddish eyes are placed at the anterior edge of the prostomium.

The latter is 8 annulate and carries four 2-jointed antennæ. There is a pair of slightly flattened anal cirri.

The body at this stage is divided into 13 segments. Well-developed dorsal and ventral cirri are present. The setæ are

in two bundles and all the setæ are compound with long blades which show minute serrations when highly magnified. Some of the pre-anal segments have a row of cilia at base of parapodia and also a row of inter-segmental cilia.

The alimentary canal is distinct and consists of an eversible pharynx and gizzard followed by a wide stomach filled with nutrient globules. The rectum opens between the anal styles. The pharynx has two rows of fleshy papillæ. At the entrance to the gizzard there are two round lobes. The gizzard contains 6 chitinous curiously shaped teeth, two of which are slightly larger than the other four.

It is very difficult to refer this form definitely to any of the genera of the Glyceridæ. The characters of the setae point to its being probably the larva of *Eone*.

Family SPIONIDÆ, Sars.

Prostomium small, without tentacles or palps. Peristomium with two long tentacular cirri. Parapodia generally biramous with simple setæ. Notopodial cirri ciliated, finger-shaped and function as gills. No ventral cirri. Burrowers usually.

Genus Chaetosphaera, Hacker.

Nectosoma larvæ probably belonging to two distinct species have been captured.

Chætosphaera A.—(Fig. 25). These occur in large numbers in the months of February and March and in smaller numbers in November. Most of the larvæ encountered belong apparently to the same stage of development. The body has a robust appearance. Prostomium is small and is produced into a pointed snout which is highly contractile. Minute cilia cover the prostomium and in between these a few stiff cilia can also be seen. Two well-developed tentacles are present. There is no prototroch present at this stage but the bases of the tentacles have cilia in front. These cilia are probably the remnants of the prototroch. Two pairs of reddish eyes are present. The mouth, as is usual in Spionid larvæ, is ventral and is bounded by well-defined thick fleshy lips which show isolated black pigment spots. The lips carry no cilia now. They are capable of great divarication, and the mouth, which is

usually triangular in the normal condition, can be made to appear very much bigger. The inside of the mouth is provided with minute cilia.

Body consists of several segments, and the posterior part of the body is characteristically bent into an s-shape. There is a powerful telotroch. The anus is terminal, and is placed at the bottom of a funnel-shaped depression (Fig. 26). Parapodia are well differentiated, are biramous and are provided with a dorsal group of straight, moderately long, bristled, provisional setæ, which start from their point of insertion in the body, and project freely dorsally and upwards like the ribs of a palm leaf. Fig. 27 shows one of these setae. The setae are free from bristles at the base and at the end. The bristles are increasingly longer from bottom onwards. The lower bundle of setæ of each parapodium is in the form of smooth capillaries (Fig. 28) which do not project very much. In addition to these setæ, in the middle and the posterior segments crochets with two teeth are present (Fg. 29). The body segments are provided with powerful gastrotrochs and rather feebly developed nototrochs. Like all '*Chaetosphaera*' the larva contracts into a ball and in this position the head end is folded over the anal end. In this rolled-up condition the larva swims slowly upside down when the nototrochs can clearly be seen at the hind end. In this position they are found to be in minute groups, set in a row. Now and then the larva straightens out its hind end and swims rapidly for a few seconds and again assumes its favourite attitude.

The alimentary canal is deeply constricted between the segments giving the digestive tract a folded appearance and often has been noticed to contain two or three *Coscinodiscus*.

The shedding of the provisional setæ of the dorsal bundle is accomplished with extraordinary quickness. Isolated larvæ placed in the plankton glass at 10 A.M. had completely shed the bristled setæ by 3 in the evening. Whether this is effected with the same rapidity under natural conditions is not known.

Chætosphaera B.—(Fig. 30). This is slightly more robust than the one described and has the same habit of rolling itself into a ball. It is distinctly bluish green in colour, the pigment being concentrated in the form of transverse streaks in each

segment. The head is produced in front into a pointed process and the bases of the pair of tentacles are ciliated. A prototroch, however, is absent. A powerful telotroch surrounds the terminal anus which is placed in the middle of a funnel-shaped depression with 5 radiating dark streaks of pigment. Two pairs of reddish eyes are present. No cilia could be seen on the prostomium. The upper lip is very thick. Not much could be made out of the lateral lips but they are certainly ciliated. The body segments are all provided with clearly defined biramous parapodia. The provisional setæ persist in all segments. The dorsal groups consist of stout curved yellowish setæ which are serrate on the convex side only and of smooth capillaries in between. Lower group consists of simple smooth capillaries only. In the posterior segments peculiar setæ (Fig. 31) with excavated ends are present. Two minute teeth can be observed in each such seta.

Powerful gastrotrochs are present in most of the segments. They are however difficult to make out in one or two of the anterior and posterior segments. The gastrotrochs act in groups and have a grasping action. They are never all of them in motion at the same time. The larva keeps its rolled up condition with the spines projecting out like the quills of an angry porcupine and it is very difficult to induce it to unroll itself.

Larvæ of *Chætosphæra* have been described by Hacker (1898) and Gravely (1909). Hacker's forms are *C. falconis*, Hacker and *C. nationalis*, Hacker. *C. falconis* has two kinds of setæ. Those of the dorsal group are boomerang-shaped and are serrate on the convex side. The ventral group consists of moderately long smooth capillaries with hook-shaped end. The setae of *C. nationalis* are all curved and serrate. Hacker also figures an older form in which he shows the first segment as having curved bristled setae and the remaining segments as having long smooth provisional setae.

Gravely (1909) describes three forms of *Chaetosphæra* which he attributes to three different species. His Spionid D (*Chaetosphaera*) has stout, curved, smooth provisional setæ 300 μ long in the first segment and 200 μ long in the remaining segments. When these are shed their place

is taken by smooth capillaries similar to those of the ventral group. His second form from the Plymouth plankton has very much stouter setæ, some smooth, some serrate, and resembles strongly, as he says, one of the forms for which Hacker founded his original larval genus. His third form sent to him by Professor Herdman from Port-Erin is described as having mostly serrate setæ with a single flat seta in the middle of some of the tufts.

The Madras form *Chætosphæra* A differs from all the forms described in having straight bristled dorsal setæ in all the segments. The second form *Chætosphæra* B distinguishes itself by its bluish green colour, by strong curved serrate setæ in the dorsal bundles and by the presence of hooded hooks with two points in the posterior segments.

Fauvel (1927) places *Chaetosphaera* under Spionidae. *C. falconis* and *C. nationalis* are regarded as larval stages of Spionids the adults of which are unknown.

Genus CHÆTOPTERIDÆ, Audouin & Milne-Edwards.

Chætopterids constitute a small family of a few genera. Body is divisible into two or three regions. Prostomium is small, mouth terminal without eversible pharynx; anterior region with only a few segments with uniramous parapodia; parapodia of the posterior region biramous. Setæ are simple, smooth, often broadened in the anterior region. Posteriorly, setæ are uncinates and simple capillaries or uncinates only. Often setæ of the 4th setigerous segment of the anterior region show profound modification like the setæ of the 5th segment of Polydora.

Chætopterids are essentially tube dwellers. There is a pelagic larval period, rather prolonged.

Genus CHÆTOPTERUS, Cuvier.

Chaetopterus sp. A fine metatrochophore (Figs. 32, 33) was obtained in the first week of the rainy month of November. In the living condition the larva is about three and a half times as long as it is broad. The entire body is clothed by very fine cilia. Two powerful bands of mesotrochal cilia are present, the first occupying almost the middle of the body

and the second, similar in girth, encircling the animal one third of the distance from the first band to the posterior end.

The part of the body between the two bands is very slightly constricted. The anterior end is broad and very obtusely rounded. The head forms a hood-like structure which overhangs the very big crescentic, ventrally placed mouth. The lower lip is thick, fleshy and deeply cleft. The hood is semi-transparent, has a broad rim which carries the 3 pairs of eyes of which the posterior are only slightly larger than the others. The tentacles have commenced to form. No rigid cilia or bristles can be seen at the anterior end of the head.

The body, behind the second band of cilia, which Berneck (1893) calls the post-ciliated region, is divided into six segments and the last segment is followed by a stout cylindrical caudal appendage with faint constrictions and carrying at the end a few stiff processes, probably of a sensory nature. The caudal appendage is capable of complete retraction. Ordinarily, however, it is carried extended and is often used to anchor the animal to the side of the plankton glass. Often a sticky yellowish fluid seems to accumulate at the end of the caudal appendage and it is probably by this means that the animal now and then anchors itself. No anal protuberances of the kind which Berneck mentions are present in this form.

Three days later the larva has visibly elongated (Fig. 34). The nine segments in front of the first band of cilia have now become more distinct and the setigerous tufts of the segments are clearly seen in the extended condition of the larva. Fig. 35 is drawn from a balsam preparation and represents the nature of the setæ in this region. It will be seen that there is a general increase in the length of the setæ from the front to the hind segments. The first bristle bundle is the shortest and consists of a number of simple smooth setæ. The setæ of the next group are longer and are greatly flattened. The third bundle consists of several very yellowish broad setæ with lanceolate ends. The fourth bundle is smaller than the preceding and succeeding bundles, is more dorsal, and has one highly modified seta. (Not shown in the Fig.) The setæ of the succeeding parapodia are very much larger and broader.

Besides these simple setæ of the anterior region a pair of chitinous uncinate plates could be made out on the ventral

side close to the first band of cilia. No other plates could be made out.

Running along the middle ventral line of the larva there is a distinct longitudinal groove which starting at the base of the caudal appendage crosses the two transverse mesotrochal bands and ends in front at the cleft of the lower lip. The entire groove is ciliated; probably there is a definite current directing small organisms into the capacious mouth.

The mouth leads into a funnel-shaped gullet, which is followed by a conspicuous stomach. Then follows the intestine, with diatoms in various stages of disintegration. There is a short rectum which opens at the anus at the base of the caudal appendage.

Genus Telepsavus, Costa.

Telepsavus sp. A single metatrochophore (Figs. 36 and 37) was captured in February 1930. The larva is of dirty brown colour, is very contractile. The head is rounded, without any characteristic pigmentation. The underlip is fleshy and broadly cleft in the middle. The two halves do not stretch beyond the anterior edge of the head. Two rudimentary tentacles are already present and just in front of the base of each tentacle is a streak of brownish obliquely disposed pigment representing the eye on each side.

There is only a single mesotrochal band of cilia encircling the body slightly behind the anterior half. In the anterior region there are already 9 pairs of uniramous parapodia. The setæ are simple and flattened. A single seta of the 4th bundle is very short and stout and is curiously modified.

Fig. 38 shows the fourth setigerous bundle drawn from a balsam preparation. There are four setæ. One of these is very stout and is the modified seta. The projecting end is slightly excavated with a wavy rim which is produced into a number of blunt projections. Of the other 3 setæ, two have lance-shaped ends. One of these lance setæ is very short and the other very long, of characteristic shape. The fourth seta is slightly longer than the long lance seta and is only moderately broad. The setæ in the other bundles of the region are all more or less broadened and lance-shaped, less

so generally in the anterior than in the hind segments. The broad lance-shaped setæ are very transparent and are difficult to make out. Behind the mesotrochal band there are a few banchial lobes which show indications of being cleft. The cilia on these branchial lobes are very active and are about half the length of the girdle cilia and about 4-6 times as long as the cilia which cothe the general body surface.

In the second division of the body 12-15 segments are present of which all, except the last two or three, carry chitinous comb plates.

The second division is terminated by a short caudal appendage which is one-fourth the length of this part. No sensory bristles are present either on the head or on the caudal appendage which however carries at its very end a patch of minute cilia. There is at first no flagellum at anterior end. It develops later.

The alimentary canal is very distinct and appears as an opaque tract and consists of an œsophagus, gizzard and a coiled intestine which is very dark with food contents and a short rectum which opens on the dorsal side at the base of the caudal process. Ten days later this form had not changed very much. It had undergone a slight elongation and the setigerous tufts of the anterior region have become more pronounced. But the most important change is the development of a single long stiff flagellum at the anterior end.

Chætopterid larvæ have been described by many authors. The free swimming larva of Chætopterus was first described by Müller under the name of Mesotrocha. Claparède and Mecznikow (1869) describe larvæ of *Telepsavus costarum* Claparède, and *Phyllochætopterus socialis*, Claparède. The former larva has only one mesotrochal band and the latter two. Both possess a caudal appendage and uncigerous plates in the precaudal segments. The larva of *Telepsavus costarum* has two eyes while that of *Phyllochætopterus* six. Wilson (1882) describes in detail the very early stages of *Chætopterus pergamentaceus*, Cuvier, and an advanced stage of *Spiochætopterus*, Sars. Fewkes (1883) has given an account of several stages of the larvæ of *Telepsavus* and *Phyllochætopterus*. He also mentions two eyes as occurring in the former and six eye-spots and a long flagellum in the latter form.

Gravely (1909) describes the trochophore and metatrochophore of a Chætopterus from Port-Erin. His trochophore has at first one band and later acquires a second band of cilia and passes into the metatrochophore stage. The Madras form is apparently very much similar to the Port-Erin form but differs from it in not having a stiff cilium at the front end and in the under lips extending to the front rather late in development.

Family MAGELONIDÆ, Cunningham and Remage.

Magelonids are small slender worms with two distinct body regions, a pair of long slender palps carrying papillæ at base. There is a well-developed pharynx. Parapodia are biramous with lamelliform dorsal and ventral cirri without branchiæ. Simple capillary setæ and hooded crochets only. Anal cirri are present. Mostly bottom dwellers. There is a prolonged pelagic larval period.

Genus Magelona, Muller.

Several Nectosma of *Magelona* of slightly different degrees of development have been obtained. Two of these stages will be described.

Stage A.—(Fig. 39). Nectosoma. Palps, when fully stretched, are one-third longer than body. Mouth is widely open. No cilia are present at this stage. Larva lies quietly at bottom of glass but moves by quick contractions of the body with the palps coiled up when disturbed. Prostomium triangular with the anterior end gently rounded. Both the palps are present at this stage and show the usual differentiation into a basal portion and a terminal larval part. The proximal part carries distinct fleshy papillæ on the anterior side of tentacle, and the distal a large number of stiff processes. Each tentacle is marked by two dark-coloured rings, dividing it into three almost equal parts. Two pairs of eyes are present. Middle pair larger and concave externally.

The anterior region of the body is formed of ten segments of which the first segment has a pair of tufts of long smooth

provisional setæ of 625 μ length. The next nine segments have also provisional capillaries in the dorsal and ventral tufts. These setæ are shorter than the provisional setæ of the first segment and those of the second segment are very small. Next follow 5 segments constituting a middle region. These are provided with smooth provisional capillaries. The posterior segments have crotchets only arranged in two groups, an upper and a lower. No caudal appendage can be made out. The anus is sub-terminal.

Stage B.—This had one complete tentacle only; its companion tentacle had lost its larval part. The basal part of the complete tentacle shows a few constrictions on its anterior side and is one-eighth the total length of tentacle; the terminal part is very slender and fully covered with stiff processes all round. There are four eyes, the anterior pair wide apart, the posterior nearer together.

The provisional setæ of the anterior segments (except those of 1st) have been lost and the permanent setæ have taken their place. Specimens with the larval parts of both the tentacles completely lost are often encountered and agree in respect of the characters of the setæ with the description above given. It is not rare to meet with worms without the larval parts of tentacles but with the provisional setæ fully retained. A comparison of a number of nectosoma larvæ leads one to the conclusion that there is a great variation in the following characters:—

(*a*) The proportion the basal part bears to the larval part of the tentacle.

(*b*) The time of shedding of the larval part in relation to the shedding of the provisional setæ.

(*c*) The time of shedding of the provisional setæ of the 1st segment as compared with the shedding of the other provisional setæ.

(*d*) The number of segments (9 or 10) constituting the front region and the number (4 or 5) forming the middle region.

Claparède (1869) has given a complete account of the larval stages of *Magelona*. The youngest larva is cylindrical. The mouth is wide and has a deeply cleft ventral lip. The provisional setæ of the 1st segment are as long as the body.

In front of the bases of these setose tufts ciliary tufts are mentioned. The bristle bundles are connected by a ventral ciliary band. All the body segments, which, at this stage do not carry any setæ, have ventral bands of cilia except the last few.

Fewkes (1883) has also given a detailed account of the larval development under the name of *Prionospio tenuis*. Fewkes. Other descriptions mostly of one or two advanced stages have been given by McIntosh (1894) and by Hacker (1898).

Two mature specimens of *Magelona papillicornis* were obtained by me by dredging at 10 fathoms depth. The larval forms described evidently are the post larval stages of the same species.

Family TEREBELLIDÆ, Grube.

Body consists of numerous segments grouped into a thoracic and an abdominal region. The thoracic region is more or less swollen and the parapodia have dorsal simple capillaries and ventral tori with uncini. Abdominal region is elongated, more or less slender, often without dorsal setæ and only carrying uncini. Prostomium, which is indistinctly separated from the peristomium, forms an upper lip and carries numerous non-retractile, filiform, canaliculate tentacles. Gills pectinate or otherwise, or wanting altogether. When present they are carried on the second to the fourth anterior segments. Paleæ absent. Dorsal setae are simple capillaries, often limbate. Ventral ramus in the form of a torus carrying uncini. Anus terminal. They are all tube dwellers. Tubes of mucus or of a membrane encrusted with debris, broken pieces of shell, etc.

Genus Loimia, Malmgren.

Loimia medusa, Sav—(Figs. 40, 41). Post larval stages of this Terebellid are very common in the plankton in the months of November and June. The larva is characterised by a gelatinous case which it uses as a house.

The creature is very transparent and most of the internal organs could easily be seen. There is very little pigment except on the tentacle and the upper lip. It is very

contractile and waves of contraction pass down the body of the larva. Often it leaves the case and takes to swimming which it does by movements reminding one of the larva of a culicine mosquito. It can also turn freely in its case and appears with the tentacles showing at either of the two ends.

Various stages were obtained and from an examination of these it is easy to see that the development is identical with that so admirably described by Wilson (1928).

The earliest stage observed agrees closely with the second stage figured by Wilson. At this stage there are four tentacles. They are all cylindrical and each is marked by three pigment rings placed at regular intervals. There are 11 pairs of bristle bundles. The statocysts are clearly seen as also the larval anterior nephridia. The internal organs are quite clear and the alimentary canal is in a state of constant movement. It is held in position by muscles passing to the body wall. The upper lip is conspicuous. The mouth is perfectly distinct and at the entrance to it there is a fleshy organ which is constantly exhibiting a sort of rolling activity and to this Wilson attributes the function of fashioning the tube. It has been called the buccal organ. The bristle bundles are constantly thrust out and pulled in. On the dorsal side of the larva there is a row of minute cilia for each segment, constituting the nototroch. There are at this stage 15-16 pairs of processes ventral to the bristle bundles, carrying uncini. The larva now develops an additional tentacle (5 in all) and one or two bristle bundles are added and at this stage the first gill appears immediately above the statocyst.

The next stage examined shows a greater number of segments. There are two pairs of branchiæ and the bristle bundles are now seventeen in number, followed by segments carrying uncini only. The processes carrying the uncini in the first segments have disappeared and their places have been taken by tori with uncini arranged in a single vertical row in front and in 2 rows behind. There is very little difference between the uncini of the front and those of the hind segments. The anal processes have appeared.

Often very advanced stages having three pairs of branchiæ are encountered. They are still with their gelatinous cases. Several are, however, without them. It is very difficult to determine whether at this stage the worms leave their case of their own accord or whether they have been forced out of them by waves. The two-gilled to the three-gilled condition was not followed in the laboratory but there is no doubt that development is on the same lines as those described by Wilson for this form.

Family CAPITELLIDÆ, Grube.

Slender bodied worms with a short anterior thoracic and a longer posterior abdominal region. Prostomium conical with no appendages. With or without eyes. Mouth ventral, pharynx unarmed. Buccal segment generally achætous. Parapodia biramous but not projecting beyond the body. Setigerous bundles of capillaries or crochets. Often with modified copulatory acicula. Mostly of creeping and burrowing habits. A typical trochophore stage absent.

Genus Capitella, Blainville.

Capitella sp.—(Fig. 42). Several larvæ in advanced stages of development were obtained in September 1929, also about the same time in 1930. They are never very numerous and it requires some care spotting them. The larva is very contractile. The prostomium is rounded. There are three pairs of reddish eyes placed one behind the other on the dorsal side of the prostomium. Prototroch and telotroch are quite well developed, the latter more so. Telotrochal cilia are arranged in several rows and all the cilia are turned backwards. The body is clearly divided into 18 segments of which 16 carry setæ. No cilia have been observed in the ventral side of the body rings. The alimentary canal which is of uniform width is quite plainly visible throughout and is filled with colourless globules probably of a fatty nature. General body colouration is not in any way noteworthy. There are however scattered yellow pigment granules throughout the body wall. The first 8-9 segments carry only capillary setæ, the next 2-3 capillaries and hooded crochets, the last few carry short crochets only (Fig. 43).

It was pointed out by Claparede (1869) that in the

development of *Capitella capitata* the first three segments at first form simple capillary setæ and the rest of the segments only hooks and the rest of the final setal characters are assumed only later. It seems therefore that the present form represents a fairly late stage in development. The general arrangement of the setæ however resembles that of the genus *Capitella* to which genus I must provisionally refer this form. Eisig gives a good account of the development of *Capitella capitata* (1889).

Family SABELLARIDÆ, Johnstone.

This is a family of small worms in which the body is divisible into three distinct regions. The prostomium is indistinct and is placed between two large peduncles carrying peculiar setæ (paleæ) arranged in one to three rows. Mouth unarmed, generally surrounded by filiform tentacles or papillæ. Anterior region comprises 2 rudimentary segments with reduced parapodia carrying ventral capillary setæ only. Next 3-4 segments possess paddle-like or styliform setæ constituting the parathoracic region. Abdominal region with dorsal pectinate setæ and ventral capillaries. Simple branchiæ present on the thoracic and abdominal segments. A caudal region without segmentation and setæ. They are all tube dwellers. The free swimming pelagic larvæ are often beautifully coloured by chromatophores. There is a rapid metamorphosis after which the sedentary habit is assumed.

Genus Sabellaria, Lamarck.

Sabellaria sp.—Sabellarian larvæ are never very numerous in the Madras tow-net water. They are very small and it requires some care to detect and pick them out. They have a very graceful method of swimming with their long provisional setæ held close to the body.

A few metatrochophores were captured. Fig. 44 shows this fine larva. There is quite a broad anterior and a gradually narrowing body. Seven segments could be made out in front of the telotroch which has become well developed. While the front segments are separated by distinct grooves, the hind segments are marked by transverse rows of greenish

pigment spots. The prototroch consists of two rows of powerful cilia of which the cilia of the posterior row are only one-third as long as those of the anterior row. It is interrupted ventrally. Two pairs of eyes are present; of these the anterior are slightly the larger and in between several irregular chromatophores are present. In front there are a few short stiff cilia arranged in minute groups. The mouth is quite conspicuous on the ventral side and the lips are provided with powerful cilia. The upper lip is still provided with long cilia. The provisional setæ are mostly very slender, some fairly stout, all with wings. The setæ measure 250 μ. Unfortunately observations of the next stages were not complete.

Just before the onset of metamorphosis the larva begins more and more to frequent the bottom. The assumption of a tubicolous habit is very rapid. An examination of a metamorphosed larva shows the following characters.

The worm has elongated. The tail has become bent underneath. The umbrella has become shrunk completely.

At the base of the setigerous sac 3-4 pointed spines have appeared and are visible when highly magnified. 3 parathoracic segments have appeared. Ventral bundle consists of 3 flattened setæ of which 1 is bayonet-like, the upper bundle of 3-4 setæ, all more elongated but less flattened than those of the ventral.

Abdominal segments 3, with 5, 3 and 3 uncini. Other details of development were not observed.

Though the larvæ of Spionidæ are easily recognised by the large provisional setæ on the 1st segment and a large ventral vestibular depression, considerable confusion has been caused by the close similarity of the early larval forms of *Polydora* and *Spio* on the one hand and the Sabellarian larvæ on the other. True Sabellarians have been described as belonging to *Polydora* and *Spio*. These facts have been clearly set forth by Wilson (1929) in his recent paper on the development of *Sabellaria spinulosa*.

The differential characters of the larvæ of Sabellaridae and Spionidæ are given by Caullery. (1914)

ARCHIANNELIDA.

FAMILY POLYGORDIDÆ, E. PERRIER.

A primitive group of slender worms belonging to a few genera. Body slender, cylindrical, with external segmentation indistinct. Ciliated organs may be present. Parapodia, if present, very rarely with setæ. Tail swollen or bifurcate. Hermaphrodite or with sexes separate; generally marine. Larvæ typical trochophores.

GENUS Chætogordius, MOORE

Chætogordius sp. On 15-11-29 and a second time on 19-12-29 (both rainy months) swarms of a peculiar kind of intensely green larvæ looking like those of Polychaets were noticed in tow-net water. On both occasions they continued to be common for about ten days after which they, as suddenly, disappeared only to reappear about the same time next year.

They were all metatrochophores and easily metamorphosed into young worms. The youngest larva (Fig. 45) is broad and rounded in front, narrow behind and measures 375 μ long and 250 μ broad at the broadest point. 12-15 segments could be observed. Prototroch and telotroch are well developed. The prototrochal ring seems to be composed of four rows. The cilia of the first row are best developed and are directed forwards and measured 45-50 μ long. The cilia of the middle two rows are rather coarse, project straight outwards and are not very active but are often seen to work independently. The cilia of the last row are shorter than those of the first and are directed backwards. The cilia of the telotroch are coarse, more like flat bristles and when stretched backwards do not quite reach the posterior end.

A pair of eyes are present close to the anterior end.

The larva is very contractile and swims with a curious jerky movement. Often, the part of the body in front of prototroch is withdrawn into the succeeding part and then slowly pushed out. The pharynx is clear and leads into a broad stomach filled with nutrient globules. The stomach

leads into a short intestine which opens at the anus situated between two lobes.

In the contracted state of the larva, setæ cannot be made out but when the larva stretches itself out (Fig. 46) after the manner of a leech, the setæ, which are normally deeply imbedded in the body wall, are pushed out and can then be easily made out. There are no parapodial projections of any kind and there are three setæ in each bundle (Fig. 47). Of these one is more slender than the other two and projects beyond the others which are short and broad. All the setæ are peculiar in having their distal portion distinctly channelled.

The larva grows rapidly and new segments are rapidly added. The distinction between pharynx and stomach is yet more pronounced. The intense green colour of the body (Fig. 48) in general, and in the stomach and intestine in particular, still persists. A pair of tentacle rudiments have commenced to form but they seem to be so delicate at this stage that they appear more as a fold than otherwise. There is as yet no change in the ciliary apparatus. The larva now measures 1,600 μ long and 620 μ broad and possesses twenty-three to twenty-four segments (Fig. 49). The tentacles rapidly grow longer.

Further development is still more rapid. The loss of cilia is accomplished quickly; the tentacles now present a jointed appearance. The larva has now the form shown in Fig. 50. It has ceased to swim and has taken to groping at the bottom of the glass. In this condition the body measures 1500 μ long and 125 μ broad and the tentacles measure 935 μ long.

A larva similar to that depicted in Fig. 45 was described by Milne-Edwards (1844) as an *Amphinome*. Claparede and Mecznikow (1869) give an account of a similar larva from the Crimean coast and described it under 'unbestimate Spioniden larven'. Later St. Joseph describes and figures a very similar larva and refers it to *Saccocirrus papillocercus*. There is a very great similarity between the present form and that figured by St. Joseph but they cannot be identical. His figure shows four eyes and fairly distinct lower lips. He also shows a pair of 'fossettes' behind the anterior cilia. These 'fossettes' are absent in the present form. There is however

great similarity in the setæ. But in the young worm of the present form there are no parapodial projections at all. It cannot therefore belong to *Saccocirrus*. Very probably it belongs to *Chætogordius* (Moore). It is not however *Chætogordius canaliculatus* as in the Madras form setæ are present in all the segments.

LIST OF FIGURES.

Plate I.

1. Phyllodocid A × 125
2. Phyllodocid B × 125
3. Nectochæta B × 125
4. Nephthys × 125
5. Nectochæta of Nephthys
6. Slightly older larva.
7. Nectochæta with ten parapodia.
8. A very young Nephthys—slightly pressed under the cover slip.
9. Eunicid A × 40
10. Nectochæta with ten pairs of parapodia × 40
11. First foot of worm with five setigers. × 200

Plate II.

12. Eunicid A. with five setigers. × 40
13. Eunicid B. Atrochal stage. × 40
14. Eunicid B. slightly later stage with two broad bands of cilia. × 40
15. Young Nectochæta. Eunicid B. × 40
16. First foot of Nectochæta before setæ become jointed × 200
17. Second foot of the same. × 200
18. Young worm with six setigers and all tentacles formed × 50
19. Head of a more grown up worm, with tentacles fully formed. × 50.
20. Jointed setæ from an anterior segment.
21. Young larva of Glycera.
22. The same with Coscinodiscus.
23. A fully grown larva of Eone. × 20
24. The same, proboscis shot out.

Plate III.

25. Chætosphæra A, side view.
26. The same ventral view—all setæ not shown.
27. Straight bristled seta of Chætosphæra A × 50

28. A capillary seta from the dorsal bundle. × 200
29. A crotchet of Chætosphæra A from a middle segment.
30. Chætosphæra B. curved setæ alone shown.
31. Crotchet seta from a posterior segment of Chætosphæra B. × 200
32. Chætopterus sp. slightly extended. Ventral view × 30
33. Chætopterus sp. contracted condition. × 30
34. Chætopterus sp. Dorsal view. × 30

Plate IV.

35. The setæ of Chætopterus sp. 4th parapodial setæ not shown. From a balsam preparation. × 200
36. Telepsavus sp. Dorsal view.
37. Telepsavus sp. Side view.
38. Fourth parapodium of Telepsavus. Balsam preparation. × 200
39. Anterior end of Magelona papillicornis. Ventral view. A single pair of eyes alone visible from this side.
40. Loimia medusa; contracted state; slightly diagrammatic.
41. The same in 'house'.
42. Capitella sp.
43. The setæ of Capitella sp.

Plate V.

44. Larva of Sabellaria sp. × 100
45. Chætogordius; early stage. × 40
46. The same slightly extended. × 40
47. Setæ from two adjacent segments. × 200
48. Three segments to show pigmentation.
49. Later stage.
50. Young worm. × 100

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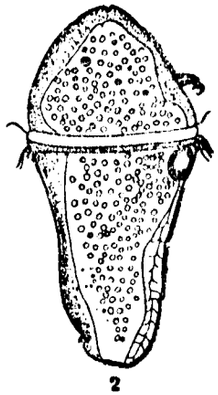
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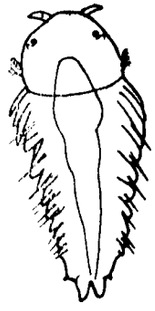
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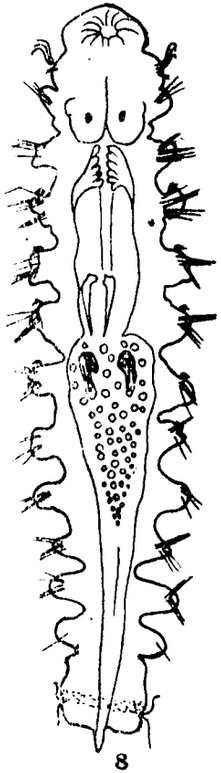
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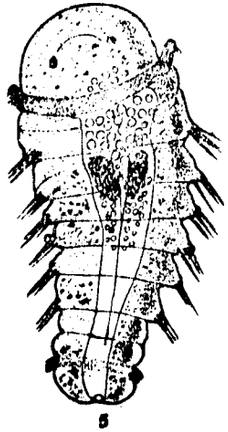
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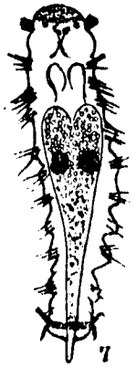
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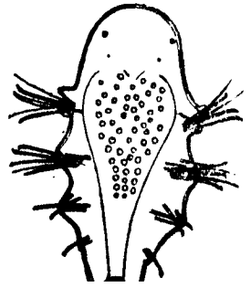

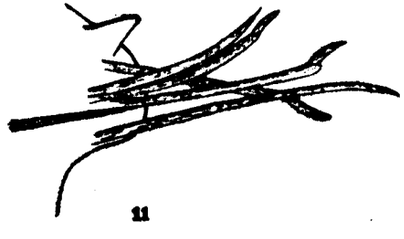
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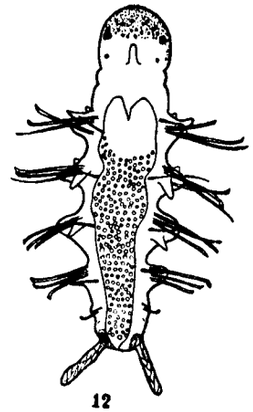
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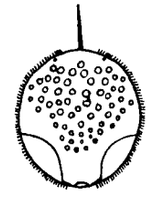
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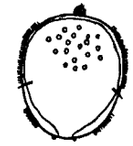
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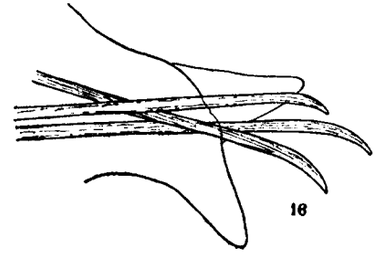
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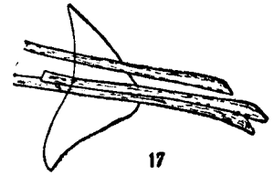
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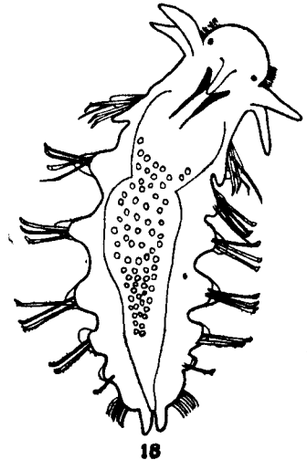
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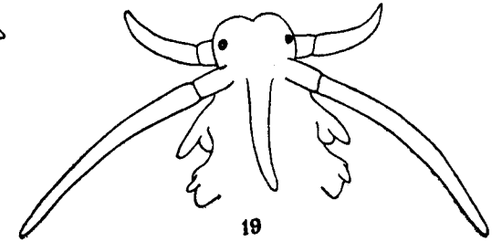
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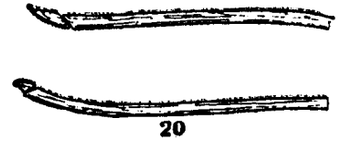
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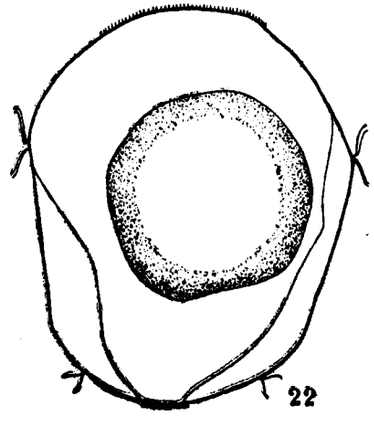
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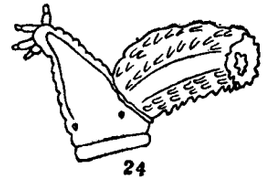
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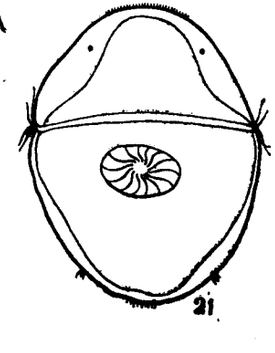
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PLATE III

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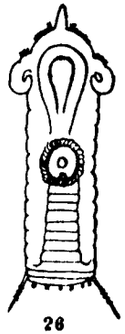

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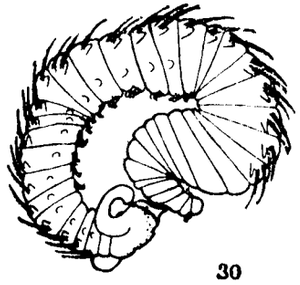

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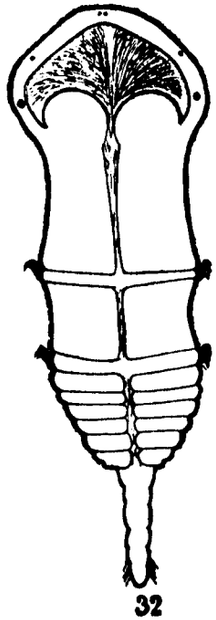

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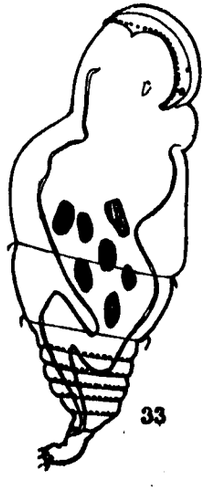

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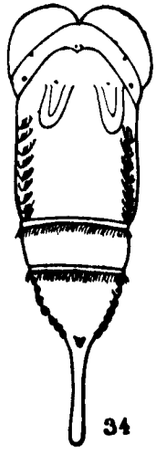

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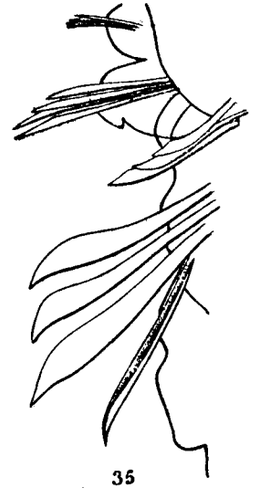
PLATE IV



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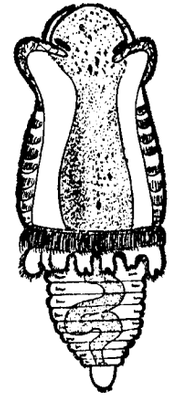

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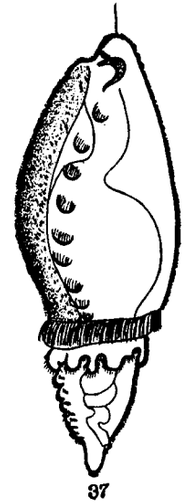

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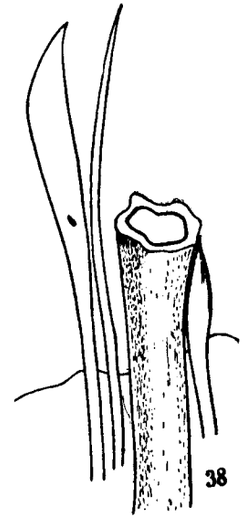

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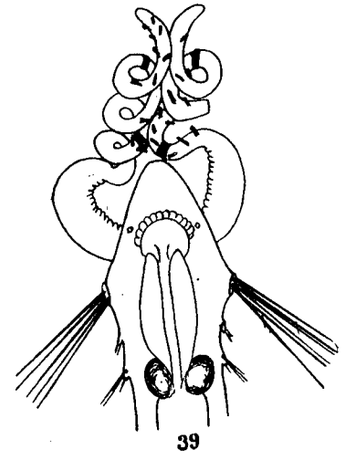

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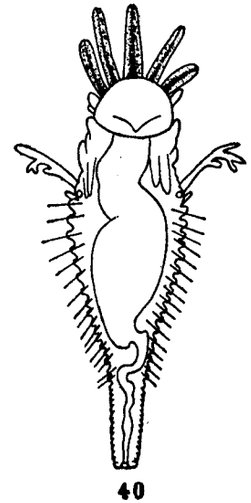

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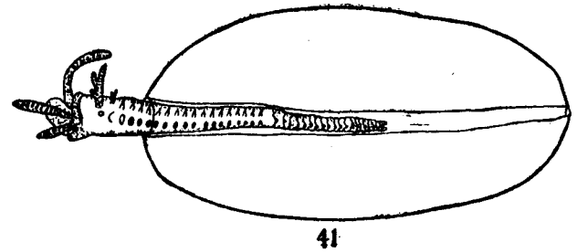

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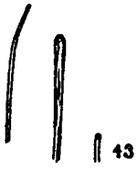

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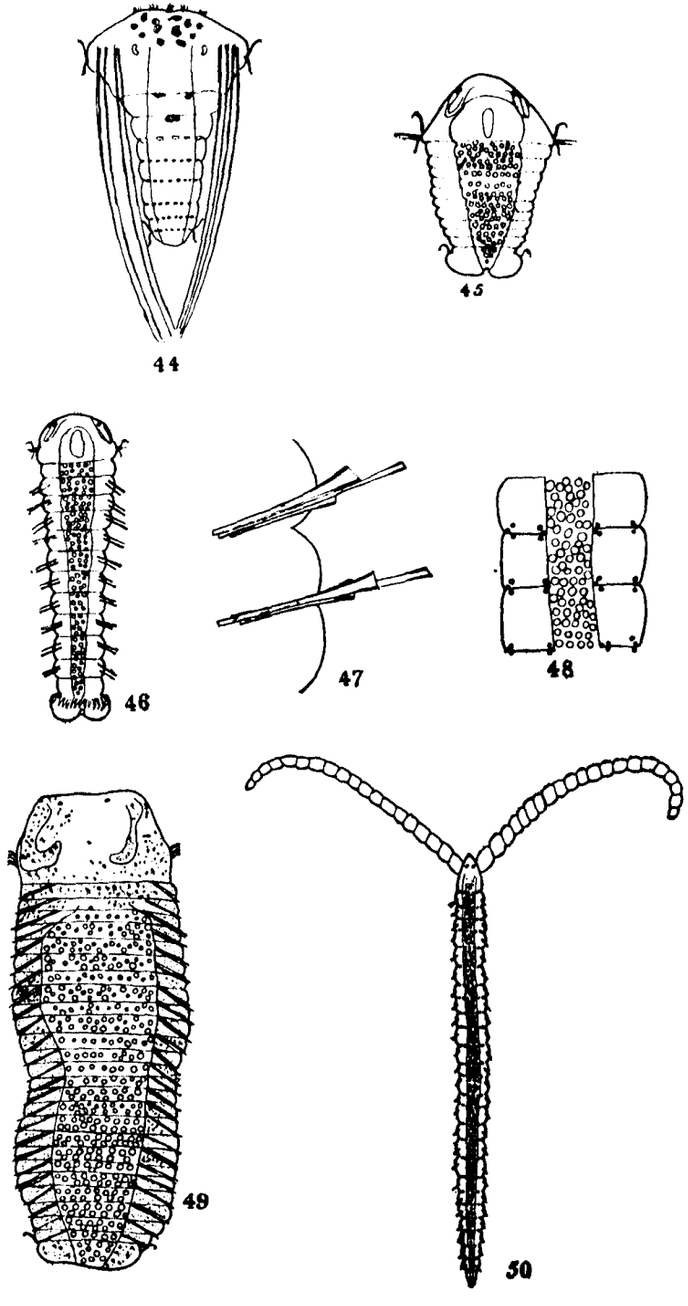
PLATE V



UNIVERSITY NOTES

Diwan Bahadur Sir K. Ramunni Menon, *Kt.*, M.A. (Cantab).

The honour which has been bestowed upon our Vice-Chancellor, Sir K. Ramunni Menon, M.A., is an honour which we consider not only bestowed upon Sir Ramunni, but also upon the University of Madras of which he is the chief executive officer. It is customary in the Universities of the West for the King to honour the Vice-Chancellor by conferring the knighthood, and it has been a matter of some surprise that India has been so slow in receiving such recognition, but the recognition even at this stage is none the less welcome.

To Sir Ramunni belongs the distinction of being the first Vice-Chancellor to be knighted under the new constitution of the Madras University, and it is a signal tribute to one who has sought the lesser shades and has throughout a life of considerable educational activity studiously avoided the limelight that the honour now conferred upon him should come during his year of Chairmanship of the Inter-University Board in this country and when still occupying the office of Vice-Chancellor in a University which has shown a very large development on its research side since the passing of the Madras University Act of 1923.

His urbane manner, his capacity for long and sustained work and his keen sense of duty have earned for him a respect and consideration not shown to many; and one feels that although he may now be privileged to be no longer addressed as an ordinary man, he will always remain a gentleman.

Our appreciation is none the less sincere in knowing that there are still years of ripening usefulness lying before Sir Ramunni and that Education and particularly University Education will obtain his wise counsel in the days of development that lie ahead.

Madras University is passing through a period of great expansion and its many schemes of development will receive

able and cautious guidance from one who during his long connection with the University has gathered round his name a reputation for financial ability and grasp of detail.

W. M.

Late Rev. William Meston, M.A., D.D., D.Litt.

De Mortuis Nil Nisi Bonum

By the sudden death of Dr. Willian Meston on the 12th January 1933 at his residence in Edinburgh, death has removed one of the ablest educational administrators and a lovable personality. Willian Meston spent a long career of over 30 years in the service of Indian education and in like manner as his distinguished brother gave his unstinted services to this country so gave he unselfishly of his best. The son of James Meston, the Registrar of old Aberdeen, Dr. W. Meston received his early education at the Grammar School in that city, graduating later, at Aberdeen University, with First Class Honours in Philosophy, and it was as Professor of Philosophy that he made his début as a Professor at the Christian College, Madras, and he still retained a keen interest in that subject especially Psychology—even when in after years he was teaching the subject of English in the Madras Christian College. He was Principal of the Madras Christian College from 1923-1928, and served as member of the Academic Council, Syndicate and Senate of this University. It was during his term of office as Principal that the scheme of transferring the Madras Christian College to Tambaram as a residential college was launched and he lived sufficiently long to see the work of building the science block of the new buildings at Tambaram commence.

He had a wide grasp of educational problems and was an authority on elementary education and its many problems in India. His sound common sense, ability for quick despatch of business and in getting to the heart of a problem together with his rare sense of humour will ever be remembered by those who came in contact with him in University affairs. His hearty laugh, unrestrained and boyish, brightened many a dull sitting. But perhaps he will best be remembered for his sincerity and deep interest in this country. He remained at

all times 'a friend of India', and left it his best in 1928 when he knew that India had taken its toll of a life ungrudgingly spent in its service and that there lay before him at the most, only a few more years in a cooler clime. The heart affection which compelled him to leave India in 1928 compelled him to spend his remaining days in retirement, but through correspondence—and he was a strenuous correspondent—he kept up and showed that he still had a deep interest in Indian affairs. Madras University is the poorer for his loss and our sympathy goes out to his devoted wife.

W. M.

New Appointments

We are glad to announce that Professor R. Gopala Ayyar, M.A., M.Sc., L.T., and Dr. M. Damodaran, M.A., M.Sc., D.Sc., F.I.C. have been appointed Directors, respectively, of the new Zoological and Biochemical Laboratories. Mr. Gopala Ayyar was hitherto Honorary Reader in Zoology, and now becomes Professor. We wish them both many years of useful work in the University.

The following gentlemen who have been lecturing on the subjects noted against each have been reappointed for the academic year 1933-34:—

Geography.—Mr. George Kuriyan, B.A., B.L., B.Sc. (London), Lecturer.

Indian Music.—Vidwan K. Varadachariya, Lecturer. Mr. Parur Sundaram Aiyar, Violin Asstt. Mr. Udaya Varma Raja, Veena Asstt.

Publications

The following publications have been recently issued:—

1. *Mauryan Polity* (University Historical Series No. VIII) by Mr. V. R. R. Dikshitar.
2. *The Historical Inscriptions of Southern India and Outlines of Political History* by Robert Sewell (University Historical Series No. V) edited for the University by Rao Bahadur Dr. S. Krishnaswami Ayyangar.
3. *Studies in Cola History* by Mr. K. A. Nilakanta Sastri (Historical Series No. VII).

4. *New Light on Fundamental Problems* by Mr. T. V. Seshagiri Rao Nayudu (Ph.D. Thesis).
5. *The Chronology of the Early Tamils* by Mr. K. N. Sivaraja Pillai.

The Syndicate has also sanctioned the publication as Bulletins of the Departments of the University the following works of Research Students :—

1. Botany Department :—
   'The Studies on Isoetes Coromandelina L', by the Director and Mr. T. N. Venkatanathan.
   'On the effects of poisons and other substances on absorption of water and transpiration in cut roots', by the Director and Mr. I. Madhusudhana Rao.
2. Indian History Department :—
   'Some aspects of Vayupurana' by Mr. V. R. R. Dikshitar.
   'Prataparudra of Warangal' by Mr. M. Rama Rao.
   'Mody Manuscripts in the Saraswathi Mahal Library, Tanjore' by Mr. R. S. Shelvankar.
3. Indian Economics Department :—
   'Handloom Weaving in South India' by Mr. K. S. Venkataraman.
   'Rural Credits in Chingleput' by G. Gopala Rao.

University Extension Lectures

The Syndicate has constituted University Extension Boards to arrange for popular and extension lectures in Madras and in important mofussil centres. Such Boards have been constituted at Madras, Trichinopoly, Madura, Trivandrum, Ernakulam and Mangalore. Courses of lectures have been arranged and in some places several lectures have already been delivered. The Madras Committee has drawn up a formidable course of lectures, and some of them are by administrators of standing.

University Students' Union

The University has opened from the 1st November 1932 a 'University Students' Union' with a view to promoting the

social, literary and athletic activities of the students of the University. Arrangements have been made for indoor and outdoor games.

Endowments

The Syndicate has accepted the following endowments :—

(1) From the Hon. Diwan Bahadur G. Narayanaswami Chettiyar for founding a prize in the name of Eric Conran Smith, I.C.S., to be awarded to the candidate who stands first among the successful candidates of the year who qualify for the B.A. Degree in History and Economics (Group IV-A).

(2) From the Secretary, Hemingway Memorial Committee, Madras, for founding a scholarship in the name of Mr. F. R. Hemingway (I.C.S.), who was for a long time Registrar of Co-operative Societies, Madras, to be awarded to the candidate who, after passing the Intermediate Examination, proceeds to study for the B.A. Degree in Group (IV-B) Economics and History.

Senate House,
8th December, 1932.

REVIEWS

THE LAW OF TORTS by S. Ramaswamy Iyer, B.A., B.L., with a preface by Sir William Holdsworth, Butterworth & Co. (1932).

It is a long time since a text book so useful as this has been published in India. Lecturers and students in colleges know only too well the vast mass of law books that come out every year particularly north of the Vindhyas, for making the work of the students easy. Writers of such books cannot be unaware of the great harm they are doing to the proper study of the law. Lecturers know that advice against the study of such books by itself is futile. The only effective way of combating this is by putting in the hands of students books written by eminent men for the use of students of law. Very few students use cram books for the study of the law of contracts mainly because an excellent text book like Anson's Law of Contracts is available. It is not at all improbable that Mr. Ramaswami Iyer's book will occupy a somewhat similar place with regard to the Law of Torts at any rate in this country. Even though it is hardly six months since the book was published, it is already deservedly popular particularly since it has received the imprimatur of the University.

Text-books written by persons who have had experience of lecturing to students and of appreciating the difficulty which students and lecturers feel in understanding and explaining the main principles of any branch of the law, have a special value of their own. Mr. Ramaswami Iyer has had this experience and every chapter of his book indicates the advantage of that experience. Two special features of this book so far as Indian students are concerned are noticeable. Wherever necessary the writer has given a brief summary of the history of the evolution of a principle or rule of law: this is very useful to Indian students who are not generally required to study the history of English Law. He has also attempted to consider the growing mass of Indian cases on this subject.

Looking at the author's preface after reading the book, one cannot help feeling that he might have acknowledged the debt which every student of law owes to such famous text books on the subject as those of Salmond and Pollock. Indeed with regard to the arrangement of the Chapters it looks as if the author was actuated more by a desire to make his book strikingly different from others than by a consideration for the needs of the students or the requirements of the subject. One can think of no other reason for making the chapter dealing with principles of liability the 13th one in the book. Chapters 13 to 15 ought to come immediately after chapter 1, in which case a great deal of what is contained in these chapters need not be repeated while dealing with specific wrongs. It also appears to be inartistic to put the chapter dealing with wrongs to Moveable property between those concerning Immoveable property and Nuisance.

S. GOVINDARAJULU.

MAHABARATHA (Southern Recension). Critically Edited by Professor P. P. S. Sastri, M.A. (Oxon.), Vols. I, II, III, VI & VII; Price Rs. 4 per Volume. V. Ramaswamy Sastrulu & Sons, Madras.

The Southern Recension of the Mahabharata has long been known to scholars, but no authoritative edition of the same has been available so far, though Dr. Winternitz projected an edition as early as 1898 and published some preliminary studies in the *Indian Antiquary* for that year. The Kumbakonam edition (1906-1910), though professing to be mainly based on South Indian Mss., is remarkable only for its comprehensiveness, mixing together, as it does, both Northern and Southern Recensions. A critical edition of the latter having long been a necessity, the presnt venture deserves hearty welcome and encouragement. Those who see the five handsome volumes before us will realise both the magnitude of the task and the way in which it has been growing in the hands of the learned and capable Editor. Prof. Sastri makes out a strong case in his scholarly introductions for considering the Southern Recension as more ancient an authentic, and probably nearer to Vyasa's original version. Even those who may not go the whole way with him cannot

but grant the force of his arguments. The tradition of European scholarship posits three stages in the development of this epic, from a stage of 8,800 verses through one of 24,000 verses to the present stage of nearly 100,000 verses. Against this has to be set the almot continuous Indian tradition dating from the earliest times (as shown in the Introduction of Vol. II) that the work always contained 100,000 verses. The support Prof. Sastri gains for his position from such very different sources as Dion Chrysostom, Nannayya and Vadiraja (the earliest known commentator on the Mahabarata) is, to say the least, striking. The belief that the fuller version is always the later and the less trustworthy has too long exercised the minds of Indologists; it is surely high time this myth is exploded.

In constituting the text, the sound principle has been followed of conformity to what appears to be the most reliable manuscript while giving all notable variants; this is more satisfactory than conjectural reconstruction. Detailed tables of contents, elaborate indices and a concordance exhibiting the additions and omissions differentiating the two recensions are a few of the noteworthy features, which make the edition valuable to the scholar.

The rapidity with which these five volumes have come out augurs well for the early completion of the work. The publishers deserve to be congratulated on the excellence of the get-up, as well as their enthusiasm in these days of depression. It is to be earnestly hoped that their venture will be justified by a full measure of patronage from scholars and libraries.

S. S. S.

VOCATIONAL EDUCATION, by N. S. Subba Rao, M.A., (Cantab.), Bar.-at-law, Director of Public Instruction, Mysore, pp. 62.

This nice little book is a reprint of the interesting papers recently contributed by the author to the Educational Supplement of the 'Hindu'. The subject is one of exceptional interest to economists as well as to educationalists, and it is but meet that an economist who is also an educational administrator should deal with it. Although Mr. Subba Rao wants

his little book to serve merely 'as a starting point for further discussion on the subject' and calls it merely 'notes' (p. 59), we may assure him that he has not only stated the problem but has tackled it on right lines. It is also noteworthy that vocational education is dealt with in the book as a part of the question of Economic Planning, to which the author is now giving attention.

SHAKESPEARE CRITICISM from the Beginnings to 1765 by Professor V. K. Ayappan Pillay, B.A. (Oxon.). Blackie & Sons, 1933.

We are glad to note that Blackie & Sons have published the six University lectures delivered by Professor Ayappan Pillai, and published serially in the Journal. 'Professor Pillai has made a procession of critics pass vividly before our eyes: a procession including honest Ben Jonson, Milton, Dryden, the egregious Rymer, Addison, and Steel, Pope, Theobald, Warton, Gray, and Samuel Johnson.'

GAUTAMA BUDDHA, by N. K. Venkateswaran, M.A., L. T., Trivandrum. The Educational Publicity Co., Francis Joseph Street, Madras. pp. 73.

This is an exceptionally interesting study of the life of one of the world's greatest thinkers. Gautama's story has been told by numerous writers, but few of them are written in such an attractive style.

HANDBOOK OF STUDY AND TRAVEL for Indian Students going Abroad. Compiled for International Student Service by P. D. Ranganadhan, B.A., Secretary (I.S.S), for Indian Students abroad, with an introduction by Harold J. Laski, M.A., Professor, London University. Association Press, Y.M.C.A., Calcutta.

In this book, the author has collected together valuable information about universities in Great Britain, Ireland, France, Germany, Italy, Switzerland, Austria, and the United States of America. Such information is now hardly accessible without much laborious searching through university calendars and handbooks, many of which are not available in India. Not only does Mr. Ranganadhan supply information about studies, but he gives valuable hints about sports,

travel, and other activities connected with student life. He insists on Indian students going abroad with a specific objective and not merely for the vague purpose of 'research' or just another degree. Otherwise, they will waste their own time, their teachers' time and their parents' money. The introductory note by Prof. Laski is valuable as he is one who, as he says, 'recognizes no boundaries to the community of international scholarship'. The book deserves to be in the hands of all students who propose to go abroad.

AN OUTLINE OF ECONOMIC THEORY by R. M. Joshi, M.A., B.Sc., I.E.S. (Professor, Sydenham College of Commerce), pp. 112.

This is a reprint of 7 lectures delivered by the author to the members of the Indian Institute of Bankers, at Bombay. The author says: 'I have deliberately called the book AN OUTLINE OF ECONOMIC THEORY. It is not a synopsis. It is not a cram book for examination purposes. It is, of course, not a text-book on the subject. It just claims to be an outline of it.' Mr. Joshi has a vigorous style both in writing and speaking, and his *Outline* is a suitable book for beginners in Economics. We wish it were longer and fuller, and we hope that it would become such in the next edition.

ACKNOWLEDGMENTS

1. *A Primer of Indian Logic*, by Mahamahopadhyaya S. Kuppuswami Sastri. P. Varadachari & Co.
2. *Mauryan Polity*, by V. R. R. Dikshitar, M.A. (Madras University).
3. *The Historical Inscriptions of S. India*, by Robert Sewell, edited by Dr. S. Krishnaswami Aiyangar (Madras University).
4. *Studies in Cola History*, by K. A. Nilakanta Sastri (Madras University).
5. *New Light on Fundamental Problems*, by T. V. Seshagiri Rao (Madras University).
6. *The Chronology of Early Tamils*, by Mr. K. N. Sivaraja Pillai (Madras University).
7. *Education and the Spirit of Man*, by Francis E. Pollard (George Allen & Unwin).
8. *An Idealist View of Life* (George Allen & Unwin).

EXCHANGES

1. *Cambridge Economic Bulletin*, Nov. 1932.
2. *Journal of the University of Bombay*, Vol. I, Parts I and III.
3. *Calcutta Review*.
4. *Journal of the Annamalai University*.
5. *Half-Yearly Journal of the Mysore University*, Vol. V, No. 2.
6. *Madras Agricultural Journal*.
7. *Mysore Economic Journal*.
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