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THE CHIEF PREVENTIBLE BLINDING DISEASES OF CHILDHOOD

Dr. Elizabeth Matthai Lectures 1933-34 (Madras University)

BY

Lt.-Col. R. E. WRIGHT, C.I.E., I.M.S.

Professor of Ophthalmology, Medical College, and Superintendent, Govt. Ophthalmic Hospital, Madras

(Member, International Association for the Prevention of Blindness, and Member, International Council of Ophthalmology)

(Continued from Vol. VI. No. 2 on page 172)

LECTURE II

CONGENITAL SYPHILIS

The syphilitic affection of the eyes which is responsible in some cases for causing blindness in children is known as parenchymatous keratitis, interstitial keratitis, or uveitis anterior. It is one of the most important of the stigmata of congenital syphilis and is included in the triad of symptoms and signs which Jonathan Hutchinson, the great clinical syphilologist described as most characteristic of this condition, the other two being deafness and the peculiar shape, spacing and notching of the teeth, since known as Hutchinson's teeth. As a matter of interest I may mention that we seldom observe the deafness of this triad in our out-patients department. Only a few weeks ago I had the opportunity of examining one hundred deaf mutes in the School for the Deaf, Mylapore, Madras, and did not find an instance of congenital syphilis. But this triad alone does not give us the whole picture of congenital syphilis as we meet it. Frequently children coming to the hospital with this chronic inflammatory condition of the cornea are unmistakable as congenital syphilitics the moment they are seen. They always present one or more of the other common stigmata which go to make up the syphilis facies. The skin of the face is inclined to be thick and lined, the face itself is narrow and pinched, the frontal eminences prominent, the bridge of the nose flattened, and the nose tip-tilted by contrast, giving a sunken appearance to the face below the brows. The eyes when affected show a bluish haze, the teeth are irregular, spaced, and notched, the palate highly vaulted. The knee joints may be

swollen and contain more or less fluid but are not necessarily painful. The body is undersized and thin, although the child is often precocious. It would be unsafe to diagnose congenital syphilis by the appearance of the teeth and palate alone because we frequently see non-syphilitic children with similar abnormalities of teeth and mouth, but interstitial keratitis itself is characteristic when examined under magnification. It always affects the two eyes, but not necessarily together. A feature of the keratitis is the blue haze which seems to show up more in the Indian eye than the pink crescent or salmon-patch due to deep vascularization of the upper part of the cornea, which is so characteristic in the lighter coloured eyes of Europeans. The affection in the eye however is not confined to the cornea, there is also a deep inflammation due to the infection of the pigmented coats and it is the iritis and choroiditis which frequently do the greatest damage in this affection. Our Indian cases also commonly have massive pale inflammatory deposits on the back of the cornea. We see quite a large number of congenital syphilitics year in year out ; for the last ten years the figures averaged 30 cases in approximately 20,000 out-patients per annum, but this is a considerably lower frequency than that given for ophthalmia neonatorum. Relatively few instances are seen in babies and then only when they are in an advanced stage of marasmus and quite likely to die. Those children who survive the general effects of the congenital disease very often find their way to the hospital, if and when eye symptoms appear. Although interstitial keratitis is not common in the first five years, being far more frequent in the next 15, still we may regard it as a disease of childhood inasmuch as the infection required for its production is there at birth. But no matter at what age the eyes show the hereditary taint, the numbers which we see rendered blind by this affection in any one year is relatively small. Many of them now-a-days respond to treatment with organic arsenic intravenously and recover a considerable amount of sight. I do not suppose more than three or four children in any one year would be noted as blind or practically blind of this affection. We see then that congenital syphilis is not so important a cause of preventible blindness in children as some of the other conditions we have been considering. This does not mean that syphilis, congenital and acquired, is not to be regarded as one of the greatest causes

of preventible blindness at all ages; it is one of the greatest single causes.

The whole clinical picture of syphilis has been modified here in the last thirty years largely owing to the arsenical method of treatment started by Ehrlich and the more modern combined methods, so that more of our serious eye disease is seen after the fourth than in the earlier decades, but with such considerations however interesting we are not now concerned.

Prevention:

The prevention of the syphilitic blinding diseases of children resolves itself into prevention of the disease in the adult population. This is a most important matter as probably every responsible member of society knows. They also ought to know that syphilis is essentially a disease which is very amenable to treatment and although gonorrhœa is more elusive, it too is amenable to treatment when taken in time. A third thing, which every member of the Madras general public ought to know is that Government has a special or venereal branch of the medical department which practises all the most up-to-date methods of dealing with these two diseases, is in touch with the great modern venereal clinics in Great Britain, is capable of employing the most up-to-date tests, and is ready to do all this free and privately. Unfortunately since this scheme was started as a routine efficient machine it has got a little out of the limelight, it is no longer as fashionable as it was some years ago to attract attention by rushing to get a seat in the front row at a venereal or social hygiene meeting. Government too has cooled off a little and the machine which was modelled on Mr. Lees' organisation in Edinburgh, and was to have been extended to the remotest parts of our Presidency, is in places very hard up for bare necessities and without them in many more. While this 'out of sight out of mind' slump has been attacking our anti-venereal campaign, it has become fashionable to publicly boost and collect both money and men to tackle social diseases which are not nearly so important and which are in quite a different category such as tuberculosis and leprosy. These would tend to die a natural death with the betterment of social conditions, and the advance of civilization, whereas the venereal diseases march hand in hand with civilization; at least they have done so up to quite recently and will again if the general public allows its perspective

to be distorted and its money diverted into less important channels by enthusiastic lay workers, uninformed city fathers, or even a benign Government. I do not mean to infer that the combat of social evils of any sort is not worthy of energetic effort. It is the lack of perspective in social effort and good work which is so defective. Perspective is most important in all prevention work if effort is to be properly directed. It is of particular interest to those of us who deal with vision that the realisation of perspective revolutionised the painting of the Italian Renaissance. It came in a wave of enthusiasm, gradually settled down and has remained ever since as an ordinary feature of that art. If we could only have such a burst of enthusiasm in the realm of local mental perspective it would do much to co-ordinate and enhance the value of the various efforts to correct social evils.

Small-pox

One of the most important diseases giving rise to an acute ulceration of the cornea which frequently results in blindness is small-pox. We may well consider it as a preventible disease of childhood because protective vaccination against small-pox is supposed to be carried out in the first year of life, and theoretically we may expect to meet with the more severe forms of rash on the face associated with ulceration of the cornea in the period before vaccination. This does not quite follow however, as some of the children are not vaccinated at all and others are not vaccinated successfully. Of course even the unvaccinated may escape till quite late in life so that the blindness due to small-pox is not by any means confined to children or adolescents. It is not possible to estimate the number of persons rendered blind by this affection even in a hospital population. We can only try to get an approximate idea in this way. If we take an average for four years of the number of eyes seen with scars of the cornea which have resulted from ulceration of one sort or another, we find that the figure is about 806 cases in 20,000 out-patients. This figure is made up of the number of cases diagnosed as nebulæ, leucomata, and staphylomata of the cornea. An attempt to analyse these in 1929 showed that of 726 opacities of the cornea (the leucomata and nebulæ)

59 followed small-pox.
2 „ ophthalmia neonatorum.

92 ,, irritant remedies.
68 ,, injuries.
54 ,, ulcers (associated with acute catarrhal conjunctivitis, phlyctenular conjunctivitis etc.)
41 ,, trachoma.
18 followed keratomalacia.
14 following syphilis (congenital or acquired)
378 were of unknown origin.

Of 143 anterior staphylomata (bulging corneal scars)
16 followed small-pox
Nil ,, ophthalmia neonatorum.
35 ,, irritant remedies.
31 ,, injuries.
2 ,, ulcers (associated with acute catarrhal conjunctivitis, phlyctenular conjunctivitis etc.)
Nil ,, trachoma.
6 ,, keratomalacia.
Nil ,, syphilis
53 were of unknown origin.

As pointed out in a previous lecture some cases of leucoma and staphyloma must be taken to swell the numbers of blind due to keratomalacia e.g. 24 in the above statement where the sequence is known, and an uncertain number of the 431 undiagnosed. The difficulty of assessing the responsibility for total blindness is however great and we have to draw on our experience in estimating the importance of the various causes. It may be seen at a glance that even if the majority of these opacities and staphylomata only partially blind the individual, the position of small-pox comes close to injuries and irritant remedies in giving rise to serious damage which may result in loss of sight. In the year analysed, 75 patients out of about 20,000 showed that the disease had attacked the eyes, about 3·75 per 1,000 of our hospital population. It will be remembered however that about 9 per 1,000 were attacked and 3 per 1,000 rendered blind or practically blind by keratomalacia. How is it that small-pox attacks so many persons severely when successful vaccination at regular intervals protects from the severer forms of the disease? A reference to figures kindly supplied by Col. J. R. D. Webb, I.M.S., Director of Public Health, Madras give

a partial answer to the question. They show the percentage of children who escaped vaccination in the Madras Presidency during the first year of age.

1928-1929	....	37·1 per cent
1929-1930	....	37·3 ,,
1930-1931	....	43·4 ,,
1931-1932	....	40·8 ,,
1932-1933	....	47 ,,

To quote the Director of Public Health :—'This shows that a proportion from 37 to 47 per cent of children surviving at one year escape vaccination. This is only a rough approximation, for we have no idea of the vaccinal condition of the infantile deaths. In the above figures the assumption has been made that all the infantile deaths were not vaccinated. As vaccination is generally done after the age of six months, we may take it that roughly about a third of these infantile deaths were amongst the vaccinated. Assuming this, the percentage of escapes at one year will be still further increased. The number of vaccinations in the year 1-6 is only slightly less than the number of escapes at one year calculated as above. The proportion vaccinated varies from 100-80% of the escapes at one year. As a rough approximation we may say that 90% of the surviving children get vaccinated by the end of the sixth year. The failure rate varied from 4·1-1·4% of the number of vaccinal operations. We have no statistics to show the number of small-pox cases amongst the vaccinated which give rise to pox marks on the face.'

I presume we must also assume that the number of those attacked before vaccination who do not die are not recorded in the vaccination operations. A consideration of these facts help to explain why small-pox is responsible for a considerable amount of blindness in spite of an elaborate machinery for preventing the disease.

Irritant Remedies

It will be seen from the figures given above that the use of irritant remedies was responsible for 127 cases of severe damage to the eyes in 1929; over 6 per 1,000 of our hospital population. Many of these are rendered partially blind; it would be impossible to say how many are totally blinded from this cause, but it is likely to be in the neighbourhood of 2 per 1,000 if we take

into consideration the probability that the figures for corneal leucomata and staphylomata of unknown origin are more likely to include a higher proportion of cases due to this cause than for instance to small-pox which is more readily eliminated from the unknown origin group. This cause of blindness in children is almost peculiar to the East and we are particularly prone to it in India. The ignorance and superstition which prevails is almost unbelievable in this connection. Not only do village-quacks and old women of the family treat all manner of simple eye diseases by inserting virulent irritants into the eyes, but they even treat fits and various forms of unconsciousness in children by this means with the idea of directly stimulating the brain. Nothing appears too vicious for these people. Tobacco juice, red hot coals, alum, chillies, the leaf or juice of the plant called in Tamil *Erukkam* [*Madar* (Hind.), *Calotropis gigantea* (Bot.)] urine, dung, human milk have all had their adherents as efficacious remedies. A former member of the staff of this hospital, an experienced sub-assistant surgeon Dr. Ekambaram, made an investigation in this connection and succeeded in listing no less than 144 types of irritants which may be put into the eyes for various reasons. The only way to prevent such a state of affairs is to bring home the wrong of such practices to the villagers. We attempt to do this by approaching children and parents by means of posters, lectures, leaflets and other forms of propaganda, through the agencies of the medical and educational departments and unofficial organisations like the Red Cross Society. The most effective agent in dispelling ignorance and superstition is the Educational Department, and the Director of Public Instruction through the machinery under his control has done, and is still doing the chief work in this connection.

Injuries

Injuries account for quite a high proportion of the cases of severe corneal damage which may result in partial or total blindness in children. The bulk of these no doubt affect one eye only although there is one very important type of damage which nearly always involves both eyes, I refer to the result of explosive mixtures. We all know how popular crackers, fire works, bombs and so on, are on certain festive occasions in India. For the most part the injuries are sustained by the individual

who prepares such explosives, hence this type of damage is not so common in young children. From the figures at our disposal we cannot estimate the proportion of children rendered totally blind by injuries, and the same applies to the damage of undiagnosed ulcers, but it is likely that total blindness in children from such causes is rare.

As seen in the above statement 431 cases of corneal scars and staphylomata of unknown origin were observed in 1929, out of about 20,000 out-patients. The great bulk of these were no doubt in adults and do not come into our purview; of the remainder, (those affecting children), the majority were unilateral and not a cause of total blindness, whilst a number no doubt were probably due to keratomalacia, ophthalmia neonatorum, irritant remedies and injuries. It is impossible in the absence of an accurate history to say what is the cause of an old corneal scar or at what age it occurred and we cannot do more than depend on our experience in disposing of this group in the way suggested above; even if the assumption is considerably in error, it does not affect the general considerations as to the chief causes of preventible blindness in childhood.

Finally as regards preventing the various types of blindness dealt with in this lecture, we depend on propaganda work almost entirely; there is no legislation. The difficulty of propaganda work may be gauged by the fact that it took me over two years to obtain a few thousand copies of ten different posters from one of our local organisations with public money lying idle which had been earmarked for devotion to such ends.

Routine, continuous and organised effort in the direction of prevention does not attract the average lay worker. It does not bring individual effort into sufficient prominence, nor afford the personal satisfaction and public approval which many a social worker appears to have in view rather than the end towards which the effort is ostensibly directed. It is also much easier to play on the feelings of the public in order to enlist sympathy in the cause of humanity when the damage has been done rather than prevent the damage. To care for the blind is a more popular social virtue than to prevent blindness. It would almost appear that the continuous, effective and unostentatious part which every educated citizen ought to play in the prevention of social evils was too dull a role for many of those impetuous spirits whose

enthusiasm carries them towards the forefront of the clamour connected with any popular movement of the moment. They appear to set an example of good work to others, but the others are not infrequently left to carry the baby, sometimes not a very healthy baby. Most of you, my hearers, being medical men and women, will frequently find yourselves in this position, but do not let this disappoint you ; continue to preach the gospel of prevention consoling yourselves with the fact that none are so blind as those who will not hear.

LECTURE III

Hereditary Diseases

In opening this last lecture of the series, I wish to thank the members of the staff of this hospital, medical and non-medical, to whom I am indebted for help in connection with references to cases, literature, hospital records and other matters.

It might seem at first sight that hereditary blinding diseases hardly come under the category of ' preventible ', but I hope to show later that they do. Some ten years ago I would not have included them amongst the chief preventible causes of blindness in children, but I am prepared to do so to-day. When for certain reasons it occurred to me last year that the hereditary blinding diseases might be so classified I began to collect a few facts in this connection. A survey of our hospital records, and a consideration of our experience with such diseases, convinced me that if we treat this group as a whole, we have a cause of blindness which is probably more important than any other single cause. In the first lecture of this series, I referred to my publication in the ' Lancet ' of April 1931 in which a case was made out for keratomalacia as the greatest cause of preventible blindness in children in India. I now propose to suggest that the hereditary diseases taken as a collective group may be considered as filling this role, at all events, in South India. Let us first look at a list of hereditary diseases which are apt to cause blindness or practical blindness, not necessarily a complete list, and see which of them we observe in our hospital population and with what frequency. As a matter of interest I shall include in this list some conditions which do not necessarily cause blindness, only defective vision, but these will be noted.

Hereditary diseases		Average rate of incidence per annum in our hospital population of approximately 20,000, calculated over a period of five years.	
Tapeto-retinal degenerations	Retinitis pigmentosa (usual classical form)	35	40
	Retinitis pigmentosa sine pigmento.	3	
	,, punctata albescens ...	2	
	,, pigmentosa centralis ...		
	Fundus albescens with hemeralopia congenita (Oguchi's disease)		
Symmetric familial degeneration of the macular region or and periphery other than Tapeto-retinal, with or without other degenerative features.	Progressive heredo-degeneration of the macula, with or without demenetia, with or without pigmentation.	From 0·8 to 4 (This figure will be explained below).	The only cases observed which we can fit into this group are those of progressive heredo-degenerations of the macula with or without pigmentation.
	Familial chorioiditis (Doyne)		
	Tay-Sachs amaurotic family idiocy.		
	Atrophia gyrata chorioideæ et retinæ		
	Atrophia chorioideæ et retinæ totalis or chorioideremia		

Nystagmus (other than those associated with recognizable lesions of media or fundus)	12
Buphthalmus (infantile glaucoma).	7
Glioma	5
Ectopia lentis (congenital dislocation of the lenses)	6
Coloboma of the iris and choroid ...	5
Microphthalmus	3
Anophthalmus	0·6
Albinism	1
Hereditary optic atrophy (Leber's disease and varieties not recognisable as such)	
Aniridia	
Congenital cataract	9
Oxycephaly (Tower skull, Turmschadel)	0·2
Familial corneal degenerations (symmetric, lattice-like or nodular) (Groenouw's disease) ...	1·4
Congenital colour blindness	
,, night blindness	
,, high myopia	
Blue sclerotics	

It must be noted that these figures vary considerably in different five yearly periods and would be enhanced if the rarer conditions were always recognised as such in the out-patient department.

The total hereditary diseases recorded as such, taking the lowest or known figure in the second member of the series, averages 91 per annum over a period of five years. This may be expressed as approximately 4·55 per 1,000 in our hospital population, whereas the figure for keratomalacia (total and practical blindness) was 3 per 1,000.

It might be argued that it is doubtful if some of these are definitely hereditary, but on the other hand there are certain conditions which might perhaps have been included e.g., the ' phakomatoses ' of van der Hoeve embracing the three affections coupled to the names of Bournville, Recklinghausen, and von Hippel-Lindau.

This list will, however, serve our immediate purpose as the lecture does not purport to be an exhaustive study of the hereditary blinding diseases. We may conveniently consider them in two groups as suggested by Treacher Collins in his address at the International Congress, Washington 1922 ; (a) those in which the tissue involved has from the first been imperfectly developed, and (b) those in which after full development degeneration sets in. As examples of the first, the hereditary errors of development resulting in anatomical defects and deformities, we have such conditions as :—

Buphthalmus
Ectopia lentis
Coloboma of the iris and choroid
Microphthalmus
Anophthalmus
Congenital cataract
Tower skull.

They are comparable with hereditary defects with which the ordinary lay person here is probably more familiar such as extra fingers.

Treacher Collins also includes hereditary functional disturbances under this head such as nystagmus, congenital colour blindness and congenital night blindness, as having some anatomic basis.

As examples of (b) we might include the first two series of grouped conditions on our list and others such as hereditary optic atrophy, familial corneal degenerations etc.

With reference to the second group he says, ' widely as these

affections may at first appear to differ they will be found to present similar characteristics which allow them of being grouped together in a classification of eye diseases founded on a pathologic basis.'

'All these diseases are hereditary in the sense that they may be met with in several siblings of the same generation and all' (with two exceptions) 'in several different generations.' The exceptions are amaurotic family idiocy and some types of symmetric macular pigmentary degeneration in which the individuals die before child bearing age. The former hardly concerns us as it is said to be confined to Jewish strains and we have never seen an instance of it here. They are all bilateral, non-inflammatory and indicate degeneration in certain definite groups of cells, 'which having reached a full degree of development and functional efficiency have then undergone degeneration.' The time of onset of degeneration varies. They fail not because of any toxicity or avitaminosis or lack of endogenous secretions, but from imperfect cell vitality so that they are unable to maintain their nutrition in full development. As Sir William Gowers, quoted by Collins, says they fail 'from imperfect life, from abiosis, in what may be designated abiotic atrophy or abiotrophy.' The cells degenerate earlier than usual due to some inherent cause. He pointed out that all cells tend to decay and die eventually, but some decay abnormally early. We do not necessarily apply the word death to this inherent failure of vitality, we speak of it as degeneration. We do not know what the force is which keeps tissues from a failure in vitality, but it is convenient to refer to this unknown quantity as vital force and to assume that lack of it means degeneration. The cells of the body are either in a state of evolution to maturity or involution to decay. Collins quotes Paget to the effect that 'premature degenerations are to be considered therefore methods of atrophy, as defects rather than perversions of the nutritive process, or as diseases only in consideration of the time of their occurrence.' Collins following Paget and Gowers regards all such hereditary conditions as abiotrophies.

We may find it difficult to fit in certain of the hereditary affections under such a grouping, but this does not alter the fact that it helps us to link up a number of diverse conditions to a common base. As an isolated example which does not appear

to fit in with either group we might instance glioma, that new growth of childhood which only shows its degeneration after a period of excessive proliferation of cell elements. It occurs no doubt after the retina has attained maturity, but is hardly to be designated a degeneration or abiotrophy in its proliferating stages. The layman would in fact label it a malignant disease or cancer.

We will now turn to a consideration of our hospital records and see which of these hereditary diseases, degenerations or defects of development we meet with in South India and with what approximate frequency, in our hospital population. This is shown in parallel column with the preceding list. Our approximate annual out-patients attendance is 20,000, and we have taken an average of the number of cases of hereditary diseases occurring over a period of five consecutive years where this has been possible.

Our considered opinion is that this figure must be enhanced. For example with reference to symmetrical familial macular degenerations, we have for a long time observed curious macular degenerations which we feel ought to be placed in this group because of their ophthalmoscopic similarity to known cases in the group, but which we are unable to prove as familial because of the difficulty in obtaining an accurate history or an examination of other members of the family. Many such cases show a central degeneration without pigmentation and without mental defect which we are wont to describe ophthalmoscopically as having a resemblance to 'tarnished metal,' 'beaten copper,' or 'beaten silver.' The disc may show more or less atrophic changes and of course the vision is poor. We feel that such cases ought to be included in the group, but they are ordinarily classified under fundus diseases, not hereditary, for want of evidence.

It may be noted also that congenital high myopia has been omitted from the lists of figures, as, when seen in young children, it is difficult to be sure if we are dealing with a single condition which may be so named, but a certain number of our cases would be included in this category by many. Aniridia has not been given a figure as we do not remember to have seen more than two cases in the last 14 years.

Glioma, ectopia lentis and buphthalmus are probably more frequent than the figures indicate.

Hereditary optic atrophy has not been recorded. We do not remember having seen more than two such in the last 14 years which were diagnosed as of the Leber type ; but a considerable amount of optic atrophy is seen in young children and classified under fundus diseases (optic atrophy), which we feel ought to be included under the title hereditary optic atrophy.

Congenital colour blindness and congenital night blindness are not included as they are not productive of a sufficient degree of damage to vision.

On the other hand in oxycephaly, blindness does not occur in all cases, and congenital cataract may be treated with great improvement to vision ; albinism and retinitis pigmentosa may be associated with sufficient vision to enable the individual to earn a livelihood, as also nystagmus and coloboma of the iris and choroid, but a reduction on account of these would hardly counterbalance the enhancement. I think we might reasonably assume a practical blindness rate of 4·55 per 1,000.

Retinitis pigmentosa, the commonest member of the Tapeto-retinal degenerations, heads our list. It is a progressive disease and whereas it sometimes does not go on to complete blindness till late in life, the majority of our cases show very defective vision comparatively early.

It is said that 33 per cent. may be deaf and 4 per cent deaf mutes. We have not noted this frequency of association and although we may have missed making observations in many cases it is most unlikely that we would fail to observe such a marked association as 33 per cent. I have recently had the opportunity of examining one hundred deaf mutes from the School for the Deaf, Mylapore, Madras, and in this series of children, there were three with retinitis pigmentosa, two Hindu brothers, and a Scotch girl, one of the very few Europeans in the institution. We see extraordinary diverse forms of Tapeto-retinal degenerations, but our criterion in diagnosis is the peculiar quality of the atrophy of the optic disc and the characteristic changes in the vessels of the retina rather than any particular form of pigmentation or the lack of it. The commonest form is retinitis pigmentosa with obvious migration of pigment, more towards the periphery of the retina, but the pigment is not distributed in the bone-corpuscle pattern so frequently seen in European countries, it is more irregular and

patchy. As has been pointed out by Kirkpatrick it is frequently associated with consanguinous marriages in South India.

Glioma, the curious malignant growth of the retina, occurs more frequently in young children and kills in childhood except in the rare cases, (with us), in which one or both eyes are removed and the individual lives to child-bearing age and possibly transmits the condition to future generations. I agree with Bickerton (*British Medical Journal*, January 1934) when he says 'the death of a child with glioma of the retina is an appalling experience for parents and child, and may take as long as two years. The law which forces us to withhold euthanasia in these cases at the same time forces us to act in a barbarous and monstrously inhuman fashion, and is, in my opinion, indefensible.'

Mention has just been made of the association of consanguinous marriages with retinitis pigmentosa in South India. It may also be noted as recorded in the Eugenics Laboratory Memoirs XXI 'Treasury of Human Inheritance Nettleship Memorial Volume', Vol. II, Part I by Julia Bell edited by Karl Pearson, that with an increase in the percentage of consanguinity there appears to be an increase in the defect resulting. For the most part we find it practically impossible to follow up pedigrees or even verify the incidence of an abnormality in the same generation. Sometimes a defect appears in several siblings of the same generation without any trace of its occurrence in previous generations even when circumstances favour a careful investigation. For the most part the affections we see show themselves in siblings of both sexes. Recently we met with an interesting familial affection in a family of three brothers and one sister in which the three brothers showed macular degeneration with progressive diminution in vision, dementia, and marked dolicocephaly. At first sight the eldest boy, about 17, gave the impression of tower skull with lateral compression and elongation, but it was not a true oxycephaly (photographs shown). The appearances at the maculæ were those previously referred to as of the 'beaten brass,' or 'tarnished metal' type. The female was unaffected. No evidence of such a disorder could be found in the previous generations, the grand-parents also were free. It is possible that in this case the condition was transmitted by unaffected females, the males only being affected, complying with the law of Nasse. This law holds for certain conditions like Hæmophilia, Leber's

hereditary optic atrophy, certain forms of nystagmus, colour blindness, megalocornea. There is no hereditary condition known however in which the female alone is affected and the defect is transmitted by the healthy male. It would appear that in heredity Kipling is right, and that 'the female of the species is more deadly than the male.'

For the purpose of these lectures nothing more need be said to emphasise the importance of hereditary blinding diseases and the part they play relative to the other chief blinding diseases of childhood. While I was yet collecting records on this subject and thinking of the part played by heredity in connection with our blind problem it interested me greatly to see an article by Bickerton in the *British Medical Journal* of January 1934 on 'The menace of hereditary blindness.' He illustrates his article with a number of interesting pedigrees and makes out a case for checking these conditions which appear to play a prominent part in the causation of the total blindness of England and Wales by a number of means for improving environment and heredity, including sterilization. The article should be read by those interested.

Prevention :

In Madras we have heard a great deal about birth control in the last year or so. The opinions of all and sundry have been aired at length ; clerical and lay, Protestant and Catholic, male and female. Nearly all are the opinions of those who have not made an intimate study of the various population problems involved and applied to them the acid tests of historical records, statistics and eugenics, including modern views on heredity. They make wonderful copy, and on account of the sex problems involved attract a wide range of readers. The reading too is sometimes very amusing. There is no certain knowledge however that if it were feasible to introduce birth control by Stopean methods, such as those suggested, on a scale commensurate with the object in view and in such simple forms as to be adopted intelligently by the uneducated masses, it would have any material effect in checking the undesirable increase of population. One has only to look at the history of population figures in Japan, Ireland, France, Italy, Great Britain to realise that there are factors at work so profound that their effect would hardly be influenced over a few generations by the methods of

birth control so much discussed in the past few years if attempted in India. The practical essay of the various forms of Stopean technique by the uneducated villager conjures up the most comic situations in the medical mind. Nor is difficulty in acquiring technique by any means confined to the 'country cousin' as every medical man knows.

However we are not now concerned with the humorous side of a partially impractical and purely hypothetical measure for influencing the birth rate as a whole. The matter was very well summed up not long ago by the *British Medical Journal* in a report dealing with the conference on birth control in Asia held at the end of last year under the presidency of Lord Horder. Referring to the data before the conference it says, 'about these facts and about similar facts pointing to over-population in China, there was hardly any controversy. But though in proposing a remedy everybody was anxious to put the cart before the horse, nobody, as is common in sociological discussions, could distinguish for certain or agree entirely with anybody else as to which was which.' Suppose for a moment we agree that birth control in some form in certain circumstances is desirable, might we not reasonably consider that the certainty or strong probability of a man or woman being the parent of a potentially blind child, is one good reason for the application of stringent birth control. If this be admitted, might we not also consider what is the best and only certain method of control under such circumstances. When I first started thinking of the hereditary conditions in connection with preventible blinding diseases, I knew that there was a movement afoot to approach the Minister of Health in England with regard to the sterilization of the unfit. In June 1932, the Minister appointed a Departmental Committee on sterilization. That Committee went into the subject in great detail and its report was presented to Parliament on January 18th this year. The difficulties which had to be contended with can only be appreciated by reading details of the report.

To quote from a leader in the *British Medical Journal*: 'Before coming to a conclusion as to the justification for sterilization the committee considered first the question of compulsion. Interpreting its reference as asking it whether there was on scientific grounds, an unassailable case for sterilization,

it came to the conclusion that in the present state of knowledge the case for compulsory sterilization could not be established.' . . . 'With regard to voluntary sterilization, the committee did not entertain the same doubts and unanimously recommended that voluntary sterilization be sanctioned, on the grounds that enough is known, " to be sure that inheritance plays an important part in the causation of mental defects and disorders . . . and that mentally defective and mentally disordered parents are, as a class, unable to discharge their social and economic liabilities or create an environment favourable to the upbringing of children ; . . . with the rider that there is reason to believe that the opportunity for sterilization would be welcomed in some cases by the patients themselves ".' In other words the committee recommended legislation of voluntary sterilization subject to safeguards. The Ministry is now in consultation through the Board of Control with the Medical Research Council, and the Registrar-General as to the best course of action concerning the recommendations in the report. It is interesting for us here to observe that the British Government consults experts before embarking on legislation in relation to highly scientific problems.

Meantime it may be noted that in Germany sterilization of defectives has been legislated for in a less conservative spirit than that indicated in the British Report. There is in fact a world-wide tendency to come to grips with this important problem of preventing defectives begetting defectives. It would *prima facie* appear to be the best end at which to begin in any composite scheme for lessening the number of births. We might in any such programme include the sterilization of those suffering from hereditary disease productive of blindness. I wonder how many of those who have put up a fight for the modern contraceptive birth control would be anxious and willing to resort to sterilization should they discover that they were the potential parents of children likely to become blind because of a hereditary taint. Retinitis pigmentosa is so common in Southern India that it is more than likely that some of our birth control protagonists suffer from it. If so they might set a good example by publicly embracing the only certain method of birth control namely, sterilization.

A word as to sterilization. My friend and colleague, Lt.-Col.

V. B. Green-Armytage I.M.S. (Retd.) London (formerly of the Eden Hospital, Calcutta) who has had an extensive experience in this connection and advocates a special technique, assured me in the course of discussion that sterilization in the female is a simple undertaking. Permanent ligation of the tubes is an easy operation which should be possible for any competent gynæcologist to perform per vaginam. The patient should be out of bed by the fifth day and home by the seventh. The same ease of performance holds good for the general surgeon with regard to the cords in the male; it should be possible to do either procedure rapidly under local anaesthesia. Neither operation interferes in any way with the individual, sexual activity is not lessened, but subsequent reproduction is impossible. No doubt many reasons may be given against it by those opposed to the sterilization of known carriers of hereditary blinding diseases. A very practical one here in India is that owing to the difficulty of tracing relatives, carriers who do not themselves present the disease may be missed in the previous generation. But one has only to look through some of the hundreds of pedigrees published in ophthalmic literature to be prejudiced in favour of sterilization; for instance the Risley pedigree, recently brought to mind by Bickerton's illustrated article in the *British Medical Journal* of January 20th this year, in which one man blind with aniridia had thirteen children similarly affected, sixty-one grand-children affected out of sixty-three, and thirty-nine great grand-children out of forty-two. This single individual in the course of three generations was responsible for producing 113 cases of blindness.

The Prevention of Blindness Committee of the Union of Counties Association for the Blind (Great Britain) issued an interesting report last year on hereditary blindness. It points out that data recorded over a long period of years have been analysed by genetic experts, and reports issued by the Galton Eugenics Laboratory. For technical reasons it cannot be estimated with any degree of accuracy to what extent blindness as a whole could be prevented by limitation of parenthood in individual cases.

The *British Medical Journal* says with reference to these reports :—' There are diseases of the eye which result in defective vision and others which cause blindness. Taking both groups it may be held by the eugenist :—(a) That any man or woman who has aniridia, congenital cataract, glioma of the retina, hereditary

opacity of the cornea, or ectopia lentis, microphthalmus, or retinitis pigmentosa, and of whom either parent has been similarly affected, is likely to transmit the defect and should abstain from parenthood. (b) That any normal parents who have more than one child affected with one of the above mentioned diseases, or with buphthalmus or total colour blindness should have no more children, and such children as they have should abstain from parenthood—whether they themselves are affected or not. Even if the parenthood of such children does not lead at once to the manifest reproduction of the disease, it inevitably adds to the latent defect in the population, which becomes manifest when two people carrying such latent defect marry and have children. (c) That if, in all stocks in which Leber's disease (hereditary optic atrophy) has occurred more than once, the sisters of affected males were to abstain from parenthood, the disease would be almost exterminated, except for sporadic cases of no genetic significance. In general, there is no risk to the descendants of men who are suffering from Leber's disease; the instances in which they transmit the disease are very rare, but should be borne in mind, and if one such case in a family has occurred all other affected members of that stock should be regarded as liable to transmit.'

'These recommendations would appear to be essentially sound, but the words 'abstain from' are perhaps a little conservative. In view of my experience of the criminal carelessness of certain parents, I would feel more inclined to substitute 'be restrained from.' There is no doubt a great difficulty here in South India in obtaining accurate information, but I personally feel that nothing but good could result from the sterilization of all those known to be potential transmitters of hereditary blinding diseases.

DEBT CONCILIATION IN THE CENTRAL PROVINCES

1. *The Rural Economy of the Central Provinces*

In order to understand the nature and working of the Debt Conciliation Boards in the Central Provinces, a knowledge of the land tenures and rural conditions of that province is essential. The principal tenure in vogue in the C. P. (as distinct from Berar) is the malguzari, and 26,827 out of the 36,151 villages or 72 per cent are under that tenure, whilst ryotwari accounts for only 2,972 villages or 8 per cent of the total. But, of the 21,940,090 acres of land under malguzari, only 3,752,834 acres (or about 17 per cent) are cultivated as home farm (*Sir* or *khudkasht*) whilst the rest is held in tenancy right. Of the tenancy land, nearly 90 per cent is held by occupancy tenants and are not transferable. Even if we consider the whole occupied land (22 million acres), 15 million or nearly 70 per cent of it is inalienable. Indeed malguzars have power to transfer their malguzari rights, but the occupancy tenants have no rights of transfer except to co-sharers and certain heirs, and their land cannot be used as security for loans, although takavi advances form a charge on it. Occupancy land cannot be attached or sold in execution of decrees, but for arrears of rent the tenant may be ejected by a revenue court.

In result, the great majority of the agriculturists of the province have only such credit as their standing crops, their cattle and their movable property will command. No wonder that of the total debt in 1928 only 27 per cent was 'secured'. The greater the risk the higher the rate of interest. The average rate is 24 per cent with a penal stipulation of a higher rate—usually 37 per cent in case of default, which is common.

In Berar, however, the bulk of lands is under ryotwari tenure and is transferable, and therefore the debt is largely secured. In 1928, secured debt formed more than 60 per cent.

2. *Debt Conciliation is not new in Central Provinces*

During the economic depression resulting from the great famine of 1897-1900 and after, Government carried out a

scheme of debt conciliation in six districts. The total debt conciliated was Rs. 240 lakhs of which Rs. 155 lakhs was remitted. The beneficiaries were mostly tenants. The conciliation proceedings were conducted by panchayats presided over by Government officers. Debtors and creditors were collected together in villages and signed agreements consenting to abide by the decision of the conciliators. The paying capacity of the debtor was taken into account and easy instalments were fixed for repayment, 5 to 10 years in the case of tenants and 15 years in the case of malguzars. Six per cent was allowed in the case of overdue instalments. A good deal of irrecoverable debt was written off, and according to some accounts 'a very large proportion of the debts conciliated was irrecoverable', but a material relief was given to debtors. The creditors seem to have soon repented of the wave of generous enthusiasm that swept over the country, and their exactions became more rigorous afterwards. However, there was no contraction of credit due to this measure. In Betul, there was a temporary withholding of credit, but wiser counsels prevailed and matters went on as before.[1]

3. *The Origin of the Debt Conciliation Boards*

The Debt Conciliation Act of 1933 was a result of the bold generosity of the Government of Central Provinces and it was ably piloted through the Council by Mr. (now H. E. Sir Hyde) Gowan, then Revenue Member. The opposition came chiefly from certain representatives of the people, who suggested a proper enquiry. 'If you see your house on fire', asked the Revenue Member effectively, 'will you enquire into the causes before you put the fire out?'[2] The bill became law in January 1933 and came into force on 1st April. Two Conciliation Boards were established in July 1933 (Khurai in Saugar District and Seoni in the Chindwara District) and subsequently four others were established, two being in Berar. All the Boards consist of non-officials working in an honorary capacity, but the chairman is a Government officer from the executive or judicial service. The Act originally provided for only five members, but as the work imposed a heavy strain on the

[1] See *C.P. Banking Enquiry Committee Report.*
[2] *Council Proceedings*, 19th January, 1933.

members, the Act was amended and the strength of the Board was increased to 9.[1] It is interesting to note that several moneylenders have volunteered to become members and are taking a keen interest.

4. *The Procedure of Debt Conciliation.*

Debtors or creditors may apply to the Board, but only debtors who do not owe more than Rs. 25,000 may apply, as the law now stands. The application must contain particulars about the parties, the amounts owed to each creditor, the property owned by the debtor, and so forth. On receipt of the application, the Board fixes a date for hearing the application. If after examining the applicant, the Board is convinced about the desirability of a settlement, a notice is issued to all the creditors to submit an account of the debts owed to them. If a statement of debt is not made in time, such debt are deemed to have been discharged. The creditor must also submit his books and documents for inspection. The Board then endeavours to make an amicable settlement, summoning witnesses, if necessary. If the creditors to whom 40 per cent of the debts are owing agree to a settlement, an agreement is signed setting forth the terms. The agreement is then registered under the Indian Registration Act. In any proceedings before a Board, parties may be represented by agents authorised in writing, but not by legal practitioners. Lawyers therefore have no place in the conciliation system. (See Appendix).

If a debtor defaults in paying the instalments according to the agreement, such amount may be recovered as arrears of land revenue on the application of the creditor, but if the Deputy Commissioner fails to recover such arrears, he will certify that it is irrecoverable, and the agreement will cease to subsist.

If a creditor refuses to agree to an amicable settlement, on the terms considered by the Board as reasonable, the Board may grant the debtor a certificate in respect of the debts owed by him, and if the creditor thereafter sues the debtor in the civil court for the recovery of the same, the court will not allow him any costs in the suit, or interest on the loan after

[1] See *Central Provinces Gazette*, 16th March, 1934.

the date of certificate not exceeding 6 per cent. If, after the registration of an agreement, an unsecured debtor sues for the recovery of the debt, any decree so obtained will not be executed until all amounts payable under the agreement have been paid off. Civil courts are prohibited from entertaining suits in any matter pending before a Board, and proceedings pending before a court are suspended, and cannot be revived until the Board has dismissed the application.

5. *Inclusion of Co-operative Debt*

There was at first great opposition to the inclusion of co-operative debts in the scope of debt conciliation. It was feared that the inclusion would ruin the co-operative movement by causing a run on the deposits in the central banks, and non-official co-operators stoutly opposed it. The Registrar of Co-operative Societies held on the other hand that co-operative debt should be included, because (1) conciliation must comprise the entire debt, if it is to be effective; (2) the exclusion of co-operative debt would cause a grievance to private creditors; and (3) the conciliation of co-operative debt would stimulate the process, already initiated, of writing off bad debt. It was also pointed out (4) that if co-operative debt was not included, the debt owed to private creditors would become like a first charge on the ryot's annual income. Even otherwise, moneylenders have a virtual charge on crops by seizing produce at the threshing floor, but when conciliation is effected, the co-operative society will have to wait till all other creditors are paid off. By allowing conciliation, provision could be made for co-operative debt in the agreement, along with other debts, and if the debtor's land is sold, the society could get a share of the proceeds. However in the end it was decided to include debts owed to the Co-operative Society, but subject to the previous approval of the Registrar of Co-operative Societies. The wisdom of this decision is doubtful. It is now thought by many that co-operative debt must be altogether left out or be included like all other debts, no debtor claiming a privileged position.

6. *The Working of the Conciliation Boards*

Two of the Boards have worked for about 15 months, and the others for shorter periods. The first report of the working

of the two older Boards was published in April, and progress reports now appear monthly. The following are the results :—

Work done by the various Boards till October, 1934

Name of Board	No. of agreements executed	Amounts involved	Percentage remission	No. of certificates issued
		Rs.		
Khurai (16 months) ...	1,507	14,47,471	50	802
Seoni (15 months) ...	1,738	17,80,261	40	239
Balaghat (9 months) ...	621	5,37,198	40	7
Narsingpur (6 months) ...	227	2,83,646	54	34
Mekpar (5 months) ..	149	1,95,388	30	30
Kelapur ...	31	39,038	32	...
Total ...	4,273	42,83,002		1,112

(Compiled from the periodical reports issued by Government)

7. *Estimate of the Board's Work*

Several complicated cases have come for hearing before the Boards, and many which were pending before the civil courts would have prolonged themselves had they not been settled by the Board. In one case at Seoni, the number of creditors was thirty, and they were from all over India, Sholapur, Ahmedabad, Tanjore, Cawnpore, Dacca, and Delhi; it was the case of a cloth merchant (himself being also a landowner) who had dealings with merchants in all those places. The total claim against him was for Rs. 20,129, but owing to the indefatigable labours of the Board, a settlement was made for Rs. 10,483.

The economic advantage resulting from such debt settlements is inestimable. In the civil courts, each creditor has to sue the debtor separately, and thus each case would have cost much money to the parties and involved much loss of time to the court, but before the Board, the whole question is heard at once and decided. Had such a complicated case as that of the cloth merchant noted above gone to the civil courts, it would have been heard as thirty separate cases, each party engaging a separate lawyer, and each case being heard separately before the court. By the Board taking it up, the parties gained, the lawyers lost, and the court's time was greatly saved. However, what the parties gained was at the expense of the lawyers and the Government treasury. Lawyers in Seoni have much less work to-day, as the number of cases has already diminished by a third. Government loses under two heads—court fees and income-tax. The sowcars who agree to conciliation file copies of the agreements at the Income-tax Office and thus obtain a rebate of income-tax already paid and get their tax reduced for the future.

I visited Seoni in the middle of September 1934, and was much impressed by the working of the Conciliation Board, by the *esprit d'corps* animating the members of the Board, the conciliatory spirit of the moneylenders, and above all, the fairness and ability of the Chairman. In fact, the Chairman is the life of these Boards, and their success is greatly due to his industry and perseverance.

Deficiencies of the Conciliation System.—If a relief measure of this kind is meant to give immediate relief, it must be available to a large number of those who are stricken by the depression. But the Conciliation Act, as at present ordained, can only relieve a small section of those who need relief, and even they get only a partial relief. First, an application for conciliation will be considered only if 40 per cent of the debtors agree. In the case of debts which are mostly secured by mortgages, and in which the property mortgaged is more than covered by the encumbrance, the creditors are not likely to consent to conciliation, as they know that they can have their pound of flesh, by proceeding to the civil court. Is it any wonder if in spite of persistent propaganda, very few secured creditors in the Central Provinces have come into the

agreements?[1] After all, secured debts formed only 27 per cent of the total debt of the Central Provinces in 1928, and therefore a large number of debtors may benefit by the Act, but that cannot be the case in a province like Madras, the bulk of whose debt is secured by land mortgage. In such provinces, creditors will not agree to come in unless the minimum is pushed down, or a larger degree of compulsion is introduced in some other manner.

Secondly, even after an agreement has been arrived at, the secured creditor can proceed to foreclosure and thus nullify the agreement. Only those secured creditors who had filed their suits in court or who had applied for the execution of decrees are affected by the Conciliation Act; for, Section 21 suspends all such suits and legal proceedings and prohibits their being revived till the registered agreement ceases to subsist. The Act does not bind the hands of other classes of secured creditors—i.e. those who have not filed a suit and those decree-holders who have not instituted proceedings. They are not bound by the provision in Section 15 (3) which compels unsecured creditors who have not come into the agreement to wait till the amounts payable under the agreement have been paid. Indeed the Board can grant a certificate under Section 15 (1), but it only means that the creditor will not get the cost of the suit and that interest will not exceed 6 per cent after the date of certificate. This cannot have any strong deterrent effect. As for the creditor who had already secured his decree, the certificate does not affect him, and he is free to execute his decree in defiance of the agreement. Thus a large section of creditors has no incentive to come into the agreement.

It must be pointed out, in passing, that the unequal treatment of secured and unsecured debts in this manner is not in keeping with the Indian traditional law; and it is calculated to undermine the sanctity of the plighted word.

The opinion is therefore now growing that such defects in the system must be done away with. The principal suggestions for amendment are :—(1) Remove the exemption given to secured debtors in Section 15 (3); (2) lower the interest

[1] This is not true of Berar. In Mekkar, 35 % of the settlements were mortgages.

allowable to secured debtors under Section 15 (2); and (3) put in a clause to the effect that when creditors to whom not less than 20 per cent of the debts are owing enter into the agreement, the remaining creditors also must either enter or wait till the amounts according to the agreement have been paid off. These proposals are now before Government.

Exclusion of Rent from Debt.—Another question which has created much comment is whether rent should be excluded from the purview of the Act. It was argued that as land revenue was paid from the rent received by the malguzar, it would be unfair to allow rent to be cut down. But in reality the arrears of rent which landlords complain of are really arrears of loans advanced by them to the tenants. Usually, the landlord lends money to tenants, but when rent is paid such payments are taken towards arrears of interest or principal, and rent is marked as in arrears. By doing so, the landlord could effectively threaten the tenant; for the latter could be turned out if rent was in arrears for three years. Further, rental arrears have been treated in a special manner by the Board, and in many cases they have insisted on applicants paying their rents before applying for debt conciliation. If rent is excluded by statute from the operation of the Act, a good number of the cases that now come for settlement will have to be dismissed, and the Debt Conciliation Act will be of little real help in relieving agricultural distress.

Repayments.—The real test of the success of debt conciliation is the punctuality of repayments, for if the instalments according to the agreement are not forthcoming, the agreement will be null and void. However light the instalments may be, repayment will be found difficult at a time like this. Hence the need for an institution like the Land Mortgage Bank to advance the money and recover it from the debtor in annual driblets spread over a long period. There are no land mortgage banks in the Central Provinces; Government is now contemplating the establishment of such banks, but so long as the bulk of land remains non-transferable, such banks will only touch a fringe of the debt problem in the Central Provinces. To remove this defect, Government is proposing to change the land law, enabling occupancy tenants to mortgage and sell their holdings to the land mortgage banks.

8. *Other Measures to Relieve Indebtedness in the Central Provinces*

The Government of the Central Provinces has also carried out legislation to regulate moneylending and to keep interest rates under control. The Usurious Loans Act of 1918 has given the courts power to reopen transactions and cut down interest if (1) the rate of interest is excessive; and (2) the transaction substantially unfair. But both these conditions are essential for interference, and it is left to the discretion of the courts whether to interfere or not. The result has been that most courts have not interfered, save in very exceptional circumstances. Law is intensively conservative, and many lawyers and judges will appeal to the sanctity of contract, even if injustice to a party is patent.

The Usurious Loans (Central Provinces Amendment) Act of 1934 is meant for strengthening the hands of law courts in meting out justice. Clause 2 of the Act empowers the courts to interfere if the transaction is substantially unfair *or* if the rate of interest is excessive; both these conditions need not be fulfilled. Not only does it empower the courts, but compels them to interfere, as is clear from the substitution of the word 'shall' for 'may' in Sub-section (1) b of Section 3 of the India Act. The exact level beyond which the interest rate may be deemed excessive is left to the discretion of the court, but interest will be deemed excessive if it exceeds 12 per cent on secured loans and 18 per cent on unsecured. For future loans the Provincial Government may order that compound interest in excess of 10 per cent is excessive.

The Moneylenders' Act of 1934 is meant for the control of moneylending. Provisions have been made for the maintenance of accounts by moneylenders and for the supply of statements thereof to debtors, but debtors are not bound to admit the correctness of such accounts. The procedure of courts in suits regarding loans is laid down. The principle of *damdupat* is recognized: interest in future is not to exceed the principal, and this may apply to past loans also, with certain reservations. Decretal amounts may be paid by instalments.

A STATISTICAL STUDY OF THE RESULTS OF A UNIVERSITY EXAMINATION

BY

N. SUNDARARAMA SASTRI, M.A.

(*Lecturer in Statistics, University of Madras.*)

SINCE schools have existed, teachers and other school officials have attempted to measure the abilities of pupils in each of the subjects by examinations. According to H. Rugg teacher's mark measures 'Inherited capacity, ability to do, and specific performance'. The measures of the abilities of pupils obtained in these ways are regarded as possessing a high degree of precision and are considered very important. An arbitrary minimum is fixed, and a pupil is promoted if the mark obtained by him is equal to or above the minimum say 'The passing mark'; and a pupil is classified as a failure if his mark is below 'The passing mark'. In the early years of this century a number of investigations were made in America by some eminent educationalists like F. J. Kelly, F. W. Johnson etc., to ascertain the accuracy or reliability of measures by means of teacher's estimates and examinations. This gave rise to an analytical study of the whole mass of the material gathered, and statistical methods were freely made use of to interpret the results. The American educational statisticians concentrated much of their attention on the 'distribution of ability!' In 1904 appeared an epoch making article by Prof. Spearman 'General intelligence objectively determined and measured' *Amer. Jour. of Psychology* 15 p. 201. Here for the first time he discovered 'The hierarchical Order' among Correlation Coefficients of the abilities in different subjects and propounded 'The theory of general ability or the theory of two factors', which has been built upon this foundation. These ideas dominated correlation work in its application to Psychology for a good number of years. His work stirred up both disciples and opponents to investigations which would otherwise never have occurred to them. Thus while in countries well advanced in education and theory of statistics, the latter is freely made use of to improve the methods of education, unfortunately in

India much interest is not taken and no importance is paid to this sort of work. The Calcutta University Commission recognising the importance of a Statistical Bureau in the University made recommendations for it in the following words. 'A special examination Board should be set up in the University. In order to deal with the problems of examination on a large scale, it will need the services of a skilled statistician, acquainted with the modern methods of statistics, who should be a member of the Board. For, such a Board should also suggest new departures and improvements in dealing with the various problems of the examination system; such matters as the problems involved in the setting of questions, of Co-ordinating the marking of a set of Assistant Examiners and of estimating the unavoidable element of chance in the assignment of marks etc.' Volume V, chapter 40. This remark applies not only to the Calcutta University but to every University in India.

The object of this paper is to make an analytical study of the results of a certain University examination, making use of the ordinary statistical methods. For this purpose the marks obtained by about 1,700 students who appeared for the Group I of the Intermediate examination in a certain year were taken. The sample is homogeneous in the sense that all of them studied the same subjects, same courses, and same texts for the examination. All of them appeared for all the four subjects taken for analysis. Marks obtained in the Vernacular are omitted because the Vernaculars of the students were different. Of course there are slight differences in various groups of students reading in different colleges. But that merges away in the general population, and is one of the causes of the variability of the ability. Obviously there is no bias in this selection because the whole mass of available material is taken.

Clear thinking about a large mass of facts necessitates the condensation and organisation of the Data in a systematic way in the form of frequency distributions. That is, we are forced to group our Data in classes and statistical treatment of the Data depends upon the determination of these classes. For a table to be neither too unwieldy and consequently inconvenient for mathematical treatment, nor too meagre and consequently

cause inaccuracy, the number of class intervals generally taken is about fifteen to twenty. The range of variation of the marks in English is 20 to 190, (out of a total of 300). So the length of a class interval is taken as 10 marks. In Mathematics, Physics and Chemistry the range is zero to 100 and the class interval can be taken as 5 marks. 'The passing mark' in English is 105 and in the subjects 35. Human nature being what it is, naturally there will be a crowding about these marks. So, the class intervals are so taken that these points are at the centre or mid-point of a class interval; in order to avoid sensible error in the assumption that the mid-value is approximately representative of the values in the class.

Having fixed the position and magnitude of the class interval the observations were classified and tabulated. The separate tables of frequency distribution in the four subjects (1) English, (2) Mathematics, (3) Physics, and (4) Chemistry are given below.

FREQUENCY DISTRIBUTION OF ENGLISH

Marks obtained	20–30	30–40	40–50	50–60	60–70	70–80	80–90	90–100	100–110
Frequency	2	4	7	13	53	130	250	312	369

Marks b tained	110–120	120–130	130–140	140–150	150–160	160–170	170–180	180–190
Frequency	242	153	84	42	29	10	3	1

Total ... 1704.

FREQUENCY DISTRIBUTIONS OF MATHEMATICS, PHYSICS AND CHEMISTRY

Marks obtained	0 - 2·5	2·5 - 7·5	7·5 - 12·5	12·5 - 17·5	17·5 - 22·5	22·5 - 27·5	27·5 - 32·5	32·5 - 37·5	37·5 - 42·5	42·5 - 47·5	47·5 - 52·5	52·5 - 57·5
Frequency in—1	5	32	67	80	107	159	192	220	193	165	141	98
in—2	0	8	19	32	63	103	153	200	262	285	212	155
in—3	8	34	56	71	98	136	166	178	210	204	202	135

Marks obtained	57·5 - 62·5	62·5 - 67·5	67·5 - 72·5	72·5 - 77·5	77·5 - 82·5	82·5 - 87·5	87·5 - 92·5	92·5 - 97·5	97·5 - above
Frequency in—1	58	60	35	26	25	17	11	6	7
in—2	88	66	25	24	8	0	0	1	...
in—3	87	49	25	29	10	2	4	...	...

Total ... 1704.

Note:—1. Mathematics. 2. Physics. 3. Chemistry.

Our sole aim is to organise the complex mass of material in such a way as to facilitate clear interpretation of the data. It is quite clear that the mind finds it difficult to deal with the whole distribution. We must find the best method of describing it. There are two fundamental characteristics in which the distributions may differ (1) they may differ markedly in position i.e., in the values of the variable round which they centre. The measure of this central tendency is called the average. Of the various kinds of averages in use the Arithmetic mean is the best and is most commonly used. The Arithmetic mean of a series of values of a variable is the quotient of the sum of the values by their number. But in the case of a frequency table, each class frequency is multiplied by the mid-value of the interval, the products added together, and the total divided by the number of observations. (2) The distributions may differ in the range of variation or dispersion. The most important of the measures of dispersion is the Standard deviation. The Standard deviation is the square root of the Arithmetic mean of the squares of all deviations, deviations being measured from the Arithmetic mean of the observations. In addition to these two principal and fundamental characters, we may also consider the Skewness or asymmetry of the distribution, and the coefficient of variation.

Skewness is measured by $\frac{\text{Mean} - \text{Mode}}{\text{Standard deviation}}$. (Mode is that value of the variable for which the frequency is a maximum.) The need for the coefficient of variation arises when we reflect that in order to gauge fairly the amount of variability, we

ought to have in mind also the size of the mean from which the variation is measured.

$$C.V. = \frac{100 \text{ S.D.}}{\text{Mean}}.$$

Hence a fairly adequate numerical representation of the distributions in question could be obtained by giving the Arithmetic mean standard deviation and the coefficient of the variation of the variate. For the sake of comparison 'The normal mean and the normal standard deviation' (though the terms are apt to be misleading as they have not so far been used in statistics), given by Mr. P. V. Seshu Ayyar and Mr. S. R. Ranganadhan in 'A Statistical Study of Some Examination Marks', *J.I.M.S.*, Vol. 14 of 1922, p. 43, are also given in the table. The normal mean and normal S.D., are the average values of the means and S.D., of 6 consecutive years considered by them.

	English	Mathematics	Physics	Chemistry
Mean	34·46	39·13	42·5	39·4
A. for 6 years	39·3	41·5	40·3	39·1
S. D.	7·03	18·22	13·46	16·16
A. for 6 years	9·26	13·23	11·98	12·5
C. V.	20·41	46·56	31·67	41·02
Skewness	·0924	·3206	...	...

There is a sharp fall in the mean of the English from the standard mean by about 5 marks. This can be explained by the fact that the minimum for pass at the time of the standard mean was 40 and for the material in consideration is 35. This shows that the reduction of minimum did not produce the desired result; and that the examiners' minds were fixed more on the percentage of pupils to be promoted than on the real worth of the candidates. There is a slight fall in the mean of Mathematics and rise in the mean of Physics.

As is generally expected the S.D., in English is lowest

and in Mathematics highest. But the fluctuations of standard deviations which are far greater than what we expect from the theory of probable errors, require an explanation. There is very marked increase of S.D., in Mathematics, Physics and Chemistry and fall in English. This shows that there is a tendency for students to be crowded about the mean in English and to be dispersed more evenly about the whole range in the subjects. This might have been brought about by the nature of the test or by the mode of giving marks.

That variability is least in English and greatest in Mathematics is confirmed from the coefficient of variation of the four subjects. In fact variability in the four subjects can be arranged in ascending order both from the S. D., and C.V., as follows; English, Chemistry, Physics and Mathematics.

The greatest aid to sound interpretation of statistical Data can come from the graphic presentation of the facts in question. The graphical method produces an instructive picture of the scheme of observations, and makes a better appeal to the mind and reason than a whole mass of the material. The distributions can be represented graphically by drawing either the frequency polygons or histograms. If we have a sufficiently large Data, these figures approach as a limit, some smoothed curves having specific mathematical properties and capable of leading to generalised interpretations. If we refer to the diagrams we find that the frequency curves of Physics and Chemistry are symmetrical, and though the curves of English and Mathematics are a little skew they have a great tendency towards the symmetrical type. The particular curve which very commonly occurs in the distribution of abilities is 'The normal curve of error'. Many eminent writers on the subject proved on theoretical grounds that the curve of abilities must be of the normal type. H. E. Garrett in 'Statistics in Psychology and Education' writes: Measurements of natural phenomena as well as measurements of mental and social traits tend to be distributed symmetrically about the central tendency in proportions which are determined by the laws of chance; the reason is that they are probably very often due to the operation of laws of chance. A man's intelligence is determined very probably by a large number of factors, which have approximately the same influence

on the final result.' Finally he says that the selection of the normal curve is after all sufficiently justified by the fact that it does generally fit the Data better. Jerman in 'Measurement of intelligence' points out the symmetry of the plotted results of testing intelligence of 905 school children. He says 'The distribution for the ages combined is seen to be remarkably symmetrical.' The symmetry for the separate ages was hardly less marked considering that only 80 to 100 children were tested at each age. H. Rugg in 'Statistical Methods Applied to Education' writes: 'Many measurements of human intelligence, various mental traits resemble with striking regularity a symmetrical curve'. 'Human traits are combinations and include many arrangements of a vast number of separate causes which may be assumed to be independent of each other. In deriving a theoretical curve of distribution for a set of many independent causes we must recall the mathematical results obtained by combining and arranging such groups of causes. Now we are dealing with compound events, i.e., those produced by the concurrence of a very large number of causes assumed to be independent of each other. For example, arithmetical ability in a particular individual, may be said to be a complex resultant of a very large number of causes; those due to the hereditary capacity, physical conditions of growth and conditions of home and school training (e.g., absence from or regularity in a school), outside activities etc. We cannot isolate the specific unit causes, so hopelessly are they tangled up; but we can measure the effect of the combination of this vast number of separate causes by the objective evidence; we measure the resultant human trait called, for convenience, "the mathematical ability". Now it is a safe assumption that these separate causes are independent of each other, at least they are not related in a definite way. Human events thus are assumed to be compounds analogous in their determination to compound chance events of an ideal nature.' Mecall, in 'How to Measure in Education', writes: 'experimental research has found that the measurements for a given fact fit the normal frequency curve when the fact measured is the joint action of (1) a large number of causes, (2) causes which are approximately equal, (3) causes which are naturally uncorrelated

or act independently of each other; i.e., the presence of one cause does not bring with it the other causes. It is because these conditions are usually present in education that most educational measurements approximate normal distribution'. A. S. Otis in 'Statistical Method in Educational Measurement' writes: 'If we think of the chance of a pupil knowing or not knowing the answer to a question in a text as something like the chance of coin falling heads or tails and hence the chance of a pupil making a certain score as something like the chance of there being a certain number of heads among 10 coins that have been flipped, we can see a reason for the distribution of a course of a homogeneous group of pupils resembling the distribution of heads among flipped coins. We know in fact that there are hundreds of causes or influences operating to determine the score of a child in even the simplest test. A child's score is effected by all the days of instruction he has had, by the factors making up his innate capacity to learn, by the interest in the subject as governed by the many ways in which it has or has not appealed to him as satisfying his needs, by the many factors making up the quality of his instruction, and finally to some extent at least by the elements making up his physical condition and mood at the time of his test. All these factors, elements, and influences are of a nature such that the presence of any one of them in the case of one of the pupils in the group and its absence in the case of another is largely a matter of chance. So that, after all, there appears to be a marked similarity between the nature of causes governing the distribution of scores of a group of pupils in a test and the causes governing the distribution of number of heads in a set of coins that have been repeatedly flipped. This reasoning coupled with the fact that there is so close a correspondence in shape between the histograms of distributions of scores of homogeneous groups of pupils and the theoretical histograms of distribution of number of heads among flipped coins leads us to say that such distributions of scores tend to follow the law of probability or the law of normal distribution.'

In short the theoretical reasoning for the adoption of normal curve to educational statistics can be put in the following words. The normal curve represents the relative frequency

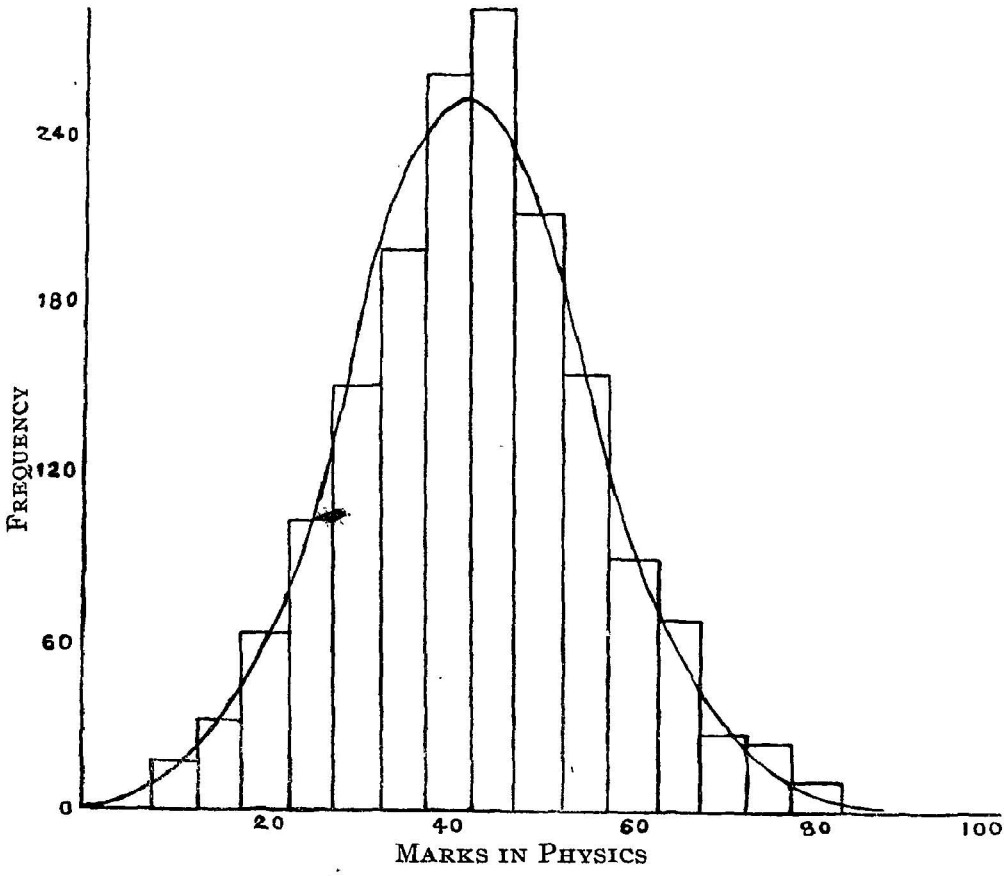
of occurrence of various combinations of a very large number of *equal, common, similar and independent* factors, when the chance of occurrence or non-occurrence of each factor is the same. The specific performance of a student in a test depends upon the combinations of a very large number of causes, (e.g.) his instruction, hereditary influence, interest in the subject, physical condition and mood at the time of the examination etc. All these can be assumed to be of equal weight, and they are independent of each other or at least they are not related in any definite way. Hence the required conditions for a normal curve are satisfied. Moreover the theory is very well supported by practical verifications.

Although graphs are useful as pictorial arguments appealing to the reason through the eye, they give only a rough idea of the distributions. To get the theoretical curves which represent the several distributions Karl Pearson's famous method of moments is used. Normal curve is fitted to each of the distributions and the goodness of fit found out in each case. The results for the several distributions are given below. In each diagram the smooth curve is the expected Normal distribution and the histogram represents the observed frequency distribution.

FITTING A NORMAL CURVE TO PHYSICS :—
($\beta_1 = \cdot 00104$; $\beta_2 = 3 \cdot 1417$).

Marks	Frequency (expected)	Frequency (observed)	O-E	$\frac{(O-E)^2}{E}$
below 7·5	7·9	8	·1	·01
7·5—12·5	14·1	19	4·9	1·70
12·5—17·5	33·1	32	-1·1	0·04
17·5—22·5	61·9	63	1·1	0·02
22·5—27·5	108·9	103	-5·9	0·32
27·5—32·5	163·9	153	-10·9	0·72
32·5—37·5	215·4	200	-15·4	1·10
37·5—42·5	246·8	262	15·2	0·94
42·5—47·5	246·8	285	38·2	5·91
47·5—52·5	215·4	212	-3·4	0·05
52·5—57·5	163·9	155	-8·9	0·48
57·5—62·5	108·9	88	-20·9	4·01
62·5—67·5	61·9	66	4·1	0·27
67·5—72·5	33·1	25	-8·1	1·98
72·5—77·5	14·1	24	9·9	6·95
above 77·5	7·9	9	1·1	0·15
			Total ...	24·65

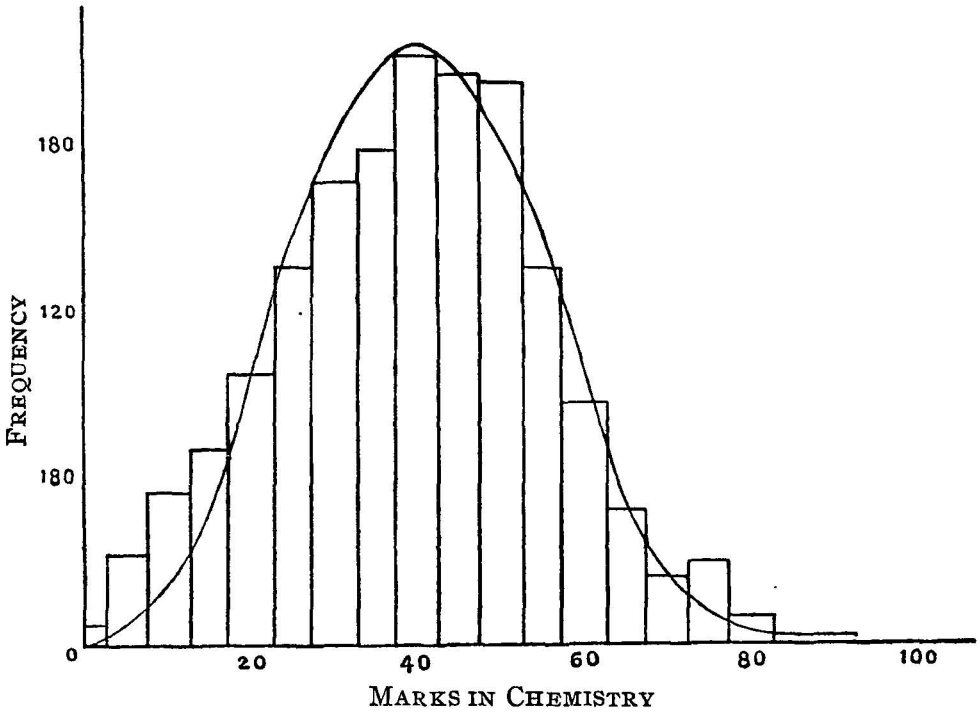
P = ·0385



FITTING A NORMAL CURVE TO CHEMISTRY :—
($\beta_1 = \cdot0006$; $\beta_2 = 2\cdot8167$).

Marks	Frequency (expected)	Frequency (observed)	O-E	$\frac{(O-E)^2}{E}$
— 2·5	19·1 } 41·3	8 } 42	0·7	0·01
2·5— 7·5	22·2	34		
7·5—12·5	40·6	56	15·4	5·84
12·5—17·5	67·7	71	3·3	0·16
17·5—22·5	102·5	98	−4·5	0·20
22·5—27·5	141·3	136	−5·3	0·20
27·5—32·5	177·1	166	−11·1	0·70
32·5—37·5	206·4	178	−28·4	3·91
37·5—42·5	205	210	5	0·12
42·5—47·5	197·3	204	6·7	0·23
47·5—52·5	169·2	202	32·8	6·36
52·5—57·5	131·9	135	3·1	0·07
57·5—62·5	93·5	87	−6·5	0·45
62·5—67·5	60·3	49	−11·3	2·16
67·5—72·5	35·4	25	−10·4	3·06
72·5—77·5	18·9	29	10·1	5·40
77·5—82·5	9·1 } 15·6	10 } 16	0·4	0·01
82·5—87·5	4·0	2		
87·5—92·5	2·5	4		
			Total ...	28·88

P = 0·0108

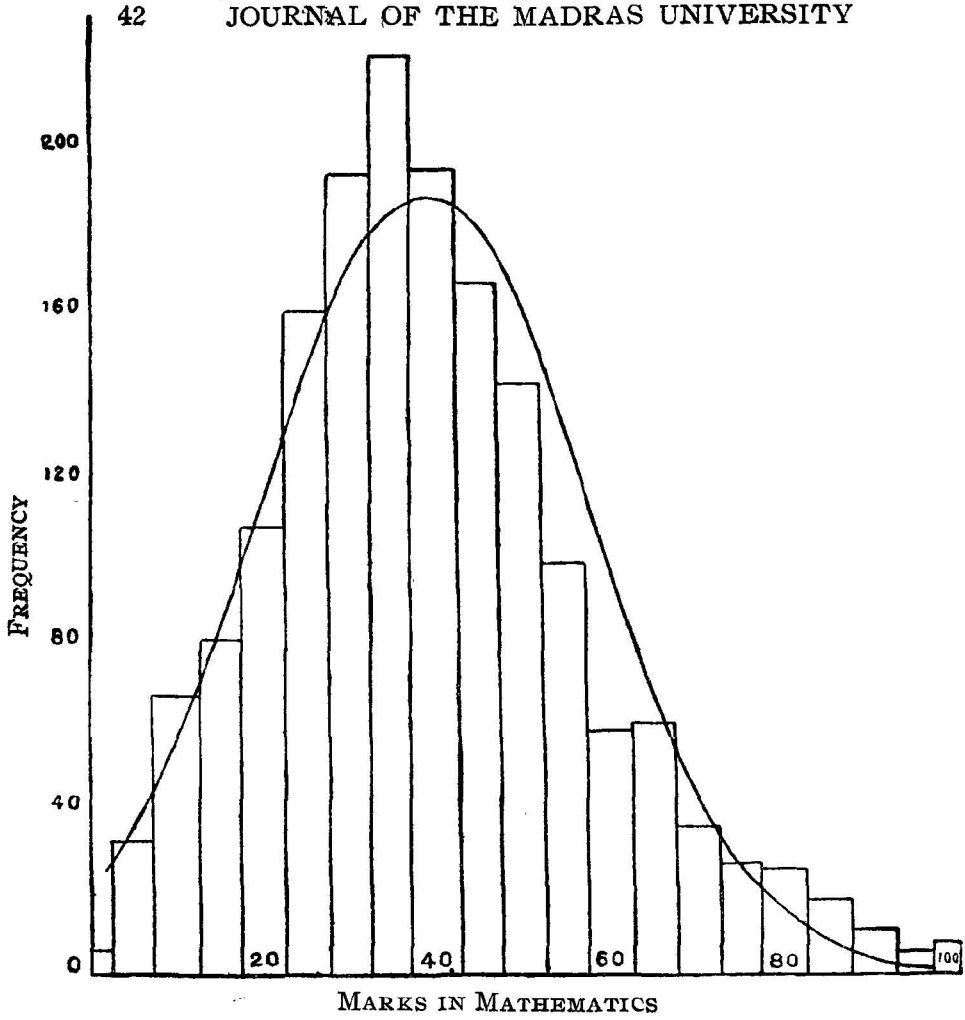


FITTING A NORMAL CURVE TO MATHEMATICS :—

($\beta_1 = 0{\cdot}352$; $\beta_2 = 3{\cdot}4090$).

Marks	Frequency (expected)	Frequency (observed)	O-E	$\frac{(O-E)^2}{E}$
0— 2·5	37·8	5	-32·8	28·46
2·5— 7·5	32·5	32	-0·5	0·01
7·5—12·5	52·2	67	14·8	4·20
12 5—17·5	77·8	80	2·2	0·62
17·5—22·5	107·5	107	-0·5	
22·5—27·5	138	159	21·	3·20
27·5—32·5	164·1	192	27·9	4·74
32·5—37·5	181·6	220	38·4	8·12
37·5—42·5	185·8	193	7·2	0·28
42·5—47·5	176·6	165	-11·6	0·76
47·5—52·5	155·8	141	-14·8	1·41
52·5—57·5	127·5	98	-29·5	6·83
57·5—62·5	96·9	58	-38·9	15·62
62·5—67·5	68·3	60	-8·3	1·01
67·5—72·5	44·6	35	-9·6	2·07
72·5—77·5	27·1	26	-1·1	0 45
77·5—82·5	15·2	25	9·8	6·32
82·5—87·5	8·0 }	17 }		
87·5—92·5	3·9 } 14·7	11 } 41	26·3	47·05
92·5—97·5	1·7 }	6 }		
97·5 and above.	1·1 }	7 }		
			Total ...	131·15

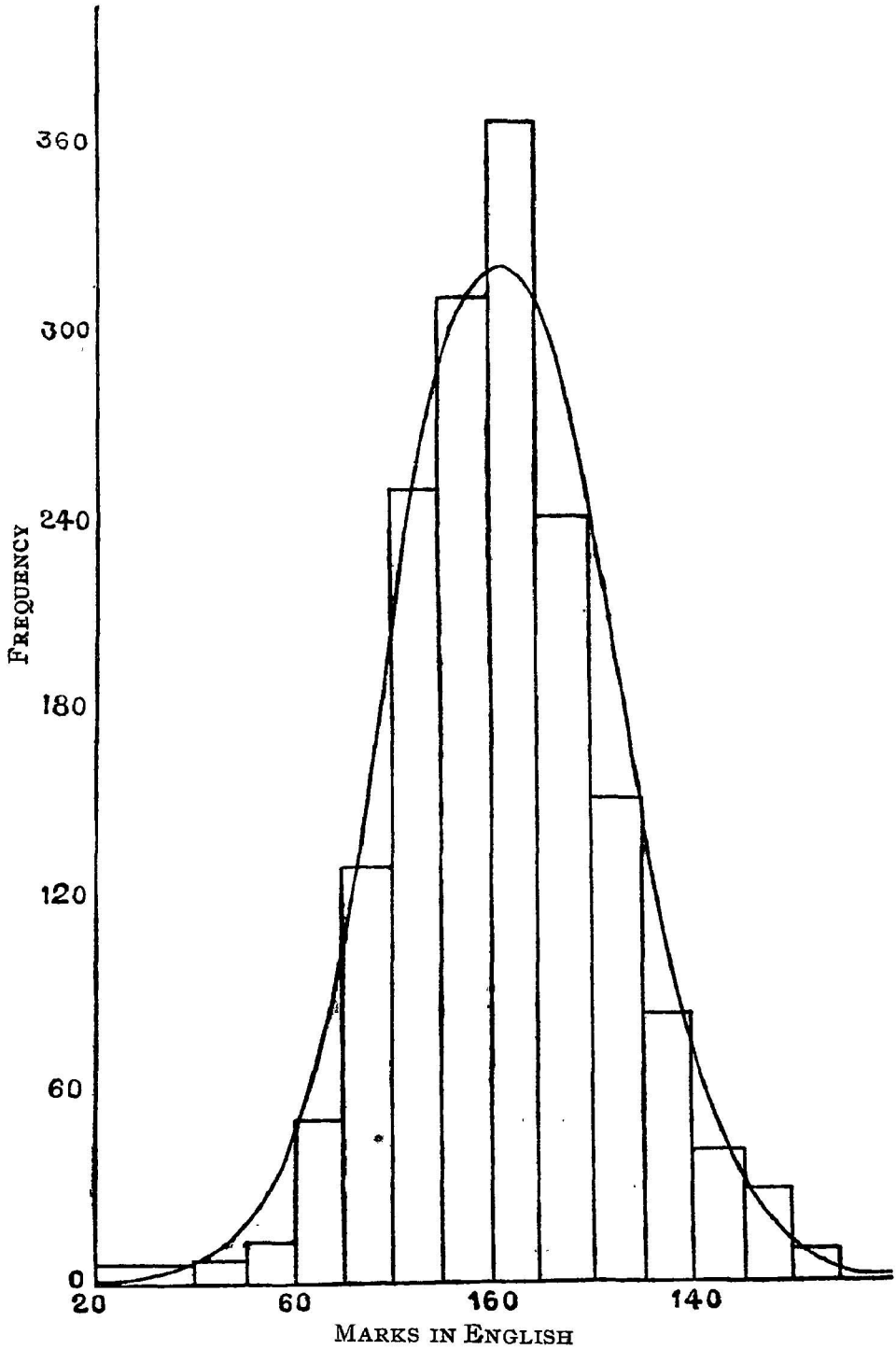
P = ·000000....



FITTING A NORMAL CURVE TO ENGLISH :—
($\beta_1 = \cdot 0601$; $\beta_2 = 3 \cdot 6528$).

Marks	Frequency (expected)	Frequency (observed)	O-E	$\frac{(O-E)^2}{E}$
20— 30	0·5	2		
30— 40	2·0 } 10·5	4 } 13	2·5	0·60
40— 50	8	7		
50— 60	25·6	13	−12·6	6·20
60— 70	66·7	53	−13·7	2·81
70— 80	134·6	130	−4·6	0·15
80— 90	224·4	250	25·6	2·92
90—100	298	312	14	0·66
100—110	317·5	369	51·5	8·35
110—120	271·4	242	−29·4	3·19
120—130	186	153	−33	5·85
130—140	102·3	84	−18·3	3·27
140—150	45·2	42	−3·2	0·23
150—160	15·8	29	13·2	11·03
above 160	6	14		10·67
			Total ...	55·93

$P_{\overline{55}} \cdot 000000...$



From the values of β_1 and β_2 we see that distributions of Physics and Chemistry fall in the 'G' region of the diagram

in Karl Pearson's tables for statisticians and Biometricians vol. 1; but from the value of P we see that the fit is not as good as is to be expected. This is due to the fact that there are serious divergences in the observed frequencies from the normal frequencies about the mean values. This can be explained by the fact that examiners have a tendency to be liberal at the pass mark and a little bit stringent at the distinction marks. If we refer to the deviations of the distributions of English, Physics, and Chemistry from the normal distributions, the most striking fact is that about the mean the observed frequencies are greater than the expected and on either side of it they are less. This may be due to the fact that the examiners have a tendency of being lenient towards average students and stiff towards those who are far above or below the average. Of course we cannot expect the tails to conform to the normal law. The one glaring fact about the deviation of Mathematics distribution from normality is that observed frequencies are greater than the expected for almost all the classes below the mean and the reverse is the case for all classes above the mean. In this respect it differs from the other three distributions. It shows that the Mathematics paper was difficult. This explains the high positive skewness of the curve of Mathematics.

It is not always that we get normal types for the frequency distributions in educational statistics. H. E. Garette in 'Statistics in Psychology and Education' writes: 'There are several reasons why distributions are skewed'. The sample may be small, or the distribution may belong to a special class e.g., dull and feeble minded. Again technical faults in the construction of the test, errors in scoring and the like may often produce skewness in a distribution of test scores. Skewness also results oftentimes, from a real lack or normality in the Data. This condition arises when several of the factors determining a given result are dominant or prepotent and hence are present more often than chance would allow e.g., in a test if there are easy questions, there will be a piling up of the scores towards the high score end of the distribution and hence negative skewness. On the other hand if the test is difficult there will be a piling up of the scores towards the low score of the scale and a positive

skewness. Too easy a test excludes from operation some of the factors which make for an extension of the curve at the upper end. Too hard a test excludes from operation factors which make for the extension of the curve at the lower end. In one case we have a number of perfect scores and little discrimination; in the second case a number of Zero scores and equally poor discrimination.

If we refer to our distributions in the light of the above remarks, we at once find that the skewness cannot be attributed to the two facts that the sample may be small or that it may belong to special class. The total number of students is 1704. So the sample is of adequate size. Students are taken from all the colleges existing in the different parts of the Presidency. There is no reason to believe that in this particular year either exceptionally bright or exceptionally dull students appeared from all the colleges. Hence the only possible explanation is the method of setting the papers and scoring. The abnormal excess of S.D., over the average of previous years confirms the above view.

CORRELATIONS

It is of great pedagogic interest to see whether there is any correlation *inter alia* between the various subjects; i.e., whether efficiency of a student in any subject indicates efficiency or the opposite in some other subject. We can also study the variations of correlation between various subjects. Six tables of double entry are formed and Karl Pearson's product—moment formula—is used to find the various coefficients of correlation. The following table gives the coefficients:

Subject	English Mathem	Mathe Phy	English Physics	English Chemis	Mathe Che	Physics Chemis
Co-efficient	0·4686	0·7634	0·5055	0·4875	0·6857	0·7044

Broadly speaking the correlation between English and subjects is less than correlation between subjects themselves. Again the correlation between English and science subjects

is greater than the correlation between English and Mathematics. The correlation coefficients of the various subjects with English may be taken to give a quantitative measure of the extent to which the power of expression in good English is necessary in the various subjects. Clear thinking and precise expression which are so very essential in science subjects explains the high correlation between English and science subjects. But it is a matter of common experience for those in charge of the students that the average standard of English or Mathematics students is less than that of any others. As between the subjects we naturally expect a higher correlation between Physics and Chemistry than between one of the science subjects and Mathematics. But we actually find that the correlation between Mathematics and Physics is highest. This discrepancy can be easily explained. If we refer to the Physics question papers for some years, we find that every year a number of questions requiring the knowledge and use of Mathematics are given. Hence a student efficient in Mathematics can easily score good number of marks in Physics considering the fact that a student who answers a mathematical question correctly gets full credit for the question whereas it is not the case for questions in scientific theory. So the correlation between Mathematics and Physics is highest, next comes Physics and Chemistry and then Mathematics and Chemistry.

As they stand the raw correlation coefficients are high thereby indicating a high correlation between the various subjects. But we must not run to hasty conclusions without further analysis. Thus the high correlation between Mathematics and Chemistry may be due to the fact that Mathematics is highly correlated with Physics and the latter with Chemistry. Similarly the correlation between English and Mathematics may be due to the fact that Mathematics is highly correlated with science subjects and the latter with English. Hence there arises the need for the calculation of the partial correlation coefficients. The partial correlation between any two of a number of variables is the correlation between these two variables in the universe of all the others; i.e., the correlation between the two variables when the influence of all the others is the same for both. In the case

of the variables 1, 2, 3, the partial correlation between 1 and 2 is measured by

$$r_{12\cdot3}=\frac{r_{12}-r_{13}\times r_{23}}{\sqrt{1-r_{13}^2}\quad\sqrt{1-r_{23}^2}}$$

In the case of 4 variables partial correlation between 1 and 2 is measured by

$$r_{12\cdot34}=\frac{r_{12\cdot3}-r_{14\cdot3}\times r_{24\cdot3}}{\sqrt{1-r^2_{14\cdot3}}\,\sqrt{1-r^2_{24\cdot3}}}$$

The following table gives the partial correlation coefficients between the various subjects.

Subject	$r_{12\cdot34}$	$r_{13\cdot24}$	$r_{23\cdot14}$	$r_{14\cdot32}$	$r_{24\cdot31}$	$r_{34\cdot12}$
Co-efficient	0·0855	0·1789	0·5168	0.1782	0·3011	0·3406

1. English, 2. Mathematics, 3. Physics, 4. Chemistry.

Here we see that all the partial correlation coefficients are very much less than the raw coefficients. The correlation (partial) between English and Mathematics is negligible. It is noticeable between English and science subjects and marked between the subjects themselves. The same story is repeated here again. Correlation is highest between Mathematics and Physics and lowest between English and Mathematics. In fact correlations can be ranked in the following descending order.

1. Mathematics-Physics, 2. Physics-Chemistry, 3. Mathematics-Chemistry, 4. English-Physics, 5. English-Chemistry, 6. English-Mathematics.

CONCLUSIONS

The average in English is less than the minimum (passing) mark, and that in the subjects is greater than the minimum (passing) mark. From this it follows that mediocrity is the order of the day in English; or that the standard of the students is low in English and higher in the subjects. The low value of S. D., in English and its high value in the

subjects, shows that there is much crowding of the students about the mean value in English and that they are more evenly distributed in the subjects. This might have been brought about by the method of setting papers or scoring. The comparison of the actual distribution of abilities with the normal distributions shows the glaring fact, that the deviation from normality is due more to the method of setting papers and giving marks than to the real lack of normality in the population. The high correlation between Mathematics and Physics is due to the importance given to the mathematical questions in physics papers. The high correlation between the subjects themselves is due to the common scientific interest required from the student for their study. The reason for the high correlation between English and science subjects is due to the fact that clear thinking and precise expression which are so essential for scientific subjects help good expression in English.

I am indebted to Mr. N. K. Adyantayya, Lecturer in Statistics, University of Madras, for suggesting the problem and for his kind help.

CORRELATION BETWEEN MATHEMATICS AND PHYSICS.

Physics \ Mathematics	– 2·5	– 7·5	–12·5	–17·5	–22·5	–27·5	–32·5	–37·5	–42·5	–47·5	–52·5	–57·5	–62·5	–67·5	–72·5	–77·5	–82·5	–87·5	–92·5	–97·5	Above –97·5	Total
– 2·5																						
– 7·5	1	5			2																	8
–12·5		5	5	4	3	2																19
–17·5	2	4	12	4	5	2	1	2														32
–22·5		9	8	7	13	12	6	4	3	1												63
–27·5	2	3	18	20	9	21	13	10	2	3	1	1										103
–32·5		4	6	19	32	22	28	20	14	5	2	1										153
–37·5		2	10	9	25	43	38	30	16	14	5	7			1							200
–42·5			2	10	10	18	54	63	46	27	18	6	2	2	3						1	262
–47·5			6	3	8	24	31	49	53	45	34	12	12	6	1	1						285
–52·5				4		9	14	22	37	35	39	20	12	10	6	2	1	1				212
–57·5						4	4	17	15	27	26	20	12	13	7	6	1	1		2		155
–62·5						2	2	2	4	5	11	16	15	14	3	2	8	3	1			88
–67·5							1	1	2	...	3	9	3	9	9	10	9	8	2			66
–72·5									1	3	1	2	...	4	2	2	3	2	2	1	2	25
–77·5											1	2	2	2	2	3	2	2	4	2	2	24
–82·5												2			1		1		1	1	2	8
–87·5																						
–92·5																						
–97·5																			1			1
above –97·5																						
Total	5	32	67	80	107	159	192	220	193	165	141	98	58	60	35	26	25	17	11	6	7	1704

$r = \cdot 7634 \pm \cdot 0068$

PHYSICS

CHEMISTRY	-2·5	-7·5	-12·5	-17·5	-22·5	-27·5	-32·5	-37·5	-42·5	-47·5	-52·5	-57·5	-62·5	-67·5	-72·5	-77·5	-82·5	-87·5	-92·5	-97·5	above -97·5	Total,
-2·5		3	2	1		1		1														8
-7·5		2	3	5	6	11	6		1													34
-12·5			9	5	8	11	12	6	3	1												56
-17·5		1	1	6	11	15	9	13	10	2	1	1	1									71
-22·5			1	4	13	16	22	16	9	14	3											98
-27·5			3	3	8	12	30	32		15	9			1								136
-32·5				2	6	13	22	35	40	24	12	9	2	1								166
-37·5				2	5	4	18	24	38	43	24	17	3									178
-42·5				2	2	10	13	31	47	53	24	18	7	2	1							210
-47·5				1	3	5	13	20	40	42	38	27	9	4	2							204
-52·5		1		1	1	3	1	12	30	43	50	30	14	11	1	4						202
-57·5						1	4	7	12	22	23	24	20	12	5	3	2					135
-62·5						1	1	1	4	15	11	16	15	16	2	5						87
-67·5							2	2	3	8	8	5		6	2	1	2					49
-72·5									1	2	8	1	2	3		2				1		25
-77·5									1	1	1	7	4	3	4	5	3					29
-82·5													1	5	2	2						10
-87·5														1		1						2
-92·5														1	1	1	1					4
-97·5																						
above -97·5																						
Total		8	19	32	63	103	153	200	262	285	212	155	88	66	25	24	8			1		1704

$r = \cdot 70436 \pm \cdot 00823$

Chemistry \ Mathematics	—2·5	—7·5	—12·5	—17·5	—22·5	—27·5	—32·5	—37·5	—42·5	—47·5	—52·5	—57·5	—62·5	—67·5	—72·5	—77·5	—82·5	—87·5	—92·5	—97·5	above 97·5	Total
—2·5	1	4	3																			8
—7·5	1	9	9	3	4	4	3		1													34
—12·5		7	11	12	8	5	7	4	1	1												56
—17·5		2	13	7	17	6	9	10	2	2	1											71
—22·5	1	5	9	5	22	19	11	8	6	5	4	1	1	1								98
—27·5		4	7	10	16	32	25	22	8	8	4											136
—32·5			5	20	8	28	29	21	20	16	13	2	2	1	1							166
—37·5		1	4	9	11	22	26	35	27	16	18	3	2	1	1	1	1					178
—42·5			4	9	10	12	39	46	31	24	9	11	4	3	4	2		2				210
—47·5				4	7	17	17	29	39	26	27	18	7	6	6	1						204
—52·5			2		1	6	15	29	27	30	31	22	15	10	5	4	2	2			1	202
—57·5				1	2	4	9	8	10	14	16	21	10	19	5	4	6		3	2	1	135
—62·5					1	2	2	4	13	14	10	7	3	6	7	2	6	6	3	1		87
—67·5								4	7	4	4	9	7	5	1	3	1	1		1	2	49
—72·5						1				4	2	2	2	5	1	2	1	2	2	1		25
—77·5						1			1	1	2	2	5	2	3	3	3	2	3		1	29
—82·5																3	4	2		1		10
—87·5																1					1	2
—92·5														1	1		1				1	4
—97·5																						
above 97·5																						
Total	5	32	67	80	107	159	192	220	193	165	141	98	58	60	35	26	25	17	11	6	7	1704

$\therefore r = \cdot 68567 \pm \cdot 00883$

ENGLISH

Physics	-30·5	-40·5	-50·5	-60·5	-70·5	-80·5	-90·5	-100·5	-110·5	-120·5	-130·5	-140·5	-150·5	-160·5	-170·5	-180·5	-190·5	Total.
-2·5																		
-7·5	1	1			3		1	1	1									8
-12·5		1	2	1	1	4	4	3	2		1							19
-17·5				2	2	8	4	9	4	2	1							32
-22·5				4	4	12	13	7	14	5	2	2						63
-27·5		1	3		9	22	16	26	12	7	3	2		2				103
-32·5		1	1	3	9	20	39	33	25	16	4	1	1					153
-37·5				1	5	17	43	58	42	18	11	5						200
-42·5			1	1	8	18	48	52	71	29	20	10	2	2				262
-47·5					3	16	40	60	74	50	23	14	3	2				285
-52·5	1			1	3	7	26	32	51	38	23	15	10	4	1			212
-57·5					6	4	9	19	38	34	25	11	4	2	2	1		155
-62·5						2	4	6	16	20	17	11	4	5	2	1		88
-67·5							2	5	13	15	10	6	7	5	2	1		66
-72·5							1	1	3	3	6	3	3	4	1			25
-77·5									3	4	5	4	5	1	1		1	24
-82·5										1	2		3	1	1			8
-87·5																		
-92·5																		
-97·5														1				1
above 97·5																		
Total.	2	4	7	13	53	130	250	312	369	242	153	84	42	29	10	3	1	1704

$\therefore r = 0{\cdot}50552 \pm 0{\cdot}01216$

ENGLISH

	-30·5	-40·5	-50·5	-60·5	-70·5	-80·5	-90·5	-100·5	-110·5	-120·5	-130·5	-140·5	-150·5	-160·5	-170·5	-180·5	-190·5	Total.
-2·5								2										8
-7·5	1	1	3	1	3	6	7	2	7	1	1	1						34
-1·25		1	1	2	6	13	11	9	8	2	2	1						56
-17·5		1	1	1	3	13	16	14	10	4	4	2		2				71
-22·5			1	2	5	13	23	29	19	4	2							98
-27·5				3	9	18	23	30	35	11	4	2	1					136
-32·5				2	4	17	38	39	32	23	6	3	2					166
-37·5				1	6	12	33	34	46	23	16	7						178
-42·5	1				4	12	39		48	32	19	11	3	2				210
-47·5		1		1	6	9	32	44	48	23	30	5	2	2	1			204
-52·5			1		3	10	16	31	44	46	20	15	11	3	1		1	202
-57·5						3	7	26	32	26	18	13	3	3	3	1		135
-62·5						1	2	7	16	28	12	11	5	4	1			87
-67·5					1	2		3	11	14	10	5	1	2				49
-72·5							1	1	6	2	1	3	4	6	1			25
-77·5								1	5	2	6	2	8	2	2	1		29
-82·5									2	1	1	1	1	2	1	1		10
-87·5								1				1						2
-92·5											1	1	1	1				4
-97·5																		
above 97·5																		
Total.	2	4	7	13	53	130	250	312	369	242	153	84	42	29	10	3	1	1704

CHEMISTRY.

$\therefore r = 0{\cdot}48753 \pm 0{\cdot}01246$

ENGLISH.

20·5	-30·5	-40·5	-50·5	-60·5	-70·5	-80·5	-90·5	-100·5	-110·5	-120·5	130·5	-140·5	-150·5	-160·5	-170·5	-180·5	-190·5	-200·5	-210·5	-220·5	Total.	
-2·5					1	2	2														5	
-7·5	1	1	1	1	5	4	9	4	5	1											32	
-12·5		1	2	3	5	12	10	17	11	2	3			1							67	
-17·5				3	4	20	12	12	14	5	8	2									80	
-22·5		1		2	5	16	25	26	18	7	6	1									107	
-27·5					8	13	29	38	37	24	5	2	1	1	1						159	
32·5			3	1	9	17	35	41	50	18	9	7	1	1							192	
-37·5		1		2	5	15	44	51	46	23	20	9	3	1							220	
-42·5	1		1		3	11	29	38	43	35	17	9	3	2	1						193	∴ $r = 0{\cdot}4685757 \pm 0{\cdot}01275$
-47·5					4	10	23	27	42	23	17	13	4	2							165	
-52·5					1	4	16	24	35	33	16	4	3	4	1						141	
-57·5				1		2	8	11	15	22	18	12	4	4		1					98	
MATHEMATICS. -62·5					2	3	3	8	14	11	5	7	5								58	
-67·5					1	1	4	7	16	9	8	5	3	3							60	
-72·5							1	5	10	9	4	4	1	1							35	
-77·5								2	5	8	7	1	2	1							26	
-82·5									5	4	5	2	2	3	2	1					25	
-87·5								1	1	3	3	1	3	3	1	1					17	
-92·5									2	2	1		4	2							11	
-97·5										1	1	3	1								6	
above 97·5										2		2	1		1		1				7	
Total.	2	4	7	13	53	130	250	312	369	242	153	84	24	29	10	3	1				1704	

THE HISTORY OF AUCITYA IN SANSKRIT POETICS

BY

V. RAGHAVAN, B.A. (Hons.)

Research Student in Sanskrit—University of Madras.

(*Continued from p. 134 of Vol. vi. No. 1.*)

Ānandavardhana then goes to other kinds of Aucitya or rather points out how, not only the working out of a plot, not only the expression of an idea in figure, but even the words and the synonyms, the case, inflection, voice etc., have to be suggestive of Rasa. That is, a poet should explore all possibilities of suggesting the vast realm of emotion—as many possibilities as his poor medium called language can afford. If a jingle can aid him, he seizes it; if a use in the passive voice is more effective than one in the active, he prefers it; if Ātmanepada suggests more, that has to be exploited. Thus every bit of the medium called language from sound, word, position of a word in a sentence etc., has to be thoroughly exploited and capital use made out of it by the poet. All these ideas revolve round Aucitya. If Sup, Tiṅg, Kāraka etc., are suggestive, they are 'ucita', appropriate.

सुप्तिङ्वचनसम्बन्धैः तथा कारकशक्तिभिः ।
कृत्तद्धितसमासैश्च द्योत्योऽलक्ष्यक्रमःक्वचित् ॥

From this part of Ānanda's work is derived Kṣemendra's Aucitya of Kriyā, Kāraka, Liṅga, Vacana etc. Similarly there is the Aucitya of Pada, of a word, of a name or synonym. This is the Padadhvani of Ānanda, found in the beginning of Ud. III. The 'suggestive word' or the 'proper word' of Ānanda and Kṣemendra is like the 'inevitable word' or the 'strong word' mentioned by some English writers.

Of Aucitya of Vṛtti and Rīti also Ānanda speaks in the third Uddyota which is devoted to the exploration of all

possible suggestive means in the medium of language, the Vyañjaka.

"यदि वा वृत्तीनां भरतप्रसिद्धानां कैशिक्यादीनां काव्यालंकारान्तर-प्रसिद्धानां उपनागरिकाद्यानां वा यदनौचित्यं अविषये निबन्धनं तदपि रस-भङ्गहेतुः ।" Dhva. Ā. III. p. 163.

Aucitya regarding Rasa itself, how the main Rasa has to be delineated, how the Aṅga-rasas are to be made to develop the main, what Rasas are mutually incompatible, how a Rasa like Śṛṅgāra must not be so over-developed as to cloy or Karuṇa which, when again and again developed, makes the heart 'fade' (Mlāna)—these are dealt with by Ānandavardhana in the III Ud. In this respect also, the pitfalls which may be called Rasadoṣas, are already available to some extent in Rudraṭa. Yaśovarman himself mentions 'रसस्य स्वावसरे पुष्टिः' 'nourishing of the Rasa at the proper time'. Rudraṭa gives a Doṣa called Virasa, which is the introduction or flowing of an irrelevant or contradictory sentiment into the current of the main Rasa. In this Virasa is included the Doṣa of Viruddha rasasamāveśa of Ānanda. (Vide Dhva. Ā. III. 20. pp. 164-170). Rudraṭa illustrates this Virasa by a case of a very inappropriate mingling of Karuṇa and Śṛṅgāra. Another kind of Virasa according to Rudraṭa is the fault of over-development of even the proper Rasa.

अन्यस्य यः प्रसङ्गे रसस्य निपतेत् रसः क्रमापेतः ।
विरसोऽसौ स च शक्यः सम्यक् ज्ञातुं प्रबन्धेभ्यः ॥
यस्यावसरोऽपि रसो निरन्तरं नीयते प्रबन्धेषु ।
अतिमहतीं वृद्धिमसौ तथैव वैरस्यमायाति ॥

K. A. XI. 12-14.

The latter is Ānanda's Atidīpti or पुनः पुनर्दीपनम्. These flaws of Rasa resulting from lack of Rasaucitya are mentioned in the Śṛṅgāratilaka also:

विरसं प्रत्यनीकं च दुस्सन्धानरसं तथा ।
नीरसं पात्रदुष्टं च काव्यं सद्भिर्न शस्यते ॥ III. 20-22.

Virasa is explained by Rudrabhaṭṭa as Viruddhā rasa, inappropriate or incompatible emotion and Nīrasa as the intermittent or excessive portrayal of one Rasa—निरन्तरं एकस्य वृद्धिः Ānanda puts these ideas of Rasaucitya relating to the handling of the Rasas themselves thus:

प्रबन्धे मुक्तके वापि रसादीन् बन्धुमिच्छता ।
यत्नः कार्यस्सुमतिना परिहारे विरोधिनाम् ॥
विरोधिरससम्बन्धिविभावादिपरिग्रहः ।
विस्तरेणान्वितस्यापि वस्तुनोऽन्यस्य वर्णनम् ॥
अकाण्ड एव विच्छित्तिः अकाण्डे च प्रकाशनं ।
परिपोषं गतस्यापि पौनःपुन्येन दीपनम् ॥
रसस्य स्यात् विरोधाय वृत्त्यनौचित्यमेव च । III. 17-19.

The last mentioned Vṛttyanaucitya resulting in Rasānaucitya is an error in taste in respect of thought in the development of character and in the portrayal of actions and incidents which is called by Rudrabhaṭṭa as Pātraduṣṭa. This is also taken by Ānanda as the improper atmosphere—कैशिक्यादिवृत्त्यनौचित्यम्. A mellow temper cannot suit a boisterous scene of dust-raising conflict of Raudra; a bloody and tumultuous chaos goes ill with the sweetness and quite pleasantness of love or the tenderness and delicacy of Vipralambha and Karuṇa. Of this Vṛttyaucitya Ānanda again says:

रसाद्यनुगुणत्वेन व्यवहारोऽर्थशब्दयोः ।
औचित्यवान् यस्ता एव वृत्तयो द्विविधाः स्मृताः ॥ III. 33.

Thus Ānanda has shown how, in his own phraseology, Aucityā is the greatest secret of Rasa— परा उपनिषत् ; how in the fashioning of every part of the expression which is the body or the symbolic vehicle of Rasa or 'the empirical technique' as Abercrombie calls it, the only ruling principle of the poet is an all-round, all-comprehensive Aucitya, with reference to which alone, the choice of words, of cases, of metre, the collocation, style, Guṇas, Alaṅkāras—in fact every means of suggestion from the trifling jingle to the greatest, is intelligible.

This Aucitya of word and thought, Vācya vācaka, with reference to Rasa is the greatest rule in poetry. To attend to it and write according to it is the chief duty of the poet.

वाच्यानां वाचकानां च यदौचित्येन योजनम् ।
रसादिविषयेणैतत् कर्म मुख्यं महाकवेः ॥ III. 32.

Between this verse on one side and with the verse—

अनौचित्यादृते नान्यत् रसभङ्गस्य कारणम् ।
प्रसिद्धौचित्यबन्धस्तु रसस्योपनिषत्परा ॥

occurring in the same section in a similar context, on the other side, the whole theory of Aucitya is completely stated.

If Time had spared to us the whole of Rājaśekhara's Kāvya mīmāmsā, we would have had a larger knowledge of Rājaśekhara's ideas on Aucitya. Even in the first chapter of Kavirahasya that has come to us, Rājaśekhara mentions Aucitya in the fifth section called Kāvyapākakalpa. He first takes up poetic culture and learning and opines that all poetic culture is only the discrimination of the proper and the improper—Ucita and Anucita.

Rājaśekhara and his wife, Avantisundarī

"'उचितानुचितविवेको व्युत्पत्तिः' इति यायावरीयः ।"
p. 16, K. M. Gaek edn.

There is also an oft-quoted Sanskrit verse which gives this same idea regarding the larger art of man's behaviour in the world.

श्रुत्वापि नाम बधिरो दृष्ट्वाप्यन्धो जडो विदित्वापि ।
यो देशकालकार्यव्यपेक्षया पण्डितः स पुमान् ॥

Rājaśekhara's wife also lays great emphasis on Aucitya; for she says that Pāka, ripeness or maturity of poetic power, is the securing of expression,—ideas, words, conceptions, fancies, etc.,—which is proper and appropriate to Rasa.

"तस्मात् रसोचितशब्दार्थसूक्तिनिबन्धनः पाकः ।"
p. 20. K. M.

The idea of Aucitya as adaptation, the idea that in poetry there is no fixed rule determining Guṇa and Doṣa and that things are good or bad only on the ground of appropriateness or inappropriateness and that, according to circumstance, even a Doṣa may become a Guṇa—is also very well realised by Rājaśekhara who says at the end of Kavirahasya—

न च व्युत्क्रमदोषोऽस्ति कवेरर्थपथस्पृशः ।
तथा कथा कापि भवेत् व्युत्क्रमो भूषणं यथा ॥
अनुसन्धानशून्यस्य भूषणं दूषणायते ।
सावधानस्य च कवेः दूषणं भूषणायते ॥

p. 112. K. M.

The careful poet who has his eye on Aucitya employs even the so-called flaws and makes them excellences whereas the careless writer abuses even the Guṇas and spoils his expression by the absence of the sense of Aucitya.

Abhinavagupta

The place of Abhinavagupta in the history of Aucitya is important. As the author of the Locana he lucidly expounds and elaborates the ideas of Ānanda, who, as we have seen above, is the greatest name in the history of Aucitya. On the other side, Abhinava is the teacher in Poetics[1] to Kṣemendra who is the systematiser of Aucitya. It is clear from Ānanda's treatment of Aucitya in Ud. III. that Aucitya naturally emerges out of the doctrines of Rasa and Dhvani and that the three cannot be separated. Abhinava takes his stand on this triple aspect of the 'life' of poetry—Rasa first, then Dhvani and then Aucitya. He says:

'उचितशब्देन रसविषयमौचित्यं भवतीति दर्शयन् रसध्वनेः जीवितत्वं सूचयति ।' p. 13.

Aucitya presupposes something to which a thing is 'ucita' and that to which everything else is finally to be estimated as 'ucita' is Rasa which is the 'soul' of poetry.

On the subject of Alaṅkāraucitya about which Ānanda speaks so much in Ud. II, Abhinava says that the greatest Aucitya of Alaṅkāra is that the term has any meaning at all only when there is the 'Alaṅkārya', the 'Soul'. Otherwise, it

[1] Vide *Bṛhatkathāmanjarī*, chap. xix, 36, 37 and *Bhāratamanjarī*, last chap., 8.

is like decorating the dead body. Decoration of a living body also is Anaucitya in certain cases; ornaments on the body of a recluse who has renounced life appear ridiculous—anucita. Thus figures of speech without Rasa and figures of speech in places which do not need them are bad.

"तथा ह्यचेतनं शवशरीरं कुण्डलाद्युपेतमपि न भाति । अलङ्कार्यस्याभावात् । यतिशरीरं कटकादियुक्तं हास्यावहं भवति, अलङ्कार्यस्यानौचित्यात् ।"

p. 75. Locana.

He thus explains Rasaucitya, i.e., the Aucitya of Bhāvas, Vibhāvas, etc., on p. 147.

"विभावाद्यौचित्येन हि विना का रसवत्ता कवेरिति । तस्माद्विभावाद्यौचित्यमेव रसवत्ताप्रयोजकं नान्यदिति भावः ।"

The idea of Aucitya, like that of Vakrokti, was current as a very frequently used term in the critical circles of Kasmirian Ālaṅkārikas for a long time. Vakrokti rose out of Alaṅkāra, Aucitya in the wake of Rasa and Dhvani. Aucitya must have become more current after Ānandavardhana who has spoken of it so much and who has said that its presence and absence makes and unmakes Rasa and poetry. It was so much in use that, by the time of Abhinava, it must have been heading towards systematisation, even as the concept of Vakrokti, which, as old as Bhāmaha, was given so much life in the critical circles that it enlarged itself and through Kuntaka built itself into a system. Aucitya also had assumed proportions and was in search of a writer for systematisation. The critics were using Aucitya as the essence of poetry very often, more often than Rasa even. Says Abhinava in two places criticising these critics: 'One cannot be indiscreetly using the word Aucitya by itself; Aucitya is ununderstandable without something else to which things are "ucita"—appropriate. Aucitya is a relation and that to which things are or should be in that relation must first be grasped. That is Rasa, nothing less and nothing else.' Abhinava first proves that there is no meaning in Aucitya without Rasa.

"उचितशब्देन रसविषयमौचित्यं भवतीति दर्शयन् रसध्वनेः जीवितत्वं सूचयति । तदभावे हि किमपेक्षयेदमौचित्यं नाम सर्वत्र उद्घोष्यत इति भावः ।"

p. 413.

He again proves that Aucitya presupposes Rasa and Dhvani also.

"औचित्यवती (अतिशयोक्तिः) जीवितमिति चेत्, औचित्यनिबन्धनं रसभावादि मुक्त्वा नान्यत् किञ्चिदस्तीति तदेवान्तर्भासि मुख्यं जीवितमित्यभ्युपगन्तव्यं, न तु सा। एतेन यदाहुः केचित्, 'औचित्यघटितसुन्दरशब्दार्थमये काव्ये किमन्येन ध्वनिना आत्मभूतेन कल्पितेन' इति स्ववचनमेव ध्वनिसद्भावाभ्युपगमसाक्षिभूतं मन्यमानाः प्रत्युक्ताः।" p. 208. Locana.

These two passages clearly show that critics there were who were speaking of Aucitya as the only thing enough to explain poetry, which according to them, was beautiful words and ideas set in perfect harmony—Aucitya. These critics had omitted the word Rasa from their vocabulary and dispensed with Dhvani. Abhinava criticises these poor critics who do not understand the implication of what they say. Aucitya implies, presupposes and means 'suggestion of Rasa'—रसध्वनि i.e., the doctrines of Rasa and Dhvani.

Abhinava thus takes his stand on the tripod of Rasa, Dhvani and Aucitya. Rasa is the 'Ātman' of poetry and the fact is that it is so only through the process of Dhvani. Again Rasa is or can be so only through Aucitya. Thus these three are very intimately and inseparably associated together. Aucitya is as indissolubly associated with Dhvani as with Rasa. If an Alaṅkāra is said to suit, to be 'ucita' to, a Bhāva; it means that the Alaṅkāra effectively *suggests* that Bhāva; if there is said to be Guṇaucitya, it means the Rasa there is *suggested* by the Guṇa. A word, a gender, a mere exclamation—these are said to be 'ucita' and how? The test of Aucitya, its proof, is the suggestion of Rasa.

Another point which Abhinava pointed out is that the breach of Aucitya results in 'Ābhāsatā. A Kāvya which does not have Aucitya is Kāvyābhāsa, not poetry but semblance of poetry. Improper Alaṅkāra is Alaṅkārābhasa. If there is Aucitya we have Rasa and sentiment; if there is Anaucitya due to absence of Prakṛtyaucitya etc., we have Rasābhāsa and sentimentality.

"औचित्येन प्रवृत्तौ चित्तवृत्तेः आस्वाद्यत्वे स्थायिन्या रसः व्यभिचारिण्या भावः। अनौचित्येन तदाभासः, रावणस्य सीतायामिव रतेः।"

Bhoja

Neither in his smaller Sarasvatīkaṇṭhābharaṇa nor in his bigger Śṛṅgāraprakāśā has Bhoja any special subject under a separate head called Aucitya. But the concept of Aucitya is not altogether absent in his two works. It is found in more than one place as a basic idea underlying many principles. Long before the concept of Aucitya dawned upon the literary circle, it was accepted in grammar as one of the conditions that determine the meaning of a word in a context, when the word has more than one meaning. The Vākyapadīya of Bhartṛhari says:

वाक्यात् प्रकरणात् अर्थात् औचित्यात् देशकालतः ।
शब्दार्थाः प्रविभज्यन्ते न रूपादेव केवलात् ॥ II. 316.

Other writers call these 'Śabdārthapravibhājakas', Aucitya etc., as 'Anavacchinna śabdārtha viśeṣa smṛti hetus'. This sense-determinant of Aucitya, Bhoja mentions twice in his Śṛ. Pra., first while explaining various kinds of Vivakṣā or intention in chapter seven and then in a similar context in chapter twenty-five.

In chapter xi, Bhoja calls his magnum opus, the Śṛ. Pra. by the name Sāhitya prakāśa and says that, among other things, Aucitya is inculcated therein (p. 430. vol. II. Mad. MS).

"एतस्मिन् शृङ्गारप्रकाशे सुप्रकाशमेव अशेषशास्त्रार्थसंपदुपनिषदां अखिलकलाकाव्य—औचित्य—कल्पनारहस्यानां च सन्निवेशो दृश्यते ।"

Bhoja realises that Aucitya is a vast and elastic principle and that it pertains to every part of the art of poetic expression. We first sight Aucitya in Bhoja in his section on Doṣas where he speaks of a Pada doṣa called Apada, which means that a poet must use the vocabulary suited to the character who is speaking. A vulgar and a rustic character does not employ the same words as a refined city-bred man. The appropriate vocabulary is one of the chief conditions that call up the correct atmosphere. Inappropriate vocabulary, which is a breach of Aucitya, is the Doṣa called Apada. See S. K. Ā. I. 23. pp. 19-20. Bhoja's Vākyārthadoṣa called Virasa, which is borrowed by him from Rudraṭa, emphasises a principle of Rasa-aucitya. (See S. K. Ā. I. 50 p. 35.) Ratneśvara,

commentator on the S. K. Ā., quotes here Ānanda's verse on Aucitya and Anaucitya— अनौचित्यादृते नान्यत् etc., and adds that the three following Upamā doṣas also are various instances of Anaucitya. Thirdly, the Doṣa called Viruddha (S. K. Ā. I. 54-57), Loka virodha, Kāla virodha etc., is also based on Aucitya. These are only more definite and particularised names for varieties of Anaucitya of Vastu or Artha. In the sub-class of Anumāna viruddha, Bhoja has a variety called Aucitya viruddha (see p. 40. S. K. Ā) and illustrates it by a case of an incorrect and inappropriate description of a low ordinary man, a Pāmara, as wearing refined silk-dress. Fourthly, a similar instance of Anaucitya of Artha-kalpaṇā is mentioned by Bhoja in connection with his Śabdaguṇa Bhāvika. (S. K. Ā., p. 58.) Here is an instance of the larger Aucitya of Adaptation, which makes Guṇas of flaws. Besides this, there is a whole section of Vaiśeṣika guṇas at the end of chapter I where it is shown that as a result of circumstance, special context and Aucitya, all the Doṣas may cease to be so and may even become Guṇas (S. K. Ā. pp. 74-120. see esp. p. 118).[1]

"अत्र स्त्रीत्वात् औचित्यविरोधेऽपि तत्समयोचितत्वात् गुणत्वम् ।"
S. K. Ā. p. 118.

Aucitya figures to some extent in Bhoja's Alaṁkāra-section also. Bhoja opens his list of Śabdālaṁkāras with the elaboration of the idea of the choice of the appropriate language, Bhāṣaucitya, which, he says, is an ornament or Alaṁkāra called Jāti. Certain subjects are well expressed in Sanskrit; certain in Prākṛt or Apabhraṁśa. There is also the appropriateness of country or province (Deśa) and rank and culture of character (Pātra, uttama, male, female etc.) which decides the language. Bhoja and Ratneśvara point out all these Aucityas which are seen already in the eighteenth chapter of Bharata's N.Ś. called Bhāṣāvidhāna. Bhoja himself uses the word Aucitya here and Ratneśvara clearly explains the Aucitya involved in this Jāti Śabdālaṁkāna.[2] In chapter xi, Bhoja

[1] See also pp. 118-119 and 126 of *Vol. VI. No. 1* of this *Journal*, the first part of this article.

[2] I have spoken of these at greater length in the chapter on Bhoja and Aucitya in my University Research Thesis on Bhoja's Śṛṅgāra prakāśa.

gives a Prabandha-ubhaya-guṇa, a comprehensive excellence of the Śabda and Artha of the whole work, called "language according to the character",' पात्रानुरूपभाषत्वम्. What is this Anurūpya except Aucitya? This Prabandha-bhāṣaucitya is only the extension of the Vākyālaṁkāra called Jati (p. 432. vol. ii. Śṛ Pra. Mad. Ms). The second Śabdālaṁkāra of Bhoja is also a principle of Aucitya. It is called Gati; it is the choice of the proper poetic form, verse (padya), prose (gadya), or mixed style (campū) and the choice of the proper metres suggestive of Rasa in the padya-class. This last is only another name for Vṛttaucitya. In explaining this Gati, Bhoja himself bases his Alaṁkāra on Aucitya of Artha which he mentions twice here. (see S. K. Ā. II. 18 and 21.)

पद्यं गद्यं च मिश्रं च काव्यं यत् सा गतिः स्मृता ।
अर्थौचित्यादिभिः सापि वागलङ्कार इष्यते ॥ II. 18.

In chapter xi again Bhoja speaks of this, the 'proper metre', as the Prabandha-ubhaya-guṇa called 'metre according to idea'—अर्थानुरूपच्छन्दस्त्वम्.

"अर्थानुरूपच्छन्दस्त्वं इत्यनेन शृंगारे द्रुतविलम्बितादयः, वीरे वसन्ततिलकादयः, करुणे वैतालीयादयः, रौद्रे स्रग्धरादयः, सर्वत्र शार्दूलविक्रीडितादयः निबन्धनीया इत्युपदिशति ।"

p. 432. vol. Śṛ. Pra. Mad. Ms.

All these Aucityas, Bhoja does not fail to relate to Rasa; for he treats of these principles of Aucitya as Doṣa-hāna, Guṇa and Alaṁkāra and all these three are, according to his statement, the means to secure the eternal presence of Rasa, Rasa-aviyoga.

Lastly Bhoja speaks of Anaucitya in the very story as available in the original source. He says that the poet must leave off those Doṣas or Anaucityas in the source which hinder Rasa and conceive the plot in a new manner. Bhoja calls this Prabandha-doṣa-hāna and Anaucitya parihāra. (Vide pp. 131-2, Vol. vi. No. 1. of this journal) says Bhoja:

"तत्र (प्रबन्धे) दोषहानं अनौचित्यादिपरिहारेण यथा मायाकैकेयीदशरथाभ्यां रामः प्रवासितः न मातापितृभ्यां इति निर्दोषदशरथे (राजशेखरस्य बालरामायणे)" p. 410. Vol. II. Śṛ, Pra, Mad. Ms.

In his S. K. Ā. Bhoja has this passage on p. 642 and he has also this Kārikā :

वाक्यवच्च प्रबन्धेषु रसालङ्कारसंकरान् ।
निवेशयन्त्यनौचित्यपरिहारेण सूरयः ॥ V. 126. p. 418.

Compare Ānanda III. 11 and Kuntaka IV. p. 224.

Kuntaka

Kuntaka naturally speaks much of Aucitya which, we are given to understand by the Locana, was a term widely current in circles of Sahṛdayas of that time. Kuntaka was a younger contemporary of Abhinava or wrote immediately after him. The word denoting the essence of poetry at that time seems to be 'Jīvita'. For we find the Locana itself rendering the 'Ātman' of Ānanda as 'Jīvita' twice. Kuntaka uses the same word 'Jīvita' to praise his Vakrokti and soon Kṣemendra is to use the same to signify the place of Aucitya. The two main facts recognised by Kuntaka in poetry are the utterance and its embellishment or its strikingness called Alaṅkāra or Vakrokti. Besides these he recognises certain general concepts which go to define his notion of poetry. Notable among these is the idea of Sāhitya. Along with Sāhitya, Kuntaka mentions two 'Sādhāraṇa Guṇas' called Aucitya and Saubhāgya. These general excellences pertaining to all styles of poetry are to be distinguished from the 'Asādhāraṇa Guṇas', special qualities, which go to distinguish styles into the graceful (sukumāra), the striking (victra), and the middling (madhyama). The Sādhāraṇa Guṇas, Aucitya and Saubhāgya are of greater importance.

"एवं प्रत्येकं प्रतिनियतगुणग्रामरमणीयं मार्गत्रितयं व्याख्याय साधारण-गुणस्वरूपव्याख्यानार्थमाह—॥" p. 72. V. J.

The first of these two Sādhāraṇa Guṇas, Aucitya, is thus defined in two verses :

आजसेन स्वभावस्य महत्वं येन पोष्यते ।
प्रकारेण तदौचित्यं उचिताख्यानजीवितम् ॥
यत्र वक्तुः प्रमातुर्वा वाच्यं शोभातिशायिना ।
आच्छाद्यते स्वभावेन तदप्यौचित्यमुच्यते ॥ V. J. I. 53-54.

Both kinds of Aucitya are for heightening the power of expression, for developing the idea undertaken to be described. They are very general and comprehensive, referring to all aspects. Kuntaka describes Aucitya generally as उचिताख्यान —proper expression. Vide pp. 72-74. V. J.

Kuntaka grasps the supreme importance of Rasa and character, i.e., Prakṛti or as Kuntaka often says, Svabhāva. He accepts the Aucitya pertaining to these which has been spoken of by Bharata and Ānanda. Other items of Aucitya also are shown by Kuntaka and everywhere he points out that all Aucitya is to develop the idea or Rasa. Firstly, defining the speciality of Śabda and Artha in Kāvya, Kuntaka points out the 'Pāramārthya' of these two. His Śabdapāramārthya is only the Aucitya or Dhvani of Pada or Paryāya and his Arthapāramārthya is nothing but Arthaucitya. His Arthapāramārthya comprises cases of the propriety of minor fancies —Pratibhaucitya. Explaining a case of the absence of this Arthapāramārthya, Kuntaka remarks that the fancy of the poet is contrary to the greatness of the character of Sītā and Rāma. This is a case of a breach of प्रकृत्यौचित्य. The test of this Aucitya is, according to Kuntaka, Rasa.

"अत्र असकृत् प्रतिक्षणं कियदद्य गन्तव्यमित्यभिधानलक्षणः परिस्पन्दः न स्वभावमहत्तामुन्मीलयति, न च रसपरिपोषाङ्गतां प्रतिपद्यते। यस्मात् सीतायाः सहजेन केनाप्यौचित्येन गन्तुमध्यवसितायाः सौकुमार्यादेवंविधं वस्तु हृदये परिस्फुरदपि वचनमारोहतीति सहृदयैः सम्भावयितुं न पार्यते।" p. 21.

On page 28, mentioning the qualities in poetry which should vie with each other, i.e., while explaining Sāhitya, Kuntaka refers to Vṛttyaucitya. This is either the Aucitya of the Kaiśikī and others Vṛttis or of the Vṛttis Upanāgarikā etc. The latter is the Aucitya of Rīti, Saṅghaṭanā, Guṇa or Varṇa and Kuntaka calls it Varṇavakratā, which he deals with at the beginning of Unmeṣa ii. This is a case of Varṇa-Saṅghaṭanā-dhvani of Ānanda or Guṇaucitya of Kṣemendra. Kuntaka says that letters or sounds must be appropriate to the context and that certain letters unsuited to certain situations may help the idea and Rasa of other situations.

वर्गान्तयोगिनः स्पर्शाः द्विरुक्ताः तलनादयः ।
शिष्टाश्च रादिसंयुक्ताः प्रस्तुतौचित्यशोभिनः ॥ V. J. II. 2.

"ते च कीदृशाः—प्रस्तुतौचित्यशोभिनः । प्रस्तुतं वर्ण्यमानं वस्तु, तस्य यदौचित्यमुचितभावः, तेन शोभन्ते ये, ते तथोक्ताः । न पुनः वर्णसावर्ण्यव्यसनितामात्रेण उपनिबद्धाः प्रस्तुतौचित्यम्लान(नि)कारिणः । प्रस्तुतौचित्यशोभित्वात् कुत्रचित्परुषरसप्रस्तावे तादृशानेव अभ्यनुजानाति ।" p. 80.[1]

Following the principles of Alaṅkāraucitya pointed out by Ānanda, Kuntaka speaks further of this Varṇavakratā, under which come Śabdālaṅkāras like Anuprāsa and Yamaka, that Anuprāsas must not be written at a stretch and that the repeated letters must often be changed.

नातिनिर्बन्धविहिता नाप्यपेशलभूषिता ।
पूर्ववृत्तपरित्यागनूतनावर्त्तनोज्ज्वला ॥ II.4.

The first principle of all Alaṅkāraucitya is that figures must easily come of themselves, without the poet taking special effort for them. Says Kuntaka in the Vṛtti on the above Kārikā :

"निर्बन्धशब्दोऽत्र व्यसनितायां वर्तते । तेन अतिनिर्बन्धेन पुनः, पुनरावर्तनव्यसनितया न विहिता, अप्रयत्नविरचितेत्यर्थः । व्यसनितया प्रयत्नविरचने हि प्रस्तुतौचित्यपरिहाणेः वाच्यवाचकयोः परस्परस्पर्धित्वलक्षणसाहित्यविरहः पर्यवस्यति ।" p. 84.

[1] Vide p. 129, Vol. VI. No. 1. of this Journal, Ānanda, III. 3-4. शषौ सरेफसंयोगौ etc. It is of this Aucitya of Varṇa that Pope speaks of in his Essay on Criticism:

'Tis not enough no harshness gives offence,
The sound must seem an echo of the sense.
Soft is the strain when Zephyr *gently blows*,
And the *smooth* stream in smoother numbers flows ;
But when loud *surges lash* the sounding *shore*
The *hoarse rough verse* should like a *torrent roar*.
* * * *
Hear how Timotheus' varied Lays surprise,
And bid alternate *Passions* fall and rise.'

Here Kuntaka speaks of what Ānanda has said that Rasa is lost when special effort is taken to build a structure of alliteration.

रसाक्षिप्ततया यस्य बन्धः शक्यक्रियो भवेत् ।
अपृथग्यत्ननिर्वर्त्यः सोऽलङ्कारो ध्वनौ मतः ॥ Dhva. Ā. II. 17.

'रसं बन्धुमध्यवसितस्य कवेः योऽलङ्कारस्तां वासनामत्यूह्य यत्नान्तरमास्थितस्य निष्पद्यते, स न रसाङ्गमिति ।" p. 86.

In the second line of the Kārikā, Kuntaka has said what Ānanda has put in another form that the same sound effect should not be continued to a great length.

शृङ्गारस्याङ्गिनो यत्नादेकरूपानुबन्धनात् ।
सर्वेष्वेव प्रभेदेषु नानुप्रासः प्रकाशकः ॥ II. 15.

"एकरूपत्वानुबन्धनं त्यक्त्वा विचित्रानुप्रासः अनुबध्यमानो न दोषाय।"
Locana, p. 85.

Vide Kuntaka's Vṛtti also on. p. 84. Kuntaka adds another point of Aucitya that cacophony should be avoided. Concatenation of very unpleasant sounds like श्लोघ्रघ्राणाङ्घ्रि etc., are not to be written at all. Kṣemendra quotes such verses of a poet of hundred and more works in his Kavikaṇṭhābharaṇa and condemns them as utterly devoid of even a drop of Camatkāra. These sounds, says Abhinava in his Abhinava bhāratī, by nature torture our ears, while there are other sounds that seem to pour nectar into our ears.

"अन्यैरप्युक्तं (आनन्देन) 'तेन वर्णा रसच्युतः' (Dhva. Ā. III) इत्यादि। स्वभावतो हि केचन वर्णाः सन्तापयन्तीव । अन्ये तु निर्वापयन्तोव उपनागरिकोचिताः; लोकगोचर एवायमर्थः ॥"

p. 415. vol. III Abhi. bhā. Mad. Ms.

Of Yamakaucitya pointed out by Rudraṭa and by Ānanda, Kuntaka speaks thus:

औचित्ययुक्तं आद्यादिनियतस्थानशोभि यत् ।
यमकं नाम..... ..... ॥ II. 6-7.[a]

"औचित्यं वस्तुनः स्वभावोत्कर्षः, तेन युक्तं समन्वितं । यत्र यमकोपनिबन्धनव्यसनित्वेनाप्यौचित्यमपरिम्लानमित्यर्थः ॥"

The few and rare cases of 'Rasavad Yamakas' are called by Kuntaka "समर्पकाणि यमकानि" p. 87.

The suggestive Pratyaya of Ānanda is Pratyayavakratā, having Aucitya to the context, according to Kuntaka. This is a case of Pratyayaucitya, the propriety of the definite Pratyaya or its effectiveness in suggesting the idea or emotion.

प्रस्तुतौचित्यविच्छित्तिं स्वमहिम्ना विकासयन् ।
प्रत्ययः पदमध्येऽन्यामुल्लासयति वक्रताम् ॥ II. 17.

"किं कुर्वन्? प्रस्तुतस्य वर्ण्यमानस्य वस्तुनो यदौचित्यं उचितभावः तस्यविच्छित्तिमुपशोभां विकासयन् समुल्लासयन्— ।"

Here are given two instances of very proper, striking and suggestive use of the present participle: वेल्लद्बलाका घनाः and स्निह्यत्कटाक्षे दृशौ ।

Liṅgadhvani or Liṅgavakratā or Liṅgaucitya is described on on pp. 114-115; II. 23.

विशिष्टं योज्यते लिङ्गं अन्यस्मिन् सम्भवत्यपि ।
यत्र विच्छित्तये सान्या वाच्यौचित्यानुसारतः ॥ II. 23.

"कस्मात्कारणात्, वाच्यौचित्यानुसारतः । वाच्यस्य वर्ण्यमानस्य वस्तुनो यदौचित्यं ..... पदार्थौचित्यमनुसृत्येत्यर्थः ।"

Kuntaka thus often speaks of this Aucitya of every element to the idea (Vastu) or emotion (Rasa). He calls it Prastutaucitya or Svabhāvaucitya or Vastvaucitya. He speaks of it again while describing the fivefold Kriyāvaicitryavakratva. II. 25. p. 227.

A case of Tense-Aucitya is mentioned by Kuntaka in II. 26. It is to promote the Aucitya of the idea to the Rasa that the poet adopts the कालवैचित्र्यवक्रता. Upagrahaucitya is dealt with also by Kuntaka. The poet chooses one of the two—Ātmanepada and Parasmaipada—on the score of Aucitya.

पदयोरुभयोरेकं औचित्यात् विनियुज्यते ।
शोभायै यत्र जल्पन्ति तामुपग्रहवक्रताम् ॥

Unmeṣa III thus describes Prakṛtyaucitya which Kuntaka calls the Svabhāvaucitya of various beings and things.

भावानामपरिम्लान स्वभावौचित्यसुन्दरं ।
चेतनानां जडानां च स्वरूपं द्विविधं स्मृतम् ॥

* * * *

स्वजात्युचितहेवाकसमुल्लेखोज्ज्वलं परम् ॥ III. 5-7.

Of Vyavahāraucitya or Lokavṛttaucitya, which idea is the basis of Bharata's Nāṭya, Kuntaka speaks in III. 9. p. 155. Thus we see how largely looms the idea of Aucitya in Kuntaka. As a matter of fact, in almost all cases of Kuntaka's Vakratā, the test or proof of the strikingness or charm is this Aucitya of the various elements with reference to the Vastu or Rasa the depicting of which is the work of the poet. Vakrokti is only another name for Aucitya! For Kuntaka says of Pada-aucitya that it is Pada-vakratā.

'तत्र पदस्य तावदौचित्यं बहुविधभेदभिन्नो वक्रभावः
V. J. p. 76.

As more than once pointed out already, many of the instances of Ānanda's Dhvani, Abhinava's Vaictrya mentioned in the Abhinavabhāratī, Kuntaka's Vakratā and Kṣemendra's Aucitya are identical. Many items of Vakratā mentioned by Kuntaka are seen in the Abhinavabhāratī as cases of Vaicitrya, with exactly the same or similar illustrations and Abhinava says that the same idea is called Suptiṅgdhvani by Ānanda and Subādivakratā by others. There is bound to be this close relation between Aucitya, Dhvani and Vakratā. Criticising Kuntaka's definition of poetry as Śabda and Artha set in Vakrokti, Mahimabhaṭṭa says in V.V. Vimarśa I: 'The "out-of-the-way-ness" of poetic word and idea as distinguished from those of Śāstra and Loka must either be the Aucitya, so very essential to Rasa which is the "Ātman" of poetry or be the Dhvani of Ānanda. If therefore the new Vakrokti is only Aucitya (which as a matter of fact figures

largely in Kuntaka's treatment of his subject), nothing new is said. If this is denied, the only other possibility is that Vakrokti is nothing but a new name for Dhvani which really seems to be the fact. For the same varieties and the same instances as given by Ānanda are given by Kuntaka.'

"यत्पुनः 'शब्दार्थौ सहितौ ..... इत्यादिना शास्त्रादिप्रसिद्धशब्दार्थोपनिबन्धव्यतिरेकि यद्वैचित्र्यं तन्मात्रलक्षणं वक्रत्वं नाम काव्यस्य जीवितमिति सहृदयमानिनः केचिदाचक्षते, तदप्यसमीचीनं । यतः प्रसिद्धोपनिबन्धनव्यतिरेकित्वमिदं शब्दार्थयोरौचित्यमात्रपर्यवसायि स्यात्, प्रसिद्धाभिधेयार्थव्यतिरेकि प्रतीयमानाभिव्यक्तिपरं वा स्यात् । प्रसिद्धप्रस्थानातिरेकिणः शब्दार्थोपनिबन्धनवैचित्र्यस्य प्रकारान्तरासम्भवात् । ....द्वितीयपक्षपरिग्रहे पुनः ध्वनेरेवेदं लक्षणमनया भङ्ग्याभिहितं भवति, अभिन्नत्वात् वस्तुनः । अत एव चास्य त एव प्रभेदाः तान्येव उदाहरणानि तैरुपदर्शितानि ।" V. V. I. p. 28.

Mahimabhaṭṭa

Mahimabhaṭṭa wrote in the same age, just after Abhinava and Kuntaka. Mahimā accepts Rasa as supreme and also the Aucitya pertaining to Rasa, Bhāva and Prakṛti. He could not escape the idea of Aucitya which was in its season then. As his criticism of Kuntaka's definition of poetry by Vakrokti shows, critics of his time were aware of only two things as specially distinguishing the poetic utterance from the ordinary or Sāstraic one, viz., Aucitya and Dhvani. Of these two there is no need to specially speak of the former because Mahimā considers it as the supreme necessity in so far as Kāvya is accepted as utterance ensouled by Rasa. That is, according to Mahimā, there can be no opposition to Aucitya. It is only with Dhvani that he fights.

"यतः प्रसिद्धोपनिबन्धनव्यतिरेकित्वमिदं शब्दार्थयोः औचित्यमात्रपर्यवसायि स्यात्, प्रसिद्धाभिधेयार्थव्यतिरेकि प्रतीयमानाभिव्यक्तिपरं वा स्यात् । प्रसिद्धप्रस्थानातिरेकिणः शब्दार्थोपनिबन्धनस्य प्रकारान्तरासम्भवात् । तत्र आद्यस्तावत् पक्षः न शङ्कनीय एव । तस्य काव्यस्वरूपनिरूपणसामर्थ्यसिद्धस्य पृथगुपादानवैयर्थ्यात् । विभावाद्युपनिबन्ध एव हि कविव्यापारः, नापरः । ते च यथाशास्त्रं उपनिबध्यमानाः रसाभिव्यक्तेः निबन्धनभावं भजन्ते, नान्यथा।

रसात्मकं च काव्यमिति कुतस्तत्र अनौचित्यसंस्पर्शः संभाव्यते, यन्निरासार्थं काव्यलक्षणमाचक्षीरन् विचक्षणंमन्याः ।" V. V. I. p. 28.

On the point of Rasa and all items of Aucitya of every element of expression to this Rasa, Mahimā is completely in agreement with Ānanda. Ānanda says that if there is one word which is Nīrasa, devoid of Rasa, it is the greatest literary flaw, the Apaśabda. Similarly all flaws are comprised in one common flaw, viz., hindrance to the realisation of Rasa. All Doṣas are hindrances to Rasa and Mahimā calls them by the common name Anaucitya. He quotes Ānanda's memorable Kārikā on this subject.

"कथञ्चिद्वा भिन्नक्रमतयापि अभिमतार्थसम्बन्धोपकल्पने प्रस्तुतार्थप्रतीतेः विघ्नितत्वात् तन्निबन्धनो रसास्वादोऽपि विघ्नितः स्यात्, शब्ददोषाणां अनौचित्योपगमात्, तस्य च रसभङ्गहेतुत्वात् । यदाहुः

'अनौचित्यादृते नान्यत् रसभङ्गस्य कारणम् ।
प्रसिद्धौचित्यबन्धस्तु रसस्योपनिषत्परा ॥'"

V. V. I. p. 31

Certain ideas get certain writers as their brilliant exponents. Thus Sānitya gets Kuntaka as its first great exponent. To Mahimā falls the share of expounding two ideas, Svabhāvokti and Doṣas. The most important part of Mahimā's work is chapter II of his V.V., devoted to a study of five important flaws of expression, on which the classic Kāvya Prakāśa, the model for later compilations, draws for its own Doṣaprakaraṇa to a great extent. These five flaws, and all others are only the many varieties of Anaucitya which means hindrance to Rasapratīti. For Aucitya of Rasa and Prakṛti is the greatest Guṇa, most essential for Kāvya. The absence of this Aucitya is the greatest Doṣa within which every other Doṣa is included. Aucitya and Anaucitya pertain to the content, i.e., Rasa and Artha or Vastu as well as to the outer garment of the Rasa and Vastu, viz., the expression—Śabda. The former is Ābhyantara or Antaraṅga—internal, while the latter is Bahiraṅga—external. Even the unsuggestive or inappropriate metre is an Anaucitya, one belonging to the latter category. Among Sabdānaucityas, Mahimā says that five are to be specially

noted; they are five Doṣas named Vidheyāvimarśa, Prakramabheda, Kramabheda, Paunaruktyam and Vācyāvacanam.

"इह खलु द्विविधमनौचित्यं उक्तं, अर्थविषयं शब्दविषयं चेति। तत्र विभावानुभावव्यभिचारिणां अयथायथं रसेषु यो विनियोगः तन्मात्रलक्षणमेकं अन्तरङ्गं आद्यैरेवोक्तमिति नेह प्रतन्यते। अपरं पुनः बहिरङ्गं बहुप्रकारं सम्भवति। तद्यथा विधेयाविमर्शः, प्रक्रमभेदः, क्रमभेदः, पौनरुक्त्यं, वाच्यावचनं चेति। दुःश्रवत्वमपि वृत्तस्य शब्दानौचित्यमेव, तस्याप्यनुप्रासादेरिव रसानुगुण्येन प्रवृत्तेरिष्टत्वात्। ..... एतस्य (अनौचित्यस्य) विवक्षित-रसादिप्रतीतिविघ्नविधायित्वं नाम सामान्यलक्षणं। ..... त एते विधेयाविमर्शादयो दोषा इत्युच्यन्ते।" II. V. V. p. 37.

Kṣemendra was the pupil of Ācārya Abhinavagupta in poetics. A greater Guru in that subject could not have been the fortune of anybody to get. Kṣemendra first wrote a work on Poetics called Kavikarṇikā[1] which is unfortunately lost to us. Perhaps in it he dealt with Rasa and Dhvani. Our sense of its loss is keen because, in his critical writings spared to us we find many a touch of originality. Kṣemendra's Kavikaṇṭhābharaṇa and Suvṛttatilaka have only slight and subsidiary interest for us. It is his Aucityavicāracarcā we are concerned here with, a small work which yet belongs to the class of 'Prasthāna-works' like those of Bhāmaha, Daṇḍin, Vāmana, Ānanda, Kuntaka and Mahimabhaṭṭa. As is plain from the above-gone survey of the concept of Aucitya, Kṣemendra is not the author of Aucitya, but, as in the case of Vakrokti and Kuntaka, Kṣemendra made Aucitya into a system, elaborating that concept and applying it to all parts of the Kāvya. Kṣemendra only worked out Ānanda and Abhinava in whose system he had his being. Abhinava criticised those critics who glibly talked of Aucitya without reference to Rasa and Dhvani which alone render Aucitya intelligible. Just as Kuntaka's Vakrokti proceeds only after accepting Rasa as supreme and accepts also Dhvani, so also Kṣemendra's Aucitya. Kṣemendra first posits Rasa as the soul of poetry, as the thing whose presence makes Kāvya; Aucitya is its life—'Jīvita'. The term 'Jīvita',

Kṣemendra

[1] Vide Au. V. C. K. M. Gucchaka 1. p. 115. Śl. 2.

as can be seen from the two quotations given above, was used by Abhinava to denote Rasadhvani with Aucitya. Thus Abhinava used both the words 'Ātman' and 'Jivita' as interchangeable and as meaning generally the essence— सारभूतोऽर्थः But Kṣemendra made a subtle distinction between Soul and Life, Rasa the Ātman and Aucitya the Life. These two metaphorical names and the relation between them in metaphysical speculations point to the fact of the intimate relation between Rasa and Aucitya and of how both come into existence together. Kṣemendra's attitude to Rasa is thus plainly stated even in the opening:

औचित्यस्य चमत्कारकारिणश्चारुचर्वणे ।
रसजीवितभूतस्य विचारं कुरुतेऽधुना ॥ Sl. 3.

It is to explain Rasa, by which Kāvya is already explained, that Kṣemendra offers Aucitya. Aucitya is the very life of Rasa, the soul of poetry and this is the natural view of Aucitya in the texts of Ānanda and Abhinava. In a verse or in a Kāvya Aucitya gives Camatkāra, Aucitya which is the life of Rasa. Rasa is the thing to which Aucitya is the greatest relation in which other things exist. He again says:

'औचित्यं रससिद्धस्य स्थिरं काव्यस्य जीवितम् ।' Sl. 5 'रसेन शृङ्गारादिना सिद्धस्य प्रसिद्धस्य काव्यस्य धातुवादरससिद्धस्येव तज्जीवितं स्थिरमित्यर्थः ।' p. 115.

We had observed before that Aucitya is as unintelligible without Dhvani as without Rasa. As a matter of fact it had its greatest exposition in the hands of Ānanda only as a supplementary idea in the system of Rasadhvani; for, to Ānanda and Abhinava the Soul-Ātman—of poetry is 'औचित्यबद्रसध्वनिः' and the three are inseparable. But such an explicit mention and acceptance of Dhvani as of Rasa are not found in the Au. V. C. But Dhvani is all throughout implied. We had said that the test and proof of Aucitya is Dhvani, the *suggestion* of Rasa, or idea. Showing the propriety of Pada (which is a case of Padadhvani with Ānanda), i.e., Padaucitya in a verse, Kṣemendra says that Aucitya in that word pleases us because that word in particular *suggests* the state of separation and

the consequent suffering, i.e., the Vipralambha Rasa : विरहावस्थासूचकं 'कृशाङ्ग्याः' इति पदं परममौचित्यं पुष्णाति । Similarly in all instances of all kinds of Aucitya, Kṣemendra must have sufficiently and clearly based his explanations of Aucitya scientifically on the principle of Dhvani. In not having done so, it must be adjudged that he has not thoroughly explained himself and that he has not paid the homage due from him to Ānandavardhana from whom the concept of Aucitya took new life.

In most cases, Dhvani, Vakrokti and Aucitya are merely names for the Camatkāra in a certain point. In his commentary on chapter xv, the opening chapter of the Vācikābhinaya section of the Nāṭyaśāstra, Abhinava uses another word for this Camatkāra, viz., Vaicitrya, strikingness or beauty or charm. Bharata gives ten grammatical divisions of words and Abhinava says that in poetry everything, gender, number, name, case etc., has to be 'vicitra', wonderful or striking. Having explained the Vaicitrya of all elements of language in poetry, Abhinava reconciles to this Vaicitrya of his the Dhvani of Sup, Tiṅg, Vacana etc., of Ānanda (Ud. III.) and the Vakratā of Sup. etc., of others (Anye) meaning Kuntaka or those of whose ideas Kuntaka is the systematic exponent.[1] To these can be reconciled Kṣemendra's Aucitya of Pada, Kriyā, Kāraka, Liṅga, Vacana, Upasarga, Nipāta etc. Again Suptiṅgdhvani, Subādivakratā, Subādivaicitrya or Subādyaucitya is the same as some of the ten different kinds of Camatkāra, Camatkāra in Śabda, in Artha, etc., given by Kṣemendra in the third section of his kavikaṇṭhābharaṇa. As a matter of fact there is nothing new in Kṣemendra's Aucitya of Pada etc., except appreciation under a different name of the same points pointed out by Ānanda in Udyota III. of his work under the heads of Dhvani of Pada, Sup. etc., forming the numerous parts of Vyañjaka. The Au. V. C. is vastly indebted to the third chapter of the Dhva. Ā. On the subject of Rasaucitya alone, while explaining Viruddha rasa samāveśa, combining of two contradictory sentiments, Kṣemendra quotes Ānanda's verse on the subject. (p. 134. Au. V. C.) Except for this one obscure quotation,

[1] Vide p. 367, Vol. II, chap. xiv. Abhi. Bhā. Mad. MS. Vide also my article on Writers quoted in the Abhi. Bhā. in the *Journal of Oriental Research*, Madras, Vol. VI, Part III, p. 221. See above, this same article on this point.

it must be stated that in his tract which only works out Ānanda's ideas, Kṣemendra has not paid the proper respect to Ānanda. He grows eloquent on Aucitya in the opening but strangely does not even quote the famous verse of Ānanda, अनौचित्यादृते नान्यत् etc.

Kṣemendra has elaborated and pointed out some more Aucitya in the wider sphere of thought—Artha and Artha-sandarbha. Most of the things in this class like Aucityas of Deśa, Kāla, Vrata, Tattva, Sattva, Svabhāva, Sārasaṅgraha and Avasthā are comprehended in Prakṛtyaucitya and in the absence of the flaw of लोकागमविरोध which is pointed out by all writers from Bhāmaha and Daṇḍin, which is part of Auciyta and can be said to be generally included in Prakṛtyaucitya which is as old as Bharata or can be separately called as Lokasvabhāvaucitya. The Pratibhaucitya given by Kṣemendra concerns with the minor 'fancies' and not with poetic imagination or genius as a whole. Similarly innumerable items of Aucitya can be elaborated and so does Kṣemendra say in the end: 'अन्येषु काव्याङ्गेषु अनयैव दिशा स्वयमौचित्य उत्प्रेक्षणीयं । तदुदाहरणान्यानन्त्यात् न प्रदर्शितानीत्यलमतिप्रसङ्गेन ।'

p. 160.

As for instance, the propriety of metre, Vṛttaucitya, is an interesting study. Bharata has spoken of it in his chapters on Vṛttas and Dhruvās, xvi and xxxii. Abhinava quotes in his Abhi. Bhā. Kātyāyana, an old writer on metres, on the appropriateness of certain metres to certain subjects, moods and situations.

वीरस्य भुजदण्डानां वर्णने स्रग्धरा भवेत् । etc.[1]

Kṣemendra reserves this subject for special treatment in his Suvṛttatilaka. (Vinyāsa iii. Sls. 7-16).

काव्ये रसानुसारेण वर्णानुगुणेन च ।
कुर्वीत सर्ववृत्तानां विनियोगं विभागवित् ॥

* * * *

वृत्तरत्नावली कामात् अस्थाने विनिवेशिता ।
कथयत्यज्ञतामेव मेखलेव गले कृता ॥ etc.

[1] Vide *J. O. R.*, Madras, Vol. VI., Part III., p. 223.

Kṣemendra then goes to explain with illustrations what situations and subjects should be depicted in what metres. Though there is bound to be a large amount of Subjectivism and Impressionism in this study, though, even as regards the question of relation of Rāgas and Rasas in music, in this enquiry also, it may be that one same metre has many emotional significances, there is some truth in some principles of Vṛttaucitya like the association of long metres like Sragdharā with descriptions of war, with Vīra, Raudra and Bībhatsa Rasas and the use of Anuṣṭubhs for narration, brief summing up and pointed speech.

The concept of Aucitya was born as a supplement to Rasa and Dhvani and is so developed by Kṣemendra, though it must be admitted that the latter, Dhvani, is not specifically spoken of by him. From the verses in the beginning which state the doctrine of Aucitya in general, it is plain, that like Rasa and Dhavani, Aucitya came in as a severe criticism of a merely physical or 'materialistic' or a jeweller's philosophy of poetry which made much only of Alaṅkāras and Guṇas. This is not true of the critical literature of Kṣemendra's time, for Rasa had been established firmly as the soul of poetry in poetics and the discussion yet going on was only on the process of the realisation of that Rasa, whether it was Dhvani, Anumāna, Bhāvanā and Bhōga or Tātparya and so on. But it is true of practical literature and of what the poets themselves were doing. Kṣemendra's Aucitya is another and final criticism of Alaṅkāras.

काव्यस्यालमलङ्कारैः किं मिथ्यागणितैर्गुणैः ।
यस्य जीवितमौचित्यं विचिन्त्यापि न दृश्यते ॥
अलङ्कारास्त्वलङ्काराः गुणा एव गुणास्सदा ।
औचित्यं रससिद्धस्य स्थिरं काव्यस्य जीवितम् ॥ S'ls. 4-5.
उचितस्थानविन्यासादलङ्कृतिरलङ्कृतिः ।
औचित्यादच्युता नित्यं भवन्त्येव गुणा गुणाः ॥ S'l. 6.

'अलङ्कृतिरुचितस्थानविन्यासादलङ्कर्तुं क्षमा भवति, अन्यथात्वलङ्कृतिव्यपदेशमेव न लभते । तद्वदौचित्यादपरिच्युता गुणाः गुणतामासादयन्ति, अन्यथा पुनरगुणा एव ।' p. 116.

This illustrative verse (which elaborates, as pointed out at the beginning of this paper, a verse on the same subject in Bharata) is also cited by Kṣemendra:

कण्ठे मेखलया, नितम्बफलके तारेण हारेण वा
पाणौ नूपुरबन्धनेन, चरणे केयूरपाशेन वा।
शौर्येण प्रणते, रिपौ करुणया, नायान्ति के हास्यतां
औचित्येन विना रुचिं प्रतनुते नालङ्कृतिर्नो गुणाः॥

Bharata says this in respect of music also where the music-alaṁkāras must be utilized only according to Rasa.

एभिरलङ्कर्तव्या गीतिर्वर्णाविरोधेन।
स्थाने चालङ्कारं कुर्यात् न ह्युरसि काञ्चिकां बध्येत्॥

N. S. xxix. 73-4. p. 335-6 Kasi edn.

Thus well has it been said by Ānanda that Aucitya is the great secret of Rasa and Anaucitya, the greatest enemy.

The Agni purāṇa

The Agṇi purāṇa's section on Poetics contains little by way of any development of the concept of Aucitya; but it is also noticed here because it shows some ingenious and original reshuffling of concepts and gives this concept of Aucitya as an Alaṁkāra of both Śabda and Artha, an Ubhayālaṁkāra. 345/2 and 5.

प्रशस्तिः कान्तिरौचित्यं संक्षेपो यावदर्थता।
अभिव्यक्तिरिति व्यक्तं षड्भेदास्तस्य जाग्रति॥
यथा वस्तु तथा रीतिः य (त) था वृत्तिः त (य) था रसः।
ऊर्जस्विमृदुसन्दर्भादौचित्यमुपजायते॥

Prakāśa varṣa

The unpublished Rasārṇavālaṁkāra (Mad. Ms) of Prakāśa varṣa is somewhat important. It is another work which speaks of Aucitya as a whole as an Alaṁkāra, but differs from the Agni purāṇa in holding it as a Śabdālaṁkāra.

श्लेषश्चित्रं तथौचित्यं प्रश्नोत्तरप्रहेलिका।
* * * *
शब्दालङ्कृतयः स्पष्टमष्टादश मनीषिभिः॥

p. 16. Mad. Ms.

Some valuable ideas on Aucitya are also given by Prakāśa varṣa. He defines Aucitya as the spirit of mutual help between sound and sense, between word and idea, Śabda and Artha and as an element which makes poetry great. He adds that to Sahṛdayas, Anaucitya is greatest flaw.

उपकार्योपकारत्वं यत्र शब्दार्थयोर्भवेत् ।
उत्कर्षाधायकं...ोः (प्राज्ञैः) औचित्यं तत्प्रकीर्तितम् ॥

* * * *

अनौचित्यात् किमन्योऽस्ति तिरस्कारस्सचेतसाम् ॥

Prakāśavarṣa gives a new twofold classification of Aucitya but does not explain the varieties further. He says that others have said enough on this subject.[1]

There is one more point to be considered before closing this account of Aucitya. Bharata has said[2] that Hāsya Rasa or the sentiment of laughter is produced by Anukṛti and Ābhāsa. It has been pointed out above that Abhinava remarks in his Locana that Anaucitya is at the root of Ābhāsa, as in the case of the Śṛṅgārābhāsa of Rāvaṇa for Sītā. We can only laugh at it. So it is that Laulya which is proposed as a Rasa by some, is made by Abhinava an accessory in Hāsya Rasa.[3] In the Abhinava bhāratī on the text of Bharata which explains the origin of Hāsya Rasa, Abhinava discusses what constitutes the basis of the comic and points out that Anaucitya is at the root of all comic.[4] Aucitya is Rasa and Anaucitya is Rasābhāsa and Hāsya Rasa. The illustrative verse quoted by Kṣemendra gives a series of Anaucitya and concludes 'नायान्तिकेहास्यतां'. Surely one with a girdle round the neck and a necklace at the foot will be laughed at. So it is that Bharata also says:

Anaucitya and Hāsya

मेखलोरसि बन्धे च हास्यायैवोपजायते । xxiii. 69.

This takes us to another aspect of poetry and of Aucitya.

[1] Vide *J. O. R.*, Vol. viii. Part 3 for an account of Prakāśavarsa.
[2] N. Ś. VI. p. 296 Gaek. edn.
[3] Vide p. 342, Abhi. Bhā. Gaek. edn.
[4] Pp. 296-297. Abhi. Bhā. Gaek. edn. A paper of mine on the Comic element in Skr. literature (on the theory of Hāsya and its treatment by poets) will soon be published.

In poetry of Rasa, Aucitya is the very life, Jīvita; but in comic poetry, the very life of its Rasa, viz., Rasābhāsa or Hāsya Rasa, is Anaucitya. Anaucitya is the secret of comic poetry and poetry of nonsense.

चार्वनौचित्यमेवैका हास्यस्योपनिषत्परा ।
अनौचित्यं रसाभासकाव्यस्य स्थिरजीवितम् ॥

It is only with various forms of Anaucitya that Hāsya can be developed; all Doṣas of speech and thought occur in Śākāra and we have already pointed out above how Nyūnōpamā and Adhikōpamā are the secrets of satire and parody. Inappropriateness is at the root of all kinds of the ridiculous and the laughable and this has been shown by Abhinava in his Abhi. Bhā:

'अनौचित्यप्रवृत्तिकृतमेव हि हास्यविभावत्वम् ।'
p. 297. Gaek. edn.

Thus Anaucitya is the Aucitya in Hāsya Rasa. This Aucitya is that aspect called 'adaptation' by virtue of which, flaws become excellences, by change of circumstances. The incoherent and the inappropriate themselves become appropriate. Just as Śrutiduṣṭa, a flaw in Śṛṅgāra, is a great Guṇa in Raudra and this adaptation is one Aucitya, so also Anaucitya which spoils all Rasas and is the greatest Rasadoṣa is the greatest Rasaguṇa in Hāsya. This is of course said of the fundamental basis, the root cause, Vibhāva, of Hāsya Rasa and of those conditions of inappropriateness, oddities and ludicrousness which are the stuff of which Hāsya is made. And in the delineation of this Anaucitya itself producing Hāsya, in expression and in all other parts, principles of internal Aucitya have to be observed. There are two old verses on this subject of how Anaucitya becomes Aucitya, of how Doṣas become Guṇas and of how adaptation and appropriateness are the only rule.

सामान्यसुन्दरीणां विभ्रममावहत्यविनय एव ।
धूम एव प्रज्वलितानां मधुरो भवति सुरभिदारूणाम् ॥
(Cchāyā of a Prākṛt Gāthā).

अन्यदा भूषणं पुंसः क्षमा लज्जेव योषिताम् ।
पराक्रमः परिभवे वैयात्यं सुरतेष्विव ॥ Māgha. S. V. II. 44.

It is all some kind of relativity in the kingdom of poetry. There is no absolute Guṇa and Doṣa but only Ucita and Anucita; and the poet takes up even Anaucitya to make Aucitya out of it. The poet's attitude is as free and open in this respect as in respect of the question of morality in poetry.

It is this Aucitya which Robert Bridges speaks of in his essay on Poetic Diction under the name 'Keeping', a concept borrowed fom Painting and which he describes as the 'harmonising of the medium'. The following line of his explains his idea further: 'But in Aesthetic no Property is absurd if it is in keeping.' Bridges speaks here of absurdity (Doṣa) ceasing to be so and becoming a Guṇa (Vaiśeṣika) because of Aucitya (keeping).

Conclusion

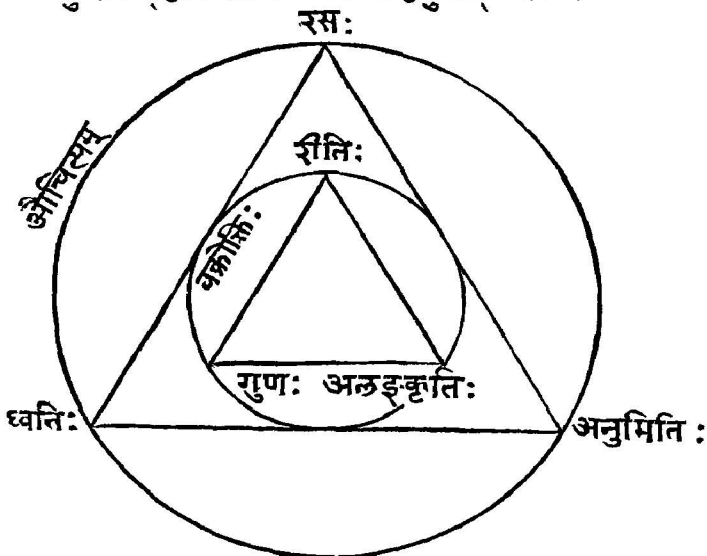
Three doctrines are the great and noteworthy contributions of Sanskrit Alaṅkāra Literature to the world's literature on Literary Criticism. They are Rasa, Dhvani and Aucitya. Even the former two are only now being slowly recognised as 'soul' of poetry by English writers.[1] Aucitya is a very large principle within whose orbit comes everything else. The Aucitya-rule of criticism is obeyed by all others, including Rasa. Our Professor, Mahāmahopādhyāya Vidyāvācaspati S. Kuppuswami Sastriar puts the whole evolution of Skr. Poetics from Alaṅkāra to Aucitya in a Kārikā and illustrates it with a graph. Within the big circle of Kṣemendra's Aucitya, there are three view-points in the shape of a triangle. The topmost point of the triangle is the undisputed Rasa of Bharata, which Ānanda and Abhinava accept as 'Soul' of poetry and which critics of Dhvani like Bhaṭṭa Nāyaka and Mahimabhaṭṭa and other theorists like Kuntaka accept. Lower down, the two points of the triangle are the two prominent theories, opposed to each other, regarding the process of realising Rasa, viz., the Dhvani of Ānanda and the Anumiti of Mahimabhaṭṭa. Anumiti is mentioned only as 'upalakṣaṇa' and it stands for other anti-dhvani theories also, like the Bhāvanā and Bhoga of Bhaṭṭa Nāyaka, Tātparya etc. Within this triangle is a

[1] A complete survey and review of Western Literary Criticism from Aristotle to Abercrombie from the point of view of Skr. Alaṅkāra Śāstra has been made by me and my paper on the subject will soon be published.

smaller circle named after the Vakrokti of Kuntaka. This circle again contains a triangle within it, the topmost point of which is Vāmana's Rīti, a concept decidedly superior to and more comprehensive than the two lower points called Guṇa and Alaṅkāra of Daṇḍin and Bhāmaha. Beginning with Alaṅkāra, the theories get superior or more comprehensive one by one. The Alaṅkāra-guṇa-rīti modes of criticism deal with diction and style in the lower sense of the term and are classed under one bigger current of the study of form culminating in the comprehensive Vakrokti-circle of Kuntaka, which is also an approach to poetry from the formal side. The next, the bigger triangle begins the current of the study of the content, of the inner essence of poetry, viz., Rasa and the process, the technique by which the poet delineates it and the Sahṛdaya gets it. All these are comprehended in the outermost circle of Aucitya which pertains to Rasa and everything else in Kāvya. All the other theories only run at the back of Aucitya which leads the van. If there is a harmony or a beauty as such, innate in every part of a great poetry, it is this Aucitī.

The Kārikā and the graph explained above are given below :—

"औचितीमनुधावन्ति सर्वे ध्वनिरसोन्नयाः ।
गुणालङ्कृतिरीतीनां नयाश्चानृजुवाङ्मयाः ॥"



M. M. Prof. S. Kuppuswāmi Sāstriar.

(*End*)

UNIVERSITY NOTES

Administration

His Excellency Khan Bahadur Sir Muhammad Usman, C.I.E., was Chancellor of the University till the 17th August, 1934, and His Excellency Lt.-Col. the Rt. Hon. Sir George Frederick Stanley, P.C., G.C.S.I., G.C.I.E., C.M.G., who resumed charge of the Governorship of Madras, became Chancellor and continued to hold the appointment till the 15th November, 1934, when His Excellency Lord Erskine, Governor of Madras, assumed charge of his office.

Mr. Richard Littlehailes, C.I.E., M.A., assumed charge of the Vice-Chancellorship on the 21st May, 1934.

Syndicate

Mr. W. C. Douglas resigned his membership in September, 1934, on the Syndicate and Mr. H. C. Papworth, Principal, Presidency College, was elected to the vacancy by the Academic Council.

Lt.-Col. R. E. Wright, C.I.E., I.M.S., resigned his membership on the Syndicate in November and His Excellency the Chancellor nominated Lt.-Col. Clive Newcomb, I.M.S.

Mr. W. Erlam Smith, Director of Public Instruction, went on leave from the 17th December, 1934, and Mr. H. Champion, acting Director, assumed charge and he is the *ex-officio* member of the Syndicate.

Courses of Study

The Academic Council has resolved as follows *re.* revision of the courses of study :—

English course in B.A.

(1) That it is desirable in the B.A. Degree courses to make provision for English both as a compulsory subject and as an optional group. (2) That the compulsory course now provided in Part I of the B.A. Degree course be retained without substantial change. (3) That an optional course may be provided by framing a group for inclusion in Part III which should not be limited to 'English subjects' such as Prose, Poetry, Composition, etc., but should include (*a*) a selection of such

subjects and (*b*) one or more 'related subjects' such as History of England, English Institutions, English Social and Industrial History, Development of English Thought, which may be judged suitable to assist in the study and appreciation of English Literature.

Higher Degrees in Research

(1) That there be a first Research Degree designated M.Litt., on the Arts side and M.Sc., on the Science side open to Pass or Honours Graduates in Arts and Science, awardable on approved thesis for post-graduate research work done under the guidance and supervision of a Professor approved by the University;

(2) That there be a higher Research Degree designated D.Litt., on the Arts side and D.Sc., on the Science side open to Honours Graduates and those who have taken the M.Litt. or M.Sc. degrees, awardable on approved theses published memoir or work which shall be an original contribution to learning showing evidence of original research work;

(3) That the M.Sc. and D.Sc. Degrees be also open to graduates in the Faculties of Medicine, Engineering, Teaching, Agriculture and Veterinary Science.

Higher Degree in Teaching

The Academic Council has accepted the recommendation of the Board of Studies in Teaching regarding the desirability of instituting a higher degree in Education, as distinct from L.T., to be designated as M.Ed. Degree to be taken after a regular University course of two years.

Framing of Regulations on the above proposals are under consideration.

Convocations

Convocations of the University were held on the 1st and 2nd August, 1934, and on the 4th December, 1934.

His Excellency the Chancellor presided over the Convocation held on the 2nd August and the Vice-Chancellor presided over the other two Convocations.

Mr. M. Ruthnaswami, C.I.E., M.A., delivered the Address to the Graduates at the Convocation held on the 2nd August, 1934.

Publications

The following were the Research Publications issued by the University during the year 1934:—

1. Vijayanagara—Origin of the City and Empire.
2. Brahati, Part 1.
3. Unadi Sutras, Part VI.
4. Vishnumayanatakam.
5. Tamil Sangam Age—2nd Edition.
6. Katyayana Pratisakhya.

Endowments

The following new endowments were accepted by the University during this period:—

(*a*) Sir C. V. Kumaraswami Sastri Medal.

(*b*) Diwan Bahadur K. Krishnaswami Rao Lectureship.

Constituent and Affiliated Institutions

The Women's Christian College, Madras, opened classes in Indian Music for the Intermediate course.

The American College, Madura, was granted affiliation in Honours course in Economics. Classes have not yet been started.

Madura College, Madura, was granted affiliation in Mathematics and Urdu in the B.A. courses.

The Economics group of the B.A. Degree course was opened at St. Berchmans' College, Chenganacherry, and at the Theosophical College, Madanapalle.

The Salem College opened classes in Natural Science for the Intermediate.

Three new Institutions were approved for training students for Oriental Titles courses (Siromani and Vidwan):—

Veda Vedanta Bodhini Patasala, Sholinghur.

The Kerala Sanskrit College, Katampazhipuram.

Sahitya Dipika Sanskrit College, Pavaratti.

Honorary Degrees

The Senate of the University of Madras has, on the recommendation of the Syndicate, resolved to confer the Honorary

Degree of Doctor of Laws (LL.D.,) on the following persons who were former Vice-Chancellors of the University :—

1. Sir John Wallis, *Kt.*, M.A., Bar-at-law.
2. Diwan Bahadur Sir K. Ramunni Menon, *Kt.*, M.A.

EXCHANGES

Oxford.
Cambridge Bulletin.
Bombay University Journal.
Annamalai University Journal.
Inter University Bulletin.
The New Review, Calcutta.
Madras Agricultural Journal.
Madras Co-operative Journal.
Indian Co-operative Quarterly.
League of Nations' Weekly Bulletin.
The Commercial Gazette.

A SHORT HISTORY OF ENGLISH LITERATURE. By EMILE LEGOUIS. Clarendon Press. 6*s*.

The Clarendon Press has recently published *A Short History of English Literature* by M. Emile Legouis, Professor of English Literature at the Sorbonne, Paris. Professor Legouis is a Frenchman, and he has written this book primarily for the benefit of French students of English Literature, and for this reason, as he himself explains, he has adopted the simple narrative manner, avoided abstractions, and aimed at concreteness.

The book is a complete compendium of the whole history of English Literature from Anglo-Saxon times to the present day, and squeezes in its four hundred pages a mention of almost every prose, poetic and dramatic work that English writers have produced. And the author apologises in his Preface for having omitted the literature of the United States, and of the British colonies and dominions beyond the seas! It is this extreme condensation which makes the book of small value to students of English Literature, though it may certainly serve as a handy book of reference to both Englishmen and foreigners who know a little of the subject and require encyclopædic information. Byron and Keats, for instance, are dealt with in two pages each, whilst a work like Landor's *Imaginary Conversations* is just mentioned, but not a single character in them is referred to, nor is the reader given any indication as to the subject of any one of them. This is the fault of the book; every work in English Literature is mentioned, but the reader is too often left wondering what the works are about. The case is the same with regard to some of the great historical movements, which have affected literature; they are too scrappily dealt with.

The work, however, is a very useful book of reference, in which facts and figures can be looked up; and in this respect it is executed with characteristic French thoroughness and definiteness. Professor Legouis, as one would expect in a foreigner, follows the clearly marked traditional paths of English Literature, and, avoiding the dangers which might lurk in any attempt to indulge in criticism of originality, states his facts with categorical precision. And the book must be commended for the completeness with which this is done.

Especially welcome is the last chapter in which the writer gives the outlines of English Literature from 1880 to the present day. Arnold Bennett, G. K. Chesterton, Somerest Maugham, Bernard Shaw, Galsworthy, Sir James Barrie, Sir Arthur Pinero and many others are each given a mention or a paragraph. There is sometimes, as perhaps is natural, a lack of proportion in the author's account of modern writers. Of the comic operas of Gilbert and Sullivans, for instance, only *H.M.S. Pinafore* and *The Mikado* are mentioned, whereas since the operas of this author and this composer are practically the only enduring products of the Victorian theatre, English theatre-goers would expect a word of appreciation of *Iolanthe, The Gondoliers, The Pirates of Penzance* and *The Yeomen of the Guard*. On the other hand, it is commendable that Professor Legouis realises that London is no longer the only centre of the English drama, and calls attention to the work of the Manchester Repertory Theatre, and to the production of 'local' drama in Ireland under the influence of the Celtic Revival.

One of the most attractive features of the book is its numerous artistic illustrations, ranging from a reproduction of the Beowulf manuscript in the British Museum (*c.*A.D. 1000), to a picture of a modern printing machine, capable of producing 50,000 twenty-four-page newspapers per hour, all delivered, folded, and counted.

H.C.P.

THE CAMBRIDGE MODERN HISTORY. Vol. I. The Renaissance. 2nd Edition. Cambridge University Press. 7*s.* 6*d.*

This is the first volume of a work which, like its original planner, Lord Acton, has become famous. The popularity and the consequent demand for this adequate and comprehensive survey of Modern History, has urged the publishers to bring out this new edition which, however, is but a reprint of the original. The general history of Europe and of her colonies since the fifteenth century is treated in twelve volumes, and for each of the volumes some historical fact of signal importance has been chosen as the central idea round which individual developments are grouped, not accidentally, but of reserved purpose.

The Renaissance, the subject of the first volume, is obviously one of such central ideas, which ushered in the modern period of history. However, this volume, it must be noted, being the first of the series, deals not only of the first of the twelve topics, with which the twelve volumes are taken up, but it is also in the nature of an introductory volume, whose purpose is to bring upon the stage of modern history the nations, forces and interests, bearing on the chief parts in the action. Thus it is that the editors of the work have devoted special chapters to forces, like the *Discourses* and the *New World,* which may be said to have inaugurated the modern history of the world's history; to interests, like the Temporal Power of the Papacy and the Catholic Kings; and to nations, like Venice and Hungary and Slavonic kingdoms, which had bearing on the 'action' of the age depicted in this volume on Renaissance.

The difficulty of arbitrarily dividing History is borne in mind by the authors. Each chapter of the volume, and the whole volume itself, include so much of antecedent, especially of institutional history, as seemed necessary for the clear understanding of the conditions bearing on the spread of Renaissance. It is interesting to note that the authors have devoted two chapters to bring out the difference between the 'Classical Renaissance' and the 'Christian Renaissance'. The work planned by Lord Acton needs no special pleading; it has already spread over the world of historical knowledge, and there is hardly a library of any importance without the twelve volumes of Cambridge Modern History.

C. J. V.

WORLD ECONOMIC SURVEY. Third year 1933-34. League of Nations Economic Intelligence Service. Pp. 356. Paper, 6*s*. cloth, 6*s*. 7*d*.

Those who welcomed the publication of the first number of the *World Economic Survey,* three years ago will welcome even more warmly the latest number of the series, which carries the story of recent economic developments up to the end of July of the current year. The first chapter gives an account of the principal events up to the end of March 1934. The final chapter continues this narrative and concludes with an estimate of the economic situation at the end

of July. Other chapters give more detailed analyses of the main aspects of economic and financial developments, dealing successively with production, prices, wages, international trade and commercial policy, public finance, banking and monetary questions and the capital market. There is also a discussion of the effects of the depression upon more fundamental aspects of economic organisations, population movements, changes in consumption, the control of production and the regulation of international trade.

Statistical information, wherever possible in the form of diagrams and charts, is included in support of the statements made; but the aim of the Survey is to give in readable form an account of recent events which shall be intelligible to the layman.

The marked recovery of production in recent months and the increased importance of national recovery plans are shown. The world output of foodstuffs remained much the same in 1933 as in 1932; but the production of industrial raw materials rose by 9 per cent. and industrial production by 12½ per cent. The quantum of world trade also rose, but to a much smaller extent, while the value of world trade continued to fall. The Survey examines from many angles the bearing of these developments upon the problem of reconciling national recoveries with international equilibrium.

AN IMPERIAL HISTORY OF INDIA by K. P. Jayaswal, published by Motilal Banarsi Dass, the Punjab Sanskrit Book Depot, Lahore, 1934. Price Rs. 8.

The full title of the book is An Imperial History of India in a Sanskrit Text (c. 700 B.C. c. 770 A.D.). The Sanskrit Text is the text of the Mañju-Śrīmūlakalpa. This important Buddhist work, thanks to the late erudite scholar MM. Dr. Gāṇapti Śāstri, was published ten years ago in the Trivandrum Sanskrit Series from the then available manuscript. In the work under review, Mr. Jayaswal has given the Text of the Mañju-Śrīmūlakalpa as corrected with the help of the Tibetan text by Ven. Rāhula Sānkṛityāyana. The printed Text in this book begins from the fifty-third pāṭala, and contains 1,005 stanzas, all full of valuable information to the History of Ancient India particularly from the first to the end

of the eighth century. The date of the composition which must be attributed to a single author is fixed roughly A.D. 800.

The book begins with a critical introduction, followed by an analytical data of the material, which is divided into parts and sections, giving descriptive ceptions to each. The historical importance of the sections has been pointed out in the comments attached to each section. The comments are full of brilliant suggestions and original interpretations.

The importance of this literary record can hardly be exaggerated. It gives a complete history of the Imperial Guptas, of the Mukharis, of Harṣa, of a revived Gupta Empire after Harṣa, and of a vivid description of two popular elections of kings in Bengal. Among the several new details mention may be made of the fact that Mahāpadma Nanda was the Prime Minister before his election to the throne, that the Valabhī Dynasty continued to be Imperial for two generations, that Cāṇakya-Kauṭalya continued to be minister for three emperors including the early rule of Aśoka, and that after Harṣa and Śaśānka and before the rise of the Pālas, there was an imperial dynasty with its seat at Benares and in Magadha. Space forbids us form entering into details set forth in this highly informative work. Scholars will differ with some of the views expressed, for instance, the fixing of Pāṇini's date on the doubtful evidence (pp. 15-16), especially in the face of the text *niyatam śrāvakatvena*. It is surprising and perhaps worth noting that a professedly Buddhist historian omits to mention Aśoka the Great, the so called Buddhist Emperor in the Maurya Dynasty, while he mention the non-Buddhist King Chandragupta and Bindusāra and their minister Cāñakya. Mr. Jayaswal thinks that Aśoka is misplaced. But to us the omission seems significant, and perhaps the confused Buddhist legends have lavished all their praise on Mauryan Aśoka, which are legitimately due to Aśoka Mukhya, the predecessor of Viśoka according to the Text. The book, which is a very useful work as giving so much additional information on the early History of India, will be appreciated by all scholars, and we heartily offer our felicitations to its learned author.

V. R. R. DIKSHITAR

PUBLICATIONS OF THE MADRAS UNIVERSITY

(Text-books, Calendars and Question Papers have been omitted)

	Name of Publications	*Price* Rs	A	P
1.	**Some South Indian Villages,** by Dr. G. Slater. Available at the Oxford University Press, Madras ... ... each	5	0	0
2.	**Sources of Vizianagar History,** by Dr. S. Krishnaswami Ayyangar, available from the Superintendent, Govt. Press, Mount Road, Madras... ... ... each	4	8	0
3.	**Dravidic Studies,** (available from the Superintendent, Govt. Press, Mount Road, Madras).			
	Volume I	0	2	0
	Volume II	0	8	0
	Volume III	0	12	0
	Bound Vols. I–III	2	4	0
4.	**History of Sri Vaishnavas,** by Mr. R. Gopinatha Rao	0	10	0
5.	**Psychological Tests of Mental Abilities,** by Dr. A. S. Woodburne	2	8	0
6.	**The Nayaks of Madura,** by Mr. R. Satyanatha Ayyar, available at the Oxford University Press, Madras	8	0	0

TO BE HAD OF MESSRS.

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7.	**A Study of the Optical Properties of Potassium Vapour,** by Dr. A. L. Narayan	1	12	0
8.	**Absorption Spectra and their bearing on the structure of atoms and molecules,** by Dr. A. L. Narayan	0	8	0
9.	**Investigations on the molecular scattering of light,** by Dr. K. K. Ramanathan	1	12	0
10.	**The Kavari, the Mukari and the Sangam Age,** by Mr. T. G. Aravamudan	2	4	0
11.	**Dravidic Studies—No. IV on the Octaval System of Reckoning in India,** by Dr. Mark Collins	0	12	0

POPULATION AND PRODUCTION IN INDIA, 1920-32.[1]

By P. J. Thomas, *Professor, Madras University.*

The increase of 10.5 per cent in the population of India between 1920 and 1930 has created considerable uneasiness in many quarters. The author of the Census Report, 1931, views it with alarm and this is shared by a large number of publicists. Mr. R. W. Brock, formerly the Editor of *Capital,* made the following statement at a meeting of the East India Association in 1932 :—'So far as the official figures indicate there has certainly not been any increase in India's agricultural and industrial production, in any way proportionate to the increase of her population, and the only possible inference appears to be that there has been a fall in the average income and therefore the average standard of living.'[2] This startling statement challenges a statistical examination of the problem.

There is one serious difficulty in accurately estimating production in India. Not less than 70 per cent of the people are dependent on agriculture, but the available statistics of agricultural production are hardly reliable, as they are based on a very imperfect system of crop forecasts. The forecasts of crop outturn in India are based on (1) area under cultivation; (2) the standard of normal outturn per acre; and (3) the condition factor or the annavari estimate. The figures of area are supplied by the Revenue Department, and are fairly reliable except in the permanently settled tracts of Bengal, Bihar and Orissa, and parts of the United Provinces. The standard outturn is 'the average yield on average soil in a year of average character'. The outturn figures are deduced from crop-cutting experiments, but in most provinces such experiments have not been systematically carried out, and in some they have not been undertaken since 1919; and although in the meantime considerable increase in the area under improved varieties of crops has taken place, the figures adopted in 1919 are still used for estimating crop yields. The worst link in the chain is the annavari estimate which is submitted by the village patwari. The annavari represents the relation of the crop reported on to the normal crop per acre, but it is based on guess-work.

The result is that year after year, the crop forecasts made have proved either an under-estimate or an over-estimate, generally the former. In the case of two crops—cotton and

[1] I am grateful to Dr. A. L. Bowley and Mr. Sundararama Sastri for help in regard to the method and the tables.

[2] *Asiatic Quarterly*, 1932, p. 440.

jute—it is possible to test the forecasts by a post-mortem examination. Such a test showed that in both cases the forecasts had been under-estimated. In the case of cotton, the difference is 17 per cent and in the case of jute, 18.6 per cent. The annual average production of cotton for ten years, was 5,380,000 bales, but the post-mortem examination showed that it was 838,000 bales less than the actual crop of those years. In the case of jute, the divergence has been even wider. In a single year (1922) the difference came to 52 per cent. (The forecast was 47.37 million bales; but the actuals came to 64.36 million bales). The area under improved crops has been increasing at a rapid pace during the decade 1920-30; from 2,507 acres in 1920-21, it rose to 12,016 acres in 1930-31. It is true that such under-estimation has made the statistics rather defective as commercial information, but the error is 'systematic', and as we are here dealing with only 'relatives', it does not affect the result tangibly.

The position in respect of industrial production is slightly better, because although there are no recorded statistics of production in unorganized industries, the statistics of production in the organized industries are fairly accurate, within certain limits. In the case of textiles (cotton and jute), we have statistics for a fairly long period, and for iron and steel, sugar, coal, paper, etc., we have complete statistics for the last decade. The publication, from September 1933, of the *Monthly Survey of Business Conditions* has greatly improved our knowledge of production in the chief organized industries, but we have still only a hazy knowledge of unorganized industries, which employ the great majority of our industrial population. Hence the need for a comprehensive economic survey, as recommended by Dr. Bowley and Mr. Robertson.

The progress of industrial production has been rapid since the War. The advance has been phenomenal in sugar and large in cement and in iron and steel. The value of organized industrial production today may be between one-third and one-half of that of primary products. The progress has been even more rapid since 1929.

Four statements and a graph to illustrate them are given below. The first two deal with agricultural production (chief crops) and the next two deal with industrial production (chief industries). The period taken for the analysis is the 12 years from 1920-21 to 1931-32. The average of the estimated pro-

duction (both agricultural and industrial) during the years 1920-21 and 1921-22 is taken as the base. On this basis the relatives of the several commodities for the successive biennial periods are calculated. The general or composite index number of production for each biennial period is a weighted average of the relatives, the weights being proportional to the values of the several commodities. Throughout, the price per unit of the commodity is taken as constant. For all agricultural commodities the average wholesale prices in the years 1920-21 and 1921-22 (base period) are taken as the prices per unit. As prices for all the industrial products for the base period are not available, those of the prices which are given in the *Indian Trade Journal* (cotton yarn, piecegoods, jute bags and gunny cloth, and sugar) are taken for that period, and the rest are standard prices recommended by the Tariff Board. These prices are only a means to get the weights, and slight variations in weights do not alter the composite index number to any material extent.

In Tables I and III average estimated production and value of each commodity are given; and in Tables II and IV, the relatives with the respective weights assigned to each commodity are given. The formulae used in calculating the composite index number are :—

1. Weighted arithmetic mean.

$$100 \times \frac{\Sigma p_0 q_1 \times \frac{q_1}{q_0}}{\Sigma p_0 q_1}$$

p_0 price per unit of the commodity in the base year.
q_0 production of the commodity in the base year.
q_1 production of the commodity in the given year.

2. Aggregative type.

$$100 \times \frac{\Sigma p_0 q_1}{\Sigma p_0 q_1 \times \frac{q_0}{q_1}}$$

3. *The Median.*

The weighted arithmetic mean is the biased II type of Fisher (refer Fisher's *Making of Index Numbers*). In Appendix II, Art. 8 of the same book it is pointed out that for the arithmetic mean this is the best system of weighting, because the upward bias possessed by the average has to be counteracted by a downward bias in weighting. As for the aggregative type, it is pointed out by Fisher that the two types differ very little and hence, for the sake of convenience in calculations the given formula is chosen.

TABLE I

Agricultural Production (Quantity and Values)

(Average of two years)

Commodity	Average Price per Unit in 1920-21 and 1921-22 (base period)	1922-23 and 1923-24		1924-25 and 1925-26		1926-27 and 1927-28		1928-29 and 1929-30		1930-31 and 1931-32	
		Quantity.	Value (Crores of Rs.)	Quantity.	Value (Crores of Rs.)	Quantity.	Value (Crores of Rs.)	Quantity.	Value (Crores of Rs.)	Quantity.	Value (Crores of Rs.)
Rice (millions of tons) ...	Rs. 9 per cwt.	31	558	30·9	556	29	504	31·5	567	32·6	587
Wheat (millions of tons) ...	Rs. 9-1-0 per cwt.	9·9	179	8·8	159	8·4	152	9·5	172	9·2	167
Sugar-cane (millions of tons)	Rs. 55 per 500 lbs.	3·2	79	2·8	69	3·3	81	2·7	67	3·6	89
Tea (million lbs.) ...	Rs. 0-9-3 per lb.	343	20	369	21	392	23	418	25	392·6	23
Cotton (million bales) ...	Rs. 50-9-0 per cwt.	5·2	94	6·2	112	5·5	100	5·5	100	4·6	83
Jute (million bales) ...	Rs. 300-6-0 per ton.	8·3	45	10·5	57	10·1	55	10·7	58	5·7	31
Linseed (thousand tons) ...	Rs. 12-6-0 per cwt.	568	14	551	14	377	9	351	8	394	10
Rapeseed (thousand tons).	Rs. 11-6-0 per cwt.	1179	28	1065	26	922	22	1002	23	1014	24
Sesam (thousand tons) ...	Rs. 15-4-0 per cwt.	463	14	467	14	479	14	430	13	495	15
Groundnuts: nuts in shell (millions of tons) ...	Rs. 13-4-0 per cwt.	1·2	24	1·8	36	2·4	48	2·9	58	2·9	58
Indigo (thousand cwt.) ...	Rs. 415-9-0 per cwt.	44	2	25	1	15	1	14·5	1	12	1
Coffee (million lbs.) ...	Rs. 59-3-0 per cwt.	22	2	26	3	35	4	33·5	4	33	4
Rubber (million lbs.) ...	Rs. 78-0-0 per cwt.	13	1	18	2	25	3	27·5	3	22	2
Jowar (millions of tons) ...	Rs. 6 per md.	5·8	95	5·6	91	5·9	96	6·3	103	6·6	108
Bajra (millions of tons) ...	Rs. 6-5-0 per md.	2·3	41	2·1	37	2·5	44	2·0	36	2·7	48
Maize (millions of tons) ...	Rs. 5 per md.	2·1	29	1·8	25	2·1	29	2 2	30	2·35	33
Gram (millions of tons) ...	Rs. 7 per md.	4·9	94	4·1	78	3·6	69	2·9	58	3·6	69
Barley (millions of tons) ...	Rs. 10-4-0 per cwt.	3·0	62	2·6	54	2·4	50	2·4	48	2·4	48

TABLE II

Agricultural Production—(Index Numbers)

Base : Average of 1920–21 and 1921–22=100

Commodity	Average of 1922–23 and 1923–24		Average of 1924–25 and 1925–26		Average of 1926–27 and 1927–28		Average of 1928–29 and 1929–30		Average of 1930–31 and 1931–32	
	Index	Weight	Index	Weight	Index	Weight	Index	Weight	Index	Weight
Rice ...	102	40	101	41	95	37	103	42	107	42
Wheat ...	121	13	107	12	102	12	116	13	112	12
Sugar-cane ...	128	6	112	5	132	6	108	5	142	6
Tea ...	111	1	119	1	127	2	135	2	127	2
Cotton ...	130	7	155	8	138	8	137	7	115	6
Jute ...	177	3	223	4	215	4	228	4	121	2
Linseed ...	161	1	153	1	107	1	99	1	115	1
Rapeseed ...	117	2	105	2	91	2	99	2	100	2
Sesam ...	103	1	104	1	106	1	96	1	110	1
Groundnuts ...	120	2	180	3	240	4	290	4	290	4
Indigo ...	80	...	45	...	28	...	26	...	22	...
Coffee ...	105	...	124	...	167	...	160	...	157	...
Rubber ...	118	...	164	...	228	...	250	...	200	...
Jowar ...	89	7	86	7	91	7	97	8	102	8
Bajra ...	100	3	91	3	109	3	87	3	117	3·5
Maize ...	91	2	78	2	91	2	96	2	102	2·5
Gram ...	111	7	93	6	82	5	66	3	82	5
Barley ...	107	5	92	4	86	4	86	3	86	3
Composite Index Numbers										
Weighted Arithmetic Mean ...	**111**		**112**		**113**		**111**		**116**	
Aggregative type ...	**109**		**107·4**		**106**		**102**		**112**	
Median	**100**		**106**		**108**		**101**		**115**	

TABLE III

Industrial Production (*Average of two years*)

Commodity	Average price in base period.	1920–21 and 1921–22	1922–23 and 1923–24		1924–25 and 1925–26		1926–27 and 1927–28		1928–29 and 1929–30		1930–31 and 1931–32	
		Quantity	Quantity	Value (Crores of Rs.)	Quantity	Value (Crores of Rs.)	Quantity	Value (Crores of Rs.)	Quantity	Value (Crores of Rs.)	Quantity	Value (Crores of Rs.)
*Cotton yarn (millions of lbs.).	Re. 1-8-0 per lb.	677	661·5	74·55	790·3	88·91	808	90·9	741	83·36	916·5	103·11
Cotton cloth (millions of yards)	Rs. 0·4 per yard	165·6	1713·5	68·54	1962·0	78·48	2324	92·96	2116·5	84·66	2651·5	106·06
Jute bags (millions) ...	Rs. 0·46 per bag	438·3	365·5	16·81	419·4	19·29	437	20·06	480·4	22·10	478·2	22·00
Jute cloth (millions of yds.)...	Rs. 0·2 per yard	1314	1187·5	23·75	1402·5	28·05	1482	29·64	1560·5	31·21	1461	29·22
Sugar (thousands of tons) ...	Rs. 470 per ton	74·3	84·4	3·97	79·4	3·74	120·4	5·62	105·0	4·94	189·9	8·93
Coal (millions of tons) ...	Rs. 9 per ton	186·5	19·4	17·46	21·1	18·99	21·7	19·53	23·0	20·70	22·8	20·52
Cement (thousands of tons).	Rs. 53 per ton	112	193·0	1·03	321·	1·71	512	2·71	555	2·95	555	2·95
Paper (Do.).	Rs. 464 per ton	29	25·0	1·16	27·1	1·26	33·0	1·53	39·1	1·82	39·1	1·82
Pig Iron (Do.).	Rs. 34·5 per ton	339·6	454·9	1·57	876·3	3·02	1021·3	3·52	1116·5	3·85	1085·5	3·75
Steel (Do.).	Rs. 180 per ton	119·2	131·3	2·36	284·0	5·11	394·5	7·11	344·0	6·19	442·0	7·96

* As we are here comparing the growth of industrial activity at different periods, the question of double counting does not arise.

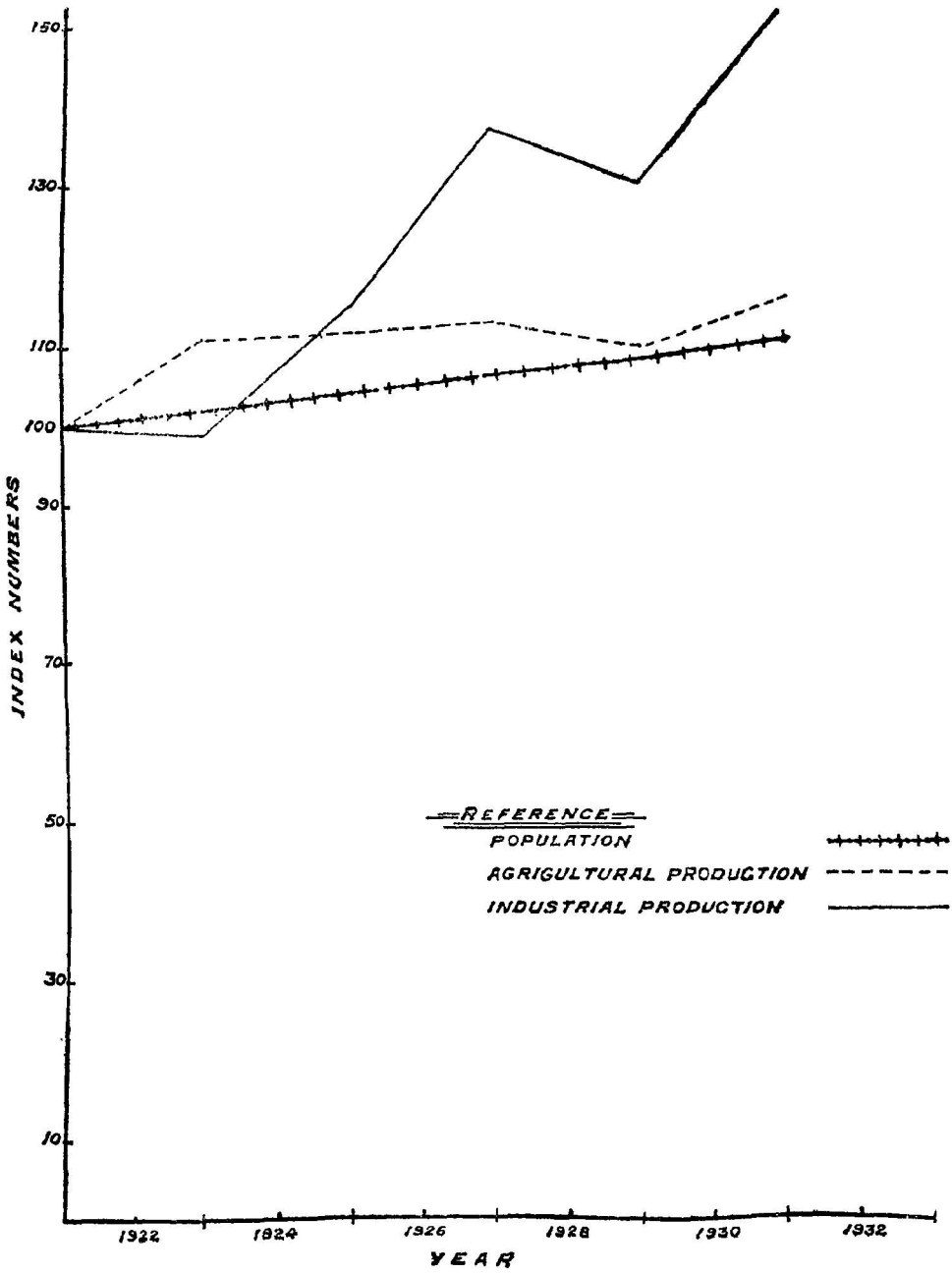

150
130
110
100
90
70
50
30
10
INDEX NUMBERS
1922
1924
1926
1928
1930
1932
YEAR
REFERENCE
POPULATION
AGRICULTURAL PRODUCTION
INDUSTRIAL PRODUCTION

TABLE IV

Industrial Production: Index Numbers

Base: Average of 1920–21 and 1921–22 = 100

Commodity	1922–23 and 1923–24		1924–25 and 1925–26		1926–27 and 1927–28		1928–29 and 1929–30		1930–31 and 1931–32	
	Index No.	Weight	Index No.	Weight	Index No.	Weight	Index No.	Weight	Index No.	Weight
Cotton yarn	97·5	35	103·5	36	119·5	33	109·5	32	136	34
,, cloth	103·5	32	118·5	31	140·5	34	128·0	32·5	161	35
Jute bags	83	8	96	8	100	7	110·0	8	109	7
,, cloth	89	11	107	11	112·5	11	118·5	12	112	9
Coal	104	8	113	8	116	7	126	8	122	7
Sugar	114	2	107	1·5	162	2	141	2	256	3
Steel	110·5	1	238	2·0	331·5	3	289	2	320	1
Pig Iron	129·5	1	258	1·0	301	1	329	1·5	371	2·5
Cement	172·5	1	286·5	1·0	457·5	1	495·5	1	504	1
Paper	86	1	93·5	0·5	114·0	1	134·5	1	138	0·5
Composite Index Numbers										
Weighted Arithmetic Mean	**99**		**115**		**137**		**130**		**151**	
Aggregative type ...	**98**		**111**		**128**		**122**		**144**	
Median	**104**		**110**		**130**		**131**		**149**	

In result, we obtain the following indices of population and production during the period :—

	1920-21 to 1921-22	1922-23 to 1923-24	1924-25 to 1925-26	1926-27 to 1927-28	1928-29 to 1929-30	1930-31 to 1931-32
Population[1]	100	102	104	106	108	110.4
Production[2]						
(1) Agricultural	100	111	112	113	111	116
(2) Industrial	100	99	115	137	130	151

It may be clear from the above that agricultural production has kept pace with population, and that industrial production has increased much faster than population. In the decade 1920-30, population increased by 10.5 per cent., but this is abnormal for India, seeing that in the three previous decades, population increased only by 2.5, 7.1 and 1.2 per cent., respectively. The increase of population between the biennial periods 1920-21 to 1921-22 and 1930-31 to 1931-32 had been 10.4 per cent, but agricultural production increased by about 16 per cent. and industrial production by 51 per cent. during the same period. The slow growth of agricultural production is due largely to the declining demand for cereals, especially dry grains, which are being supplanted by rice and wheat. India formerly exported large quantities of wheat, but today most of it is consumed at home. Thus some classes at any rate have raised their standard of living. Considering the limited scope for the expansion of rice cultivation, it is likely that India will have to depend increasingly on imported rice in future.[3] However, there is a large compensating factor in the steady growth of industrial production.

A decade, even twelve years, is far too short a period for correlating population and production. The thirty years between 1900 and 1930 may provide better scope for such a correlation. Full statistics of industrial production for the period are not available, and therefore only cotton yarn, piece-goods, jute cloth and gunny bags, and coal are taken, but the

[1] It is assumed that population increased uniformly from year to year.
[2] Indices worked on the Weighted Arithmetical Mean.
[3] See *Madras Census Report* (1931) I, p. 47.

figures for agricultural production are fairly complete. The following table gives quinquennial indices of population and agricultural production, worked out by Fisher's weighted aggregate index method.

Period	Population	Agricultural production	Industrial production
1900-01—1904-05	100	100.0	100
1905-06—1909-10	104	103.0	142
1910-11—1914-15	107	123.5	187
1915-16—1919-20	103	124.5	255
1920-21—1924-25	109	120.0	251
1925-26—1929-30	113.5	129.0	289

Population increased by 19 per cent. between the two censal years 1901 and 1931, but if we compare the first and last quinquennia, as in the case of production, the increase is only 13.5 per cent. Thus, when population increased by 13.5 per cent. production increased by 29 per cent. The index would be much higher if we take the arithmetic mean; for the production of several commodities increased enormously during the period. Groundnuts, for example, increased from 93,000 tons to 2,466,000 tons, i.e. 2,500 per cent. Industrial production has also increased rapidly; the annual production of cotton textiles increased from 500 million yards in 1900 to 2,654 million yards in 1931-32. Hardly any pig iron was made in 1900; but 1,085,000 tons of it was made in 1931-32.

Thus, whatever period we may take, there is no indication that population has outstripped production. It does not mean that India is not overpopulated. It may, or may not be; that is a different question, and I do not propose to deal with it here. All I can see from the statistical study carried out is that if India was not overpopulated in 1900—and that is the view of some—it is not overpopulated now. Production has been keeping pace with population; and in some lines—e.g., industry, commercial crops—it has increased at a much more rapid pace than population. And this progress has been kept up during the world depression—and that is a significant fact.

KĀTYĀYANA AND THE MITĀKSHARA LAW OF STRĪDHANA*

C. VENKATA DEEKSHITULU, B.A., M.L., Advocate.

I

THE law of Strīdhana as it is now administered in the Mitākshara provinces is not the Sanskrit law on the subject but a distorted version of it. Certain misconceptions have now become part and parcel of the law, as a result of an omission to look into the history of its development, and an incorrect exposition of Sanskrit writings on the subject. There is a fallacy current among the judges of the British Indian Courts and text-writers on Hindu Law that Strīdhana is defined by Sanskrit Lawyers on a basis of enumeration, and that a woman acquires a heritable proprietorship only in those items of property which are specifically mentioned by one or other of the sages as falling within that group. The view of Vigñānēśwara that the term Strīdhana is etymological and not technical in its import has not been accepted, and the other commentators of the Mitākshara school have been either misunderstood or misinterpreted so as to fit in with the prevailing view. And, instead of recognising, as it should have been done, that all property obtained by a woman is taken by her for an absolute and heritable proprietorship, a distinction which has no textual basis at all is introduced, and a line is drawn between heritable and non-heritable proprietorship.

Thus the law relating to the proprietory capacity of women came to be dominated at the present day by the rule of enumerated categories on the one hand, and non-heritable proprietorship on the other. Neither of them either individually or taken together gives a solution of certain difficulties which arise in the administration of the law from day to day. They have created problems instead of solving them, and introduced needless complexities into the simple and straightforward Sanskrit law on the subject. The idea that an item

* Part of the work done as a research student in Hindu Law in the University of Madras during the years 1930-32.

of property can be classed as Strīdhana if only some sage has mentioned it as such, leaves the nature of certain types of property in the hands of a woman unaccounted for; but this difficulty did not become apparent until recently because, the vacuum thus created was almost filled in by the rule of limited estate and reversionary succession, borrowed from the Dāyabhāga and imported into the Mitākshara system by the early European judges. As a consequence, the term Strīdhana is at the present day used in contradistinction to 'limited estate', and important items of property which would otherwise have come under Strīdhana, are placed in this category.

It is this idea of a limited estate that led to the rejection of Vigñānēṣwara's view that Strīdhana is etymological and gave a wrong perspective obscuring the proper import of the term. From the earliest times Strīdhana had nothing but an etymological significance in Hindu Law. Originally, a woman could not acquire property for herself independently of her husband or protector; but gradually the rule was relaxed in her favour by allowing her a few special modes of acquisition like gifts at the time of a marriage, or other festive occasions. As time advanced the number of these modes gradually increased. But from the beginning, where a woman was allowed to take any property for herself, it was regarded as her own, both for purposes of enjoyment and inheritance. In order to distinguish this property from that belonging to the joint family or to the husband, it was declared to be impartible and referred to as Strīdhana, it being the property of women. Strīdhana literally means woman's property, and since the earliest times it had no other significance. There is absolutely no question of its denoting something technically called so, because of this history of the development of the law. Excepting, of course, the Dāyabhāga, at no time did Hindu Law recognise two different types of property in the hands of a woman, or admit of the heirs of someone else succeeding to the same. If a woman was allowed to take a certain property she enjoyed it for herself, subject if need be, to certain limitations on her powers of disposal; but on her death it always passed on to her own heirs, and there was no question of reversionary succession.

This origin of the term Strīdhana is lost sight of by those

who speak of enumerated categories and the technical nature of Strīdhana. No doubt, the Smritis speak of certain classes of property as constituting Strīdhana, but they never define it as including those only. The enumeration lost its significance, if it had any, very early; and it was made a means of enlarging the scope of woman's property but not a method for its restriction as at the present day. Whatever be the ways in which a woman came across different items of property they were equally regarded as her own, and there was no distinction between property which was gifted by a father or inherited from a husband. The one was regarded as her property no less than the other, and on her death both of them passed to her heirs according to the special rules of succession laid down for that purpose.

The Sanskrit law of woman's property is thus extremely simple in its nature. There was no question of technical or Pāribhāshika Strīdhana. The term Strīdhana always meant what it signified ordinarily, and as the position of women advanced, its scope ~~winded.~~ Long before the age of Vigñānēśwara, woman came to occupy the same position as man with regard to her powers of acquisition, except, perhaps, for one or two prohibitions based on her position in Hindu Society. The question as to how she took this property never presented itself to the minds of the Sanskrit legists because, the idea of a life-estate as we now understand it was unknown to Hindu Law until Jīmūtavāhana introduced it. The Sanskrit legist regarded it as her own, and to him there was no possible alternative as at the present day.

II

THE above are the inevitable conclusions which cannot be avoided on a careful study of the Sanskrit writings on the subject. The ideas of limited estate and reversionary succession are so dexterously woven into the body of the present law, that one finds it extremely difficult to take a detached view and believe that they are foreign notions. But if we for a moment are able to forget the existence of these ideas, it becomes easy for us to realise that the term Strīdhana can only have an etymological significance. What then would be the nature of property inherited by a woman from her

husband? There is only one solution, and we would immediately and unhesitatingly answer that it is Strīdhana or woman's property. Remove the doctrine of limited estate from the scene of Hindu Law, and then the doctrine of technical nature of Strīdhana necessarily vanishes with it. For these reasons I would first deal with this idea of a limited estate as we now know it and try to establish conclusively that Hindu Law down to the time of Jīmūtavāhana knows nothing of it. The question of a limited estate being thus shut out, I would then trace the development of the law on the subject and show how it reached its culmination in the statement of Vigñānēṣwara that Strīdhana is etymological in its import and not technical. I would lastly point out how the other writers of the school like Mādhava and Dēvanna Bhatta fully realised the implication of the Mitākshara statement of the law, and closely followed it in their expositions of the subject.

The modern doctrine of limited estate has a two-fold aspect of general non-alienability and reversionary succession. Of these the second is the really important one because, inalienability in one form or another is the general policy of the Dharma Sāstras; and hence in discussing the law on the subject greater stress will have to be laid on the latter. The Hindu Law down to the time of Jīmūtavāhana and the Mitākshara system in particular knows nothing of this idea. We are not concerned here with Jīmūtavāhana's school of thought since it is an innovation and a departure from the general law. The earliest indication of the idea of a limited estate in Hindu Law is the following text of Kātyāyana.

अपुत्रा शयनं भर्तुः पालयन्ती व्रते स्थिता ।
भुंजीतामरणात् क्षांता दायादा ऊर्ध्वमाप्नुयुः ॥

It means that the sonless widow preserving unsullied the bed of her lord shall enjoy with moderation, and that the Dāyādas take it after her. This verse is nothing if not ambiguous. It does not state what is it that is to be enjoyed by the widow, nor does it mention what goes to the Dāyādas, or who these Dāyādas are. It may be a simple direction to the widow who under the Hindu Law is required to lead a life of abstinence, that she should not waste the property of her husband, or even

of herself, and even admitting that it imposes a restraint on her power of alienation, it carries us no farther. The Dāyādas referred to may be the heirs or coparceners. The Smritichandrika says that it refers to coparceners and not to heirs. Then again, there is nothing to point out that the heirs are not her heirs but those of her husband; and authority is not wanting to show that the text may after all refer to the Strīdhana property of the woman herself.

No inference in favour of the existence of a limited estate can be drawn from the fact that the text ordains moderate enjoyment of the property. It is the general policy of the Dharma Sāstra to see that property is preserved for the needs of the members of the family, and alienation is permitted only in cases of necessity. There was always a prohibition against extravagance. Not only a female proprietor, but even a male owner was prohibited from alienating property which was his in the fullest sense of the term, and which on his death undoubtedly passed on to his heirs. The following text usually attributed to Vyāsa clearly indicates the position taken up by the Smritis.

ये जाताः येप्यजाताश्च ये च गर्भे व्यवस्थिताः।
वृत्तिं ते त्वभिकांक्षन्ति न दानं न च विक्रयः॥

Or again take another text of the same Rishi.

स्थावरं द्विपदं चैव यद्यपि स्वयमर्जितम्।
असंभूय सुतान् सर्वान् न दानं न च विक्रयः॥

This shows that the rule of non-alienability extended even to the self-acquisitions of a man as apart from property which has come into his hands from his ancestors. It cannot be said for a moment that these texts deny the heritable proprietorship of a man in his property. No doubt, there is a prohibition against a sale or gift in the first verse; but it does not make the person any more a life-estate holder entitled only to the enjoyment of the usufruct of the property. The underlying idea is a prohibition against extravagance and improper alienation in order that the property may be conserved for the family needs; and there is no implication of a life-estate as in the English Law.

In the light of these remarks the text of Kātyāyana which is supposed to indicate the existence of a life-estate in Hindu Law may now be examined in detail. The text says that the sonless widow is to enjoy the property with moderation till her death. (क्षांता आमरणात् भुंजीत). From the word क्षांता no adverse inference can be drawn against her powers of enjoyment for the reasons stated above. If a male proprietor himself is asked not to dispose of his property, much more so a woman who is required to be under the protection of somebody and who is very little experienced in such matters. The words cannot, therefore, be understood to limit her estate as we would now have it. They are a mere prohibition against immoderate enjoyment and disposition for purposes not in the interests of the family.[1] The word भुंजीत also does not lend itself to the interpretation that only the usufruct is to be enjoyed and not the corpus, for the word carries the sense of enjoyment, or भोग and this can be either of the property itself, or of its yield.[2] Moreover the text itself is affirmative and not negative. It is not proper to give it a meaning which will have to be read into it and thus take away the rights of the widow. Granted that the text ordains moderate enjoyment of the property, how does it follow that she is

[1] This interpretation is made possible by taking the words क्षांता and भुंजीत together. But there is the possibility of a different interpretation which is very much removed from any idea of a restriction on the powers of enjoyment of the widow. The word क्षांता may go with the word अपत्रा itself instead of the verb, and then the verse would mean that the widow being patient or forgiving (towards insults perhaps) should enjoy the property till her death. Indeed, the *Smritichandrika* in one connection interprets the word क्षांता thus: दायाधिकारीतरधनविनियोगप्रतिबन्धं सहमाना.

[2] *Cf.* the following text of Devala.

वृत्तिराभरणं शुल्कं लाभश्च स्त्रीधनं स्मृतम् ।
भोक्त्री तत्स्वयमेवेदं पतिर्नार्हत्यनापदि ॥

Here the word भोक्त्री which comes from the same root as भुंजीत (viz. भुज्) is used to indicate that the woman is the absolute and complete owner of the property, and that she alone and not her husband is entitled to enjoy it.

denied the power of alienation. To say that she is to enjoy the property is one thing, and to deduce from it that she cannot alienate it is an entirely different thing.

If thus the direction in the text in regard to moderate enjoyment of the property fails to lend any support to the existence of a life-estate, much less does the reference to Dāyādas indicate any idea of reversionary succession to the property in the hands of a woman. As has already been remarked, the use of the word Dāyādas is very ambiguous, and to interpret it as heirs of the husband would be to do violence to the construction. It may be that the Dāyādas referred to are her own heirs who take after her the property in her hands. We are supported in this view by the following considerations.

Except Jīmūtavāhana and his school no other commentators have understood the text to refer to reversionary succession. The Mitākshara does not refer to the text at all, and what the Smritichandrika says on its interpretation leaves no doubt that the mind of the Mitākshara scholars was far from any idea of reversionary succession. The following Sanskrit passage is quoted from the Smritichandrika. This is what Dēvanna Bhatta says in connection with the widow's right of succession to her husband.

यदपरमुक्तं कात्यायनेन, अपुत्रा शयनं भर्तुः पालयन्ती व्रते स्थिता । भुंजीतामरणात् क्षान्ता दायादा ऊर्ध्वमाप्नुयुरिति । क्षान्ता दायाधिकारोत्तरधन-विनियोगप्रतिबन्धं सहमानेत्यर्थः । तदविभक्तदशायां रक्षणभरणासमर्थेषु कार्यान्तरनिमग्नेषु वा श्वशुरादिषु पत्न्या स्वयमेव जीवनार्थमुपात्त अविभक्तद्रव्य-विषयं । विभक्तद्रव्यविषयत्वे वृद्धमन्वादिवचनविरोधापत्तेः । रक्षणादिसमर्थेषु श्वशुरादिषु अविभक्तधनग्राहिषु सत्सु तैरेव गृहीतधनैः भरणं कार्यः ॥[1]

He understood the text to refer to property given to a woman for purposes of maintenance from the joint family estate. She is to maintain herself out of it and what remains after her death perhaps reverts to the joint family. It does not therefore, according to him refer to inheritance by the widow, nor

[1] The Smritichandrika on succession to the estate of a sonless person.

does it point to any reversionary succession. It is unnecessary to mention that the view of Dēvanna Bhatta is entitled to great weight.

A reference to Kautilya's Artha Sāstra in this connection is of great importance. There is a Sūtra in that work which is word for word almost the same as Kātyāyana's text, and which throws much light on its interpretation. It is given below:

अपुत्रा पतिशयनं पालयन्तो गुरुसमीपे स्थिता स्त्रीधनं आ आयुः क्षयात् भुंजीत । आपदर्थं हि स्त्रीधनं ऊर्ध्वं दायादं गच्छेत्[1] ॥

Here the doubt about that which is to be enjoyed by the widow is solved. The Sūtra refers to Strīdhana, or woman's property, (whatever it may mean) and not to property inherited from the husband. And even in the case of Strīdhana she is to enjoy it as long as she lives. The next few words which say that woman's property is intended to be utilised in times of difficulty (आपदर्थं हि स्त्रीधनं) show that it is meant to be enjoyed with moderation and not wasted at will. The general tenor, however, of Kautilya's discussion is to restrict and control woman's free power of alienation over her property. He defines the term Strīdhana later on as वृत्तिराबन्ध्यं वा स्त्रीधनं[2], and it may be translated as meaning that maintenance and ornaments are woman's property.

The word भुंजीत occurs here also, and it does not seem to be intended to say that she is to enjoy the usufruct alone and not the corpus. It only means that there should be no waste because the property is आपदर्थं or intended as a protection against calamities. As regards the question who the Dāyādas are, there is no place for any doubt here; the Strīdhana property cannot go to any one except her own heirs. Hence it is clear that Kautilya also did not intend the words to refer to a life-estate or reversionary succession. This Sūtra is so similar to Kātyāyana's text that it lends support to the view that Kātyāyana's text too could not have referred to reversionary succession.

[1] Kautilya's Artha Śāstra, Book III, ch. 2.
[2] *Ibid.*

I have so far endeavoured to examine the external evidence available in aid of the proper interpretation of the text in question. But what about Kātyāyana himself and the important light which he throws on the correct understanding of this text? The verses of the sage play no mean part in the law of woman's property, and just like the text now under discussion there is another important text with which I will deal at length later on. It refers to Strīdhana and runs thus:

प्राप्तं शिल्पैस्तु यद्वित्तं प्रीत्या चैव यदन्यतः ।
भर्तुः स्वाम्यं सदा तत्र शेषं तु स्त्रीधनं स्मृतम् ॥

It says that the husband has dominion over property acquired by mechanical arts, or by gift of affection from a stranger. But all other property, all the rest of it whatever it may be, in the hands of a woman is termed Strīdhana. If really woman could have had two sets of property in her hands, one which is her Strīdhana strictly so called, and another which she is to enjoy for life and pass it on to the heirs of the original propositus on her death, it is difficult to understand why Kātyāyana should have made so sweeping a statement as that contained in this verse. He is positive that the rest of the property in the hands of a woman excluding the two items mentioned in the first line of the verse, is her Strīdhana. He says it is traditionally known to be such, and there is no dispute about it for he is emphatic, the expression used being शेषं तु स्त्रीधनं स्मृतम्. It is, indeed, difficult to get over this statement if we credit Kātyāyana with a knowledge and a recognition of the principles of a life-estate and reversionary succession in the other verse. The fact is that Kātyāyana had no such idea at all; and he was only laying down a rule of moderate enjoyment in that text.

III

BEFORE proceeding to deal with the history of the development of the law of woman's property, it is necessary to pause a little and turn our attention to another aspect of the subject. Just as the question of a limited estate has been examined from the point of view of Sanskrit authority in the previous section, the idea that an item of property can be Strīdhana

if only it is one of certain enumerated categories may be dealt with similarly in the present section. The view seems to have for its starting point the text of Manu on the six-fold nature of Strīdhana. Manu is the earliest of the metrical Smriti writers and his views on any topic have a far-reaching effect. Though sage after sage who succeeded Manu enlarged the scope of woman's property, and commentator after commentator pointed out that the enumeration of six types was intended as a prohibition against a smaller number, but not against the inclusion of a greater number of items, still this enumeration idea has not lost its hold on the modern mind. The irony of it all is that Manu himself is not properly understood.

The idea of enumerated categories is of importance today in relation to property inherited by a woman from her husband, or son and other male relatives. Such property is excluded from Strīdhana on the ground that it is not an enumerated item, and that, as such, it stands on a different footing from Strīdhana proper. But Manu himself made no such distinction and according to him inherited property was not distinguished from Strīdhana proper. The Manu Smriti does not provide for a life-estate and reversionary succession, and certain texts occurring in it can be explained only on the basis of inherited property being regarded as Strīdhana and taken by a woman for a heritable proprietorship.

The Manu Smriti is not only the oldest of the metrical Smritis but also contains references to times which the author himself must have regarded as the dim old past. There is a verse of Manu viii, 416 which is nothing but a floating tradition referring to the proprietary incapacity of women in such remote ages.

भार्या पुत्रश्च दासश्च त्रय एवाधनाः स्मृताः ।
यत्ते समाधिगच्छन्ति यस्यैते तस्य तद्धनम् ॥

As the Manu Smriti distinctly recognises the right of a wife to acquire property for herself in certain well-known ways, this verse can only refer to a far remote period when the wife like the son in the Roman Law had no right to acquire property for herself independently of the person to whose

authority she was subject. The reference to Bhārya was not intended to lay down any rule as to coverture based on the legal identity of the husband and the wife. Even from the earliest times women in Hindu society were required to be under the protection of somebody, and wifehood was the most ordinary state in which a woman proprietor was generally found. Naturally a girl could not acquire property on account of her tender age, and therefore the power to do so was usually contemplated in the case of a wife. The term Bhārya here bears an Upalakshana significance. This is illustrated by another text of Manu ix, 3:

पिता रक्षति कौमारे, भर्ता रक्षति यौवने ।
रक्षन्ति स्थविरे पुत्राः, नस्त्री स्वातन्त्र्यमर्हति ॥

It shows how a woman was required by law to be under the protection of somebody throughout her life, and how since the beginning of adolescence she was subject to the control of her husband throughout the period during which she may ordinarily be expected to acquire property.

But this absolute incapacity of women to acquire property for themselves became obsolete even by the time of Manu, and he himself must have felt that the origin of the rule was lost in the mists of antiquity. He mentions six modes by which a woman could acquire property for herself: Manu ix, 194.

अध्यग्न्यध्यावाहनिकं दत्तं च प्रीतिकर्मणि ।
भ्रातृमातृपितृप्राप्तषड्विधं स्त्रीधनं स्मृतम् ॥

It might be said that this as an exception to the rule regarding the proprietary incapacity of women and thus we may avoid any possible conflict between the two. In this view the enumeration contained in the text assumes some importance and lends support to the idea that Strīdhana consists of certain specific categories of property. But this is not the proper way of looking at the text, and the problem does not admit of any such easy solution. The Manu Smriti recognises the right of certain female heirs to inherit to their male relations.

The following verse is a clear authority on the right of inheritance of the mother and the father's mother. Manu ix, 217:

अनपत्यस्य पुत्रस्य माता दायमवाप्नुयात् ।
मातर्यपि च वृत्तायां पितुर्माता धनं हरेत् ॥

If there are only six modes of acquisition of property available to a woman, it is difficult to reconcile the recognition of this right of inheritance with that rule. The only possible explanation is that when Manu speaks of Strīdhana as consisting of six types, he was only mentioning the traditional exceptions to the traditional rule about the proprietary incapacity of women. Neither in the verse about the incapacity of the wife and others, nor in the text on the six-fold nature of Strīdhana does Manu lay down a rule of law. The words used by him on both occasions have a special significance. In the one he says अधना: स्मृता:, and in the other स्त्रीधनं परिकीर्तितम्. Both the स्मृति and the परिकीर्तन can only refer to a tradition and not to the law laid down by Manu. It is certain that even in those early days the law of Strīdhana started its expansion beyond the six-sided limit, and that inherited property came to be looked upon as any other item of woman's property. It would otherwise be extremely difficult to determine the nature of such property. At the present day we easily turn round and say that it is taken for a limited estate. But there is no reference to this idea of a limited estate anywhere in the Manu Smriti; and it is generally admitted that it is a much later idea in Hindu Law. Thus, if property inherited by a woman from her son is taken for a heritable porprietorship, it follows without any difficulty that property inherited by a widow from her husband was taken in the same way. What else can such property be except Strīdhana, unless we say its nature is indeterminate?

It is therefore clear that the enumeration lost its significance even in the days of Manu; and that Strīdhana was etymological and not technical in its nature. Whatever property the woman was allowed to acquire, she took it for a heritable proprietorship. It is not necessary in this connection to examine how other Smriti writers dealt with this

idea. Indeed, none of them except Manu says anything about the number of categories of property that come under Strīdhana; they only enumerate certain other items also as constituting it. It is Manu alone that seems to limit their number; and the misconception that Strīdhana is to be defined by enumerated categories owes its origin to this text of Manu to a great extent. The fact that some sages have mentioned items other than these six as constituting Strīdhana is sought to be used to show that they were only adding to the number of six mentioned by Manu. But it is clear from what has been said above that Manu himself must have attached no significance to the enumeration of six items by him. More than that, it must be deemed that he allowed women to take a heritable proprietorship in items of property which are in no way similar to these six and which form the bone of contention at the present day. Thus, the idea of defining Strīdhana by enumerated categories is as fallacious as the idea of a limited estate being known to the Mitākshara system of law.

IV

A WORD might be said in this connection about the results that follow from a rejection of the present day ideas about the limited estate and the technical nature of Strīdhana. Though, to a certain extent, I have dealt with them independently of each other, they are really supplementary and each derives its support for its existence from the other. The idea that Strīdhana is technical and that it forms one of two classes of property belonging to a woman is founded on the principle of a limited estate, which on the death of the intermediate owner passes on to the heirs of the original propositus. If this idea of reversionary succession is eliminated, the distinction between the two classes of property vanishes. It is therefore clear that they stand or fall together and that we cannot have the one without the other. When once these ideas are thrown overboard, certain difficulties which have arisen in the administration of the law at the present day would disappear; and the Law of Strīdhana becomes exquisitely simple and very favourable to women.

It would be enough if I give a few instances for this

purpose. For example, what is the nature of property earned by a prostitute? Do such earnings form a limited estate, or do they rank as her Strīdhana? It is nowhere stated in the Smritis or the commentaries that they form an item of Strīdhana; nor can they be considered to be a limited estate by any stretch of our imagination because, there is no possible person to whom we can trace reversionary succession with respect to such property in her hands. The present law therefore gives no direct solution to the problem. But under the pure Sanskrit law the answer is extremely simple, it is property earned by her and it is therefore her own. You cannot escape the fact that it is her property which she is to enjoy while she lives, and which on her death passes on to her heirs. Or again, take another instance. What are we to do with a treasure trove found by a maiden?[1] It might be said that the case of a prostitute was perhaps even then governed by custom; but this problem does not admit of any such way of escape. Here too, there is no specific enumeration in favour of its inclusion, and there is no possibility of tracing reversionary succession, if she chances to die before marriage. Such instances might be multiplied by referring to the case of a mother who receives a share on partition and dies before her husband, or to a maiden who receives a similar share and dies before marriage. In all these cases we are confronted with the same difficulty, and the idea that Strīdhana is technical consisting of certain enumerated categories lands us nowhere. These and other difficulties are occasioned by the doctrine of a limited estate and they necessarily vanish with it. The only question which it would then be necessary to determine is whether women can acquire property in a particular way; and if this is answered in the affirmative, there being no restriction on her capacity, the property would be taken by her with all the rights and incidents usually attached to full proprietorship, and on her death she would pass it on to her own heirs.

At the present day we say that a particular item of property which a woman is entitled to take by law is not her Strīdhana because, there is an alternative present before us in the form of a limited estate, however inadequate it may be. But if that

[1] Under the Hindu Law a treasure trove does not go to the king.

insufficient alternative too is taken away, we will be constrained to regard all properties in the hands of a woman as belonging to the same category and as constituting her Strīdhana. Woman may acquire property by inheritance, or on partition. She may stumble over a treasure trove; she may receive a gift; or she may purchase property. But in all such cases it cannot be any thing else except her own, and on her death it follows the line of succession specially laid down for property in her hands. Of course, there might be restrictions on her power of alienation and the law might say that in certain cases she is subject to the control of her husband. But this does not any the less detract from her ownership; and as Vigñānēṣwara exclaims there might be dependence, but how does it conflict with the capacity to acquire property:

(अस्तु पारतन्त्र्यं, धनग्रहणेतु को विरोधः).

V

THE same conclusions result from a study of the history of the law of woman's property from the earliest times. The term Strīdhana in Hindu Law had always an etymological significance and never a technical one. It meant nothing more or nothing less than what it indicates at first sight: woman's property. The extent of such property might be limited; it may consist of a few items or it may cover as wide a range as the law knows; but it always meant property which a woman obtained as her own; and succession to it is governed by the rules laid down in the chapter on Strīdhana. As the proper interpretation of the term Strīdhana has at the present day led to some confusion, it is advisable to use as far as possible the expression woman's property as its equivalent.

There are two terminal points which give us an idea of the area of development of the law during the age of the Dharma Sāstras. The starting point is the text of Manu about the proprietory incapacity of a wife, a son and a slave, quoted already.

भार्या पुत्रश्च दासश्च त्रय एवाधनाः स्मृताः ।
यत्ते समधिगच्छन्ति यस्यैते तस्य तद्धनम् ॥

It has already been pointed out that the use of the term wife here has only an illustrative significance as relating to women in general and not to the wife alone. The text does not refer to a legal identity between the husband and the wife during coverture, but indicates a general disability only; and the son, the slave and the wife are classed together because, they represent the three chief types of subordinate members in a patriarchal family. Starting with this proposition that a woman is absolutely incapable of acquiring any property, the law advanced gradually through its being relaxed in the case of a few specified items at first, and reached a stage in the end when Strīdhana came to be defined not by enumeration but by exclusion, and, but for one or two special exceptions, woman came to stand in the same position as man with regard to her powers of acquisition of property.

The other terminal is furnished by a text of Kātyāyana which also has been quoted in another connection. It runs thus:

प्राप्तं शिल्पैस्तु यद्वित्तं प्रीत्या चैव यदन्यतः ।
भर्तुः स्वाम्यं सदा तत्र शेषं तु स्त्रीधनं स्मृतम् ॥

This text is clear evidence to show that all property obtained by a woman except the two prohibited items is her own irrespective of the way in which it is acquired. It is not a rule laid down by Kātyāyana, but the recognition of an existing right, and just as Manu mentions one tradition he mentions another. Kātyāyana says: शेषं तु स्त्रीधनं स्मृतम्. The rest is regarded as Strīdhana, it is traditionally known to be the property of a woman and there is no gainsaying it. The exception of wealth obtained by mechanical arts, or as a gift of affection from a stranger, serves to prove the completeness of the expansion of the law on the point. The two exceptions are not arbitrary in their nature but are directed by the sound public policy of Hindu Law. The word Silpa translated as mechanical arts is explained as अवैदिकविद्या or लौकिकविद्या i.e. non-scriptural learning, viz. singing, dancing, painting, sculpture, etc. The Hindu idea is that on marriage all the capacities of a wife are hypothecated to her husband; and she

is required not to travel beyond the orbit of household duties and constant attendance on her husband. As Vaidikavidya (i.e. the study of the Vedas) was not available to women, they could not acquire property by their learning as men did; nor could they do so by mechanical arts because, that would conflict with their duty towards the husband and the household. Similarly the prohibition against accepting gifts from a stranger was to avoid temptation and to preserve conjugal fidelity and peace in the household. The intention was to obviate the possibility of domestic discord; and the woman being generally confined to the house, there is neither occasion nor necessity for her to receive a gift from a stranger. The Hindu Law-givers achieved their object not by a direct prohibition, but in a more telling way, by declaring that property obtained by violation of the rule goes to the husband and not to the woman herself.[1] Thus the law of Strīdhana passed through three phases; it began by a negation, and gradually developed by enumeration till it reached the final stage and ended by exclusion as indicated by Kātyāyana. By the end of the Smriti period, therefore the law had shaken itself free from all shackles and there was very little difference between the range of property of a woman, or that of a man. Kātyāyana emphatically declares that all other property excepting the two items was regarded as her own.

Dēvala and Kātyāyana are two of the minor prophets and traditionary revelation may be said to have come to a close with the latter. The last mentioned text is therefore, of special importance. Two centuries after Kātyāyana we enter upon the age of commentators with Asahāya, Viṣwarūpa, and Mēdhāṭithi at its head, and Vigñānēṣwara as its brightest luminary. Kātyāyana, it may therefore be seen is very close to Vigñānēṣwara; and as I will point out later he says almost what Vigñānēṣwara says on the topic of Strīdhana. But before taking up the question of Vigñānēṣwara's statement of the law, it is necessary to rapidly glance through the various stages of its development prior to his day.

In this connection it should be stressed at the beginning

[1] The idea of Kātyāyana is confiscation, but this seems to have changed later on. There is evidence to show that the text was construed as meaning that it lays down a restraint on alienation without the husbands' consent.

that neither in the Sūtras, nor in the Smritis do we come across anything like a definition of Strīdhana, as we now understand the term definition. Nobody including Vigñānēśwara ever attempted a definition; all that they do is to state a proposition, or to mention the various items which in their own day were recognised as constituting the property of women.

Following the accepted chronology Gautama[1] comes first. He refers to Strīdhana in general, but does not tell us what it consists of. He makes a special mention of Sulka however, and lays down a separate rule of succession for it.

Baudhāyana[2] is more enlightening and he mentions the mother's jewels, and Sāmpardāyika, or traditional property. Vasiṣṭha[3] speaks of the mother's पारोह्यण as equally divisible among the daughters, and this is usually understood to mean nuptial presents; but it may also mean household utensils or furniture. Lastly Āpastamba[4] remarks that the furniture in the house and ornaments belong to the wife, and points out that according to some the wealth which she may have received from her relations goes to her. I am purposely leaving out Vishṇu in this connection because, his antiquity is not undoubted. Taking stock of the position so arrived at, it is clear that the Sūtra writers included in woman's property her ornaments, the household utensils, the wealth given by relatives, the Sulka and the Sāmpradāyika or traditional property.

Coming down to the period of the Smritis, there are four important texts on the subject found in Manu, Yāgñavalkya, Dēvala and Kātyāyana, and a few other texts of Nārada and Vyāsa. Manu's text on the six kinds of Strīdhana has already been mentioned and it runs thus: Manu ix, 194.

[1] Gautama Sutras xxviii, 24 स्त्रीधनं दुहितृणामप्रत्तानामप्रतिष्ठितानां च ॥
Do. xxviii, 25 भगिनी शुल्कः सोदर्याणामूर्ध्वं मातुः ॥

[2] II, 2, 3, 43. मातुरलंकारं दुहितरः, सांप्रदायिकं लभेरन्नन्यद्वा ।

[3] XVII, 46. मातुः पारीणह्यं स्त्रियो विभजेरन् ।

[4] II, 6, 14, 9c परोभांडं गृहे अलंकारो भार्यायाः ज्ञातिधनं चेत्येके ॥

अध्यग्न्यध्यावाहनिकं दत्तं च प्रीतिकर्मणि ।
भ्रातृमातृपितृप्राप्तं षड्विधं स्त्रीधनं स्मृतम् ॥

I have already explained that this text could not have been intended by Manu as a rule of delimitation either in regard to the number or the nature of the items to be included in woman's property. The word स्मृतम्[1] is of great importance, it means that the verse is not an ordinance of Manu but the statement of a tradition. These items are remembered or recognised as forming woman's property. This is not however an exhaustive list, and they are only some of the items that go to constitute woman's property.

The next and the most important text in the law of strīdhana is that of Yāgñavalkya, II, 143 & 144.

पितृमातृपतिभ्रातृदत्तमध्यग्न्युपागतम् ।
आधिवेदनिकाद्यं च स्त्रीधनं परिकीर्तितम् ॥
बन्धुदत्तं तथा शुल्कमन्वाधेयकमेव च ॥

This is very comprehensive, but a detailed examination thereof will have to be left for another occasion. It is enough if the word 'Ādya' in the text is merely pointed out for the present.

Then follows a text of Vyāsa which gives us a glimpse of the rapid development of the law on the subject and indicates clearly the tendency towards further expansion.

विवाहकाल यत्किंचित् वरायोद्दिश्य दीयते ।
कन्यायाः तद्धनं सर्वं अविभाज्यं च बन्धुभिः ॥

It lays down that whatever property is given to the bridegroom intending the benefit of the bride, goes to her alone and is indivisible by the relatives.

The next Smriti of importance is that of Dēvala.

वृत्तिराभरणं शुल्कं लाभश्च स्त्रीधनं स्मृतम् ।
भोक्त्री तत् स्वयमेवेदं, पतिर्नार्हत्यनापदि ॥

[1] The difference between a mere statement and a rule of law may be gathered by comparing this expression with others of a different type occurring in the Smriti, viz. मनुरब्रवीत् or इत्याह भगवान्मनुः which indicate that Manu himself is laying down the law.

Though the emphasis here is on the second half of the verse, still excepting Sulka all the other items refer to new modes of acquisition. The 'Bhōga' referred to in this text is not enjoyment but ownership. The word लाभ[1] is of special importance here and it has been variously interpreted. It probably means any other property obtained by a woman by way of finding a treasure trove, or as a gift or otherwise. The लाभ referred to here is similar to the शेषं तु स्त्रीधनम् in Kātyāyana's text; and this shows how we are gradually approaching the residuary definition. Dēvala is also the first person to class वृत्ति, आभरण and शुल्क as Strīdhana at one and the same time.[2] Prior to him Vyāsa had stated that an amount not exceeding two thousand Paṇas is to be given to a woman from the inheritance; and commentators quoting another Smriti text generally understood it as an upper limit for one periodical payment, in that one cannot be forced to give more than that amount at any one time. But if property is given to a woman in lieu of maintenance for a number of years, neither this limit of two thousand Paṇas nor the exclusion of immovable property obtained. Perhaps in such cases prior to Dēvala's time the unexpended portion, if any, went to the family estate. But Dēvala says that it should be classed as her own property going to her heirs. The classification of Sulka as woman's property may be understood to mean that just as Vyāsa had laid down that any property given to the bridegroom intending the benefit of the bride goes to her alone, similarly property given to the bride's parents for her use is her own property.[3]

These different texts show how the Dharma Sāstra law

[1] *Cf.* Manu X, 115. सप्तवित्तागमा धर्म्याः दायो लाभः क्रयो जयः ।
प्रयोगः कर्मयोगश्च सत्प्रतिग्रह एव च ॥
and लाभो निध्यादेः मैत्र्यादि लब्धस्य च—Kullūka.

[2] *Cf.* Kautilya. वृत्तिराबन्ध्यं वा स्त्रीधनम् ।
शुल्कमन्वाधेयमन्यद्वा बान्धवा हरेयुः ।

[3] *Cf.* Manu. ज्ञातिभ्यो द्रविणं दत्वा कन्यायै चैव शक्तितः ।
In later days the importance seems to have shifted on to what is given for the benefit of the girl herself.

advanced step by step and how starting with a small beginning woman's property came to assume large proportions. After Dēvala comes Kātyāyana and the importance of his texts on the question of woman's property cannot be overestimated. Prior to him woman's property stood to a certain extent on a basis of enumeration; but in his day it changed to one of exclusion. He does not tell us what it consists of, but draws pointed attention to what is excluded from it. This text has been referred to in another connection and its importance explained in part. But before further dilating on it, it is necessary to notice another important aspect of women's property.

So far, in tracing the development of the law I have not touched upon the question of inherited property, but purposely left it to the last on account of its special importance. The answer to the question whether Hindu Law recognised any distinction between etymological and technical Strīdhana turns principally upon the attitude of the law towards the nature of inherited property. We may now take up sage by sage and examine what each of them has to say on the point.

Gautama recognises the right of a sonless wife to inherit to her husband in the following passage.

xxviii, 21. पिंडगोत्रर्षिसंबंधा रिक्थं भजेरन्,
स्त्री चानपत्यस्येति । बीजं वा लिप्सेत ॥

He also says that Strīdhana devolves on the daughters but does not define its nature. As he takes occasion to mention a special line of devolution for Sulka, what else can become of this inherited property except that the daughters take it? Āpatsamba similarly admits the right of the daughters to inherit, and Vishṇu says that mothers shall receive shares proportionate to their son's shares, and so shall unmarried daughters.

Coming to the Smritis the position of Manu has been explained already. Yāgñavalkya it is well known, admits the right of inheritance of a wife, mother and daughter. He also allows a wife, mother and unmarried daughter to take a share on partition.

What then is the nature of property which a woman takes by inheritance, or on partition? What else can it be but a heritable proprietorship? There is no trace of the idea of a limited estate down to the time of Kātyāyana at least; and all the available evidence goes to show that it is a Dāyabhāga doctrine propounded for the first time by Jīmūtavāhana. The conclusion is inevitable that during the Smriti period such property was regarded as her own and that it devolved on her heirs when she died. This is further illustrated by the fact that Yāgñavalkya definitely lays down a rule that in a Jīvdvibhāga a father's wife is entitled to a share in case she received no Strīdhana, (i.e. any separate property bestowed on her):

II. 115. यदि कुर्यात्समानंशान्पक्षयः कार्याः समांशिकाः ।
न दत्तं स्त्रीधनं यासां भर्त्रा वा श्वशुरेण वा ॥

and what is to happen in case she is given some separate property is left to be inferred from another text:

II, 148. अधिविन्नस्त्रियै दद्यादाधिवेदनिकं समम् ।
न दत्तं स्त्रीधनं यस्यै दत्ते त्वर्थं प्रकीर्तितम् ॥

This is clear evidence that even Yāgñavalkya viewed Strīdhana as etymological. The share on partition ranked in his eyes with her separate property as we now understand it, and the same must necessarily have been the case with inherited property.

If we now look at the text of Yāgñavalkya on Strīdhana the importance of the word 'Ādya' in it becomes clear. The word was not at all intended to satisfy the exigencies of meter, but was purposely used to indicate the comprehensive nature of woman's property and to avoid the difficulty of a long enumeration. Yāgñavalkya even, is only mentioning a tradition about woman's property; and it would be extremely difficult to understand the nature of inherited property according to him, but for that word 'Ādya' occurring in the text.

It is thus clear that from the Sūtra age onwards property inherited by a woman became absolutely her own and was heritable by her heirs only. The distinction originally was

not between limited estate and technical Strīdhana as we now know it, but between joint family estate or divisible property on the one side and non-partible or अविभाज्य property on the other. Strīdhana is one type of 'Avibhājya' property which could not be touched by the coparceners; and hence the topic of woman's property is usually dealt with in the Dāyabhāgaprakarana in connection with partition. With the progressive development in law, more and more items became indivisible as constituting woman's property, and there was nothing either in reason or in law against including inherited property in this indivisible type.

Kātyāyana was therefore representing the prevailing opinion of his day when he stated that all property in the hands of woman, excepting the 'Silpa-prāpta' and the 'Prītidatta' of a stranger, is considered to be her Strīdhana. Enumeration being no longer feasible it gave place to the principle of exclusion, and any property which is not specifically excluded came to be regarded as Strīdhana. Thus by the end of the Smriti age the law regarding woman's property reached the limit of its expansion. Revelation came to a close at about the time of Kātyāyana, and after him there are no more sages; but we come across scholars whose only claim is that of interpretation of the Sūtras and the Smritis. Among them the first place belongs by consensus to Vigñānēṣwara, and the next section is devoted to an examination of his views.

(To be continued.)

URINARY CALCULUS
A
PROBLEM IN PHYSIOLOGICAL CHEMISTRY[1]

BY

S. RANGANATHAN, B.A., M.SC., A.I.I.SC.

(Nutritional Research Laboratories, Indian Research Fund Association, Coonoor)

PART I

INTRODUCTION

THE whole of the author's work, dealt with in this thesis, was carried out in his capacity as Chemist on Col. McCarrison's staff and under his guidance. I desire to make it clear that it only forms part of Col. McCarrison's pioneer investigations on 'stone'. I take this opportunity of expressing my grateful thanks to him for so kindly permitting me the use of the material collected by him in the course of his epidemological and experimental investigations on 'stone'.

Urinary calculi are concretions formed under certain conditions in the urinary tract, kidneys, ureters and bladder, and they are respectively known as renal calculi, ureteral calculi and vesical calculi. They are made up of one or more of the sparingly soluble substances present in the normal urine, possibly associated with a binding substance which gives the concretions their rigidity and hardness. It is a matter of common observation that even urine from a normal, healthy person shows under the microscope numerous crystals, like uric acid and urates, triple phosphate and calcium oxalate. But there are circumstances under which the self-same crystals, instead of being excreted as loose, non-coalescent entities in the urine, are retained in the urinary tract and give rise to calculi, a malady so well recognised by clinicians from the earliest times. The variety of circumstances under which such calculus formation arises, the mechanism of its formation and the rationale of its prevention, form the subject matter of the present thesis.

[1] Prize-thesis for the Maharajah of Travancore-Curzon Prize, 1932.

Needless to add, they are problems of the greatest physiological importance. The conjoint efforts of the physiologist, the pathologist, the surgeon and the bio-chemist have brought us today considerably nearer the solution of this problem in physiological chemistry. However, there still remains much leeway to be made.

Though essentially to be treated from the aspect of physiological chemistry, it will not be out of place to include a short historical account of the subject and its relation to environmental factors, with particular reference to India.

Historical

The history of urinary lithiasis dates back almost to the dawn of civilisation. The symptoms and treatment of the disease are described fairly accurately in the ancient medical writings. Of the ancient Hindu writings, the Rig Veda and Atharva Veda describe the malady and its treatment. The varieties of calculi, their physical and chemical characters, and treatment are lucidly described in Charaka Samhita (vi, 26, 21) and Sustrutha Samhita (ii, 3, 4-6).

Stone in India and the Influence of Environmental Factors[1]

McCarrison[1] found, from statistics collected during the three years 1926 to 1928, that roughly 1 in 10,000 of the population of India suffered from stone. But the actual incidence is likely to be far greater, for what with conservatism, illiteracy and the fatalistic concept of life coupled with the sparse distribution of hospitals obtaining in India, only a fraction of the victims seek medical relief and it is this fraction that is indicated by the above figures. There are districts in India where the incidence of stone per 10,000 of the population is almost nil, like Colaba (Bombay), and Malabar (Madras) to places where the incidence is as high as 438 in Dera Ghazi Khan (Punjab). The 'stone-area' of India extends from Sind, the North-West Frontier Provinces and the Punjab into the western parts of the United Provinces. The prevalence of the disease gradually diminishes as one passes eastwards towards Bengal and Assam;

[1] McCarrison (1931): *Brit. Med. Jour.*, June 13th, 1931, Vol. I, p. 1009; *The Veterinary Journal*, 87, No. 9, p. 411.

likewise it diminishes towards the south and south-east until in the southern parts of the Bombay Presidency, Mysore, Hyderabad and Madras, the malady is relatively rare (McCarrison).

Stone is not related in any conspicuous way to the physical features of the country, though it was observed that the relatively higher incidence of stone occurred in soils of Post-Tertiary period. As regards climatic influences, it is noticed that in areas where there is a great disparity between summer and winter, and between day and night temperatures, stone is more frequent than in areas where the climatic conditions are more equable (McCarrison).

Analysis of a series of cases of stone randomly distributed over the whole of India shows that the percentage incidence of stone runs parallel with the percentage distribution of the population of the major communities of India. But it is often lightly said, of course with no statistical evidence in support, that Mahomedans are more subject to the disease than the Hindus (McCarrison).

A consideration of the nutritional influences reveals that in passing from the wheat-growing districts to the rice-growing areas, there is a gradual decrease in the incidence. The inference is irresistible that stone may in some way be associated with the cereal forming the staple article of the diet. This association of the cereal with stone is not absolute, for there is at least one glaring exception in the rice-eating Manipuris (in Assam) among whom stone is as common as in the wheat-eaters of either Punjab or North-West Frontier Provinces or even commoner (McCarrison).

Experimental

Though stone has been recognised from earliest times, much experimental work has not been done till almost a decade or two ago. The reasons are obvious; stone is not the result of a single mechanism at fault, but is the result of a variety of factors operating in the urinary tract. The difficulty of controlling the factors—the physiological variables in stone production—in human beings has remained insurmountable. Hence, the experimental production of stone in lower animals under rigidly controlled conditions is a desideratum. This achievement was luckily possible in 1926, when through the indefatigable

researches of McCarrison and Fujimaki, stones were experimentally produced in albino rats through faulty diets. It is only at this stage that stone came to be conceived as a nutritional disease, caused by one or more deficiencies in the diet, chief of which has been found to be a deficiency of the fat-soluble vitamin A. McCarrison's experience tells him that there are two factors in the causation of stone : *positive* factors, like excess of lime in the diet and some unrecognised agent present in whole cereal grains; and *negative* factors, like deficiency of vitamin A and imbalance of mineral salts.

Though McCarrison and Fujimaki succeeded, almost at the same time but independent of each other, in experimentally producing stones through deficient and faulty diets, there was one fundamental difference in their investigations. While Fujimaki produced stones by means of synthetic and artificial diets, McCarrison attained the same end with greater precision through faulty diets in common use by the people of India.

PART II

Chemical Composition of Human Stones

The initial success that attended the experimental production of stones in rats through dietaries in common use in India suggested to Col. McCarrison the collection through a questionnaire of human stones from hospitals all over India with definite medical and dietetic history of each case. His chief aim was to correlate the composition of the stones with the diet, as also to find out the predisposing dietetic or other factors responsible for stone formation, if any. In all, 226 stones were collected from all over India : 221 were vesical and 5 were renal. The stones collected varied in weight from almost a few milligrams to over hundred grams. Naturally, the methods of chemical analysis must differ, in the case of small stones, from those employed for the comparatively bigger ones. They were divided into two : Macro-methods of analysis and micro-methods of analysis. The mean composition of the 221 vesical stones is given in Table I. For details of methods adopted and results of analysis of individual stones, reference may be made to the *Indian Journal of Medical Research*, 1929, xvi, p. 1036, and 1930, xvii, p. 1037.

TABLE I

Showing the mean composition of the 221 vesical stones

Constituent	Mean per cent	Standard deviation	Median per cent	
Moisture ...	7·2	8·7	3·7	
N ...	17·9	11·0	19·7	as percentages of the dry stone
P_2O_5 ...	6·9	10·8	3·3	
CaO ...	14·9	11·9	11·4	
MgO ...	2·0	3·4	indeterminate	
C_2O_3 ...	14·0	13·2	8·6	

The results of analysis of individual stones show that the stones tend to have either a great deal or very little of nitrogen, and stones with an average amount are less common. In other words, stones tend either to be urate or non-urate, though the majority of stones have some uric acid or urates in them.[1] The results also reveal the following associations between the constituents :—

(*a*) Stones with a large amount of phosphate have a large amount of moisture in them and urate stones have but little.

(*b*) Nitrogen is negatively associated with all the other constituents, indicating thereby that it exists in some form uncombined with either Ca, Mg, etc., presumably as uric acid.

(*c*) The association of oxalates with calcium is very marked and its association with other constituents is negative or at best insignificant, showing that oxalates exist as calcium oxalate.

(*d*) Magnesium is markedly associated with phosphates and less negatively associated with nitrogen than the other constituents, indicating that magnesium exists as magnesium ammonium phosphate.

Classification of Stones

The stones were classified into urate, phosphate and oxalate stones and mixtures of these. Amounts of phosphates and oxalate less than 1 per cent were neglected, and the Murexide test was used for deciding if stones with only a little nitrogen were to be classed as containing some urate or not. The results of

[1] Newcomb and Ranganathan (1930): *Ind. Jour. Med. Res.*, xvii, p. 1037.

classifying the 221 vesical stones divided according to the provinces from which the stones came, are shown in Table II (Newcomb and Ranganathan, 1930, *Ind. Jour. Med. Res.*, xvii, p. 1037).

TABLE II

	U	P	O	UP	UO	PO	UPO	Total
N.-W.F.P. ...	4	1	2	4	11	2	7	31
Punjab ...	4	0	1	5	9	0	5	24
United Provinces ...	2	0	0	4	23	5	10	44
Central Provinces ...	0	0	1	0	2	2	2	7
Bengal ...	0	0	1	1	0	2	2	6
Assam ...	2	0	2	3	22	3	33	65
Ajmeer-Meerwara ...	0	0	0	1	1	0	0	2
Madras ...	0	1	1	0	0	4	0	6
Bombay ...	1	0	0	1	8	4	11	25
Bihar and Orissa ...	1	0	0	0	1	0	1	3
Nepal ...	0	0	0	0	0	0	2	2
Hyderabad ...	1	1	0	1	1	1	1	6
Total ...	15	3	8	20	78	23	74	221
Per cent. ...	6·8	1·4	3·6	9·1	36·3	10·4	33·4	...

U = Uric acid.
P = Phosphate.
O = Oxalate.

It will be seen from Table II that only 26 stones out of 221 (11·8 per cent) consist purely of one substance. The rest consist of mixtures of which a mixture of urates and oxalates is the most common. In 187 of the stones (84·6 per cent), some urate was present, in 120 (54·3 per cent), some phosphate, and in 183 (82·8 per cent) some oxalate. A mixed stone is the usual thing.

The Kidney Stones

Of the 226 stones received in connection with the above investigation, only five were kidney stones. The proportion must not be taken as an accurate index of the actual incidence of the two kinds of stones in India. Since the above was primarily an investigation on stone in the bladder, kidney stones may not have been sent. It does, however, reflect the common observation that in India stone is very much more prevalent in the bladder than in the kidney (Newcomb and Ranganathan, 1930, *Ind. Jour. Med. Res.*, xvii, p. 1037).

The five kidney stones form a class apart not only in their origin and physial characters but in their composition as well. They are all essentially calcium oxalate stones. In only one (stone No. 94) was any urate present and in that but little. Their chemical composition is given in Table III. So far as can be judged from the five specimens, the composition of the Indian kidney stones is not different from that of those of other countries.[1] They are distinctly different from bladder stones.

TABLE III

Stone Number	N	P_2O_5	CaO	MgO	C_2O_3	Age
110	0·6	0·8	33·8	0	45·9	43
151	0·9	0·7	34·9	0	37·0	12
53	0·9	4·7	36·6	0	35·3	29
154	1·4	12·8	37·7	1·6	35·5	25
94	5·5	0·7	30·7	0	44·8	30
Means	1·9	3·9	34·5	0·3	39·7	28

Diagnosis of the Composition of a Stone by Inspection

Many a surgeon is labouring under a misconception that a good guess can be made of the composition of a stone by a mere visual inspection. Such diagnosis may be easy if it were to consist of only one constituent. Knowing the composition of stones, as revealed by the chemical analysis, an attempt was made as to how far visual inspection could be an aid in understanding the composition of stones. It was observed that the diagnosis of the composition of a stone from its appearance is of very little value (Newcomb and Ranganathan, 1930, *Ind. Jour. Med. Res.*, xvii, p. 1037).

The Nucleus of Urinary Calculi

Statements in the literature regarding the composition of the nuclei of urinary calculi are conflicting. Thus, Langen[2]

[1] Benjamin Moore (1911): *Brit. Med. Jour.*, vol. i, p. 737.
Rosenbloom (1915): *J.A.M.A.*, vol. lxv, 161.
Kahn and Rosenbloom (1912): *Ibid.*, vol. lix, 2252.
} Quoted in *Nutrition and Diet in Health and Disease* by McLester (1931).

[2] Langen (1929): *Meded. v. d. dienst. d. Volksg. in Nederlandsch Indie.* (Foreign Edition), xviii, No. 2, p. 315.

states that 'nuclei are built up of calcium, phosphates and magnesium. Besides, organic ingredients are regularly found in them, sometimes still recognisable leucocytes and chemically traces of blood. In the nucleus of the stone, we found only now and again small quantities of oxalates and of urates; in the outer layers of the stone, however, these substances are often found in great quantities and they form the chief ingredient with respect to structure and consistency of the fully developed bladder stones. Especially the composition of the nuclei is very much the same in both kinds (i.e. both stones from human beings and those obtained by animal experiments), while the layers enveloping the nucleus, which have developed afterwards, show more differences'. Iwano[1] believes that the composition of 'the nucleus is of great importance with regard to its (the stone's) formation' and that it (the nucleus) has a distinct relation to the age of the patient. 'Uric acid and urate nuclei appear', he says, 'much more at advanced age, while phosphate nuclei occur most frequently in persons of ages from 30 to 60 years and far less in young persons. Oxalate nuclei are formed most frequently in persons between the first and the fifth decennium'. Gideon Wells[2] considers that in all pathological concretions including urinary calculi, 'there must first be a *nucleus* of some substance different from the substance that is to be deposited, and which is most frequently a mass of desquamated cells but may consist of clumped bacteria, masses of mucus, precipitated proteins or a foreign body of almost any sort'. Contrary to the above, Hampton Young[3] observes that the nucleus is usually a solidified agglomeration of the same salts of which the calculi are composed and forms the core. Lastly, Shattock[4] after an exhaustive study of the microscopic structure of urinary calculi, has shown that a nucleus of cells or other organic material is, at least in uric acid calculi, extremely rare; the centre being almost always a primary crystalline deposit from a super-saturated solution.

The present investigation into the chemical composition of

[1] Iwano (1923): *Jour. Biochem., Japan,* iii, pp. 67-82.
[2] Gideon Wells (1925): *Chemical Pathology,* p. 505.
[3] Hugh Hampton Young (1927): *Modern Medicine*, Osler and McRae, 1927, v, p. 691.
[4] Shattock (1911): *Proc. Roy. Soc. Med.* (Path. Sect.), iv, p. 110 (quoted by Gideon Wells, *Chemical Pathology*, 1925, p. 513).

the nucleus was undertaken to ascertain how far the above statements applied to the nuclei of the 226 stones in Col. McCarrison's collection. Considerable difficulty was experienced in finding the nucleus : firstly, because it did not always exist in the centre of the stone, though a centrally situated nucleus with several concentric layers around it is a common arrangement; second, because of the varying size of the nuclei which may range from a tiny point to a fairly large mass weighing as much as 70 mgs.; third, because of the absence of a nucleus in some stones. Of the 226 stones, there were 61 whole stones and 165 crushed ones. A cross-section passing through the centre was made in the whole stones. The cut surface was cleaned and examined under a hand magnifying lens. Only twelve stones were found to have prominent nuclei large enough to admit of a micro-chemical analysis; in the remaining 49 whole stones, the nuclei were either indistinct or not bigger than a tiny speck. The prominent nuclei were scooped out carefully and a complete quantitative analysis made on them. The results of the chemical analysis are shown in Table IV. Table V shows the chemical composition of the stones from which the nuclei were separated.

TABLE IV

Showing the chemical composition of nuclei

Nucleus of stone number	Moisture per cent.	As % on moisture-free sample						CO_2	Murexide Test	Ammonia	Weight of nucleus in mg.
		N.	P_2O_5	CaO	MgO	C_2O_3	Insoluble ash				
8	4·1	3·6	1·6	14·6	0	22·7	32·0	0	+ +	—	14·5
20	3·1	9·0	0·8	28·8	0	47·0	0	0	+ +	—	16·0
25	1·1	32·7	Trace	6·3	0	7·7	0	0	+ +	—	28·4
28	0·7	34·2	Trace	1·3	0	1·2	0	0	+ +	+	40·8
29	0	34·5	Trace	1·6	0	3·2	0	0	+ +	+	45·5
46	1·1	34·0	Trace	Trace	0	2·8	0	0	+ +	+	37·8
61	3·2	1·6	0·9	40·5	0	43·2	0	0	+	0	18·6
95	0·3	33·5	Trace	4·4	0	5·3	0	0	+ +	+ ?	39·9
139	1·2	21·7	0·8	15·0	0	17·8	0	0	+ +	+	50·4
150	2·8	34·0	0·9	4·4	0	7·4	0	0	+ +	+	14·2
163	4·0	33·5	1·8	10·4	0	...	0	0	+ +	+	9·9
187	0·9	0·5	4·1	39·7	0	41·6	0	0	+ ?	0	77·7

TABLE V

Stone number	Moisture per cent.	As % on moisture-free sample								CO_2	Ammonia	Murexide Test	Weight of stone in gms.
		Ash	Insoluble ash	Soluble ash	N.	P_2O_5	CaO	MgO	C_2O_3				
8	14·4	63·5	34·8	28·7	4·0	10·2	12·3	5·9	13·6	0	0	+	11·0
20	9·3	37·2	0	37·2	14·2	11·0	20·4	+	16·7	0	0	+ +	34·0
25	1·5	2·8	0	2·8	30·3	0	2·5	+	3·0	0	0	+ +	25·0
28	1·4	0·2	0	0·2	32·9	0	0·2	0	0	0	0	+ +	11·0
29	3·6	3·7	0	3·7	31·3	1·6	0·7	0·7	0	0	0	+ +	30 0
46	1·2	1·1	0	1·1	32·6	+	0·3	0	0	0	0	+ +	10·6
61	3·4	38·0	0	38·0	0·7	+	36·0	+	44·5	0	0	+ ?	40·0
95	1·9	1·0	0	1·0	32·9	+	0·9	0	+	0	0	+ +	27·0
139	9·6	18·6	0	18·6	23·8	6·9	7·9	3·7	7·5	0	0	+ +	66·0
150	36·4	63·0	+	63·0	11·2	37·6	1·8	22·6	0	0	0	+ +	11·2
163	2·7	27·8	0	27·8	12·8	3·9	22·4	0	24·6	0	0	+ +	41·0
187	2·2	...	0	...	1·4	9·4	33·7	2·6	26·4	0	0	+	14·0

(The stones were analysed by macro-methods.)

It will thus be seen from the above tables that the nuclei, though appearing homogeneous under the magnifying lens, were not composed of any one single substance. Phosphates occurred only in traces, while urates and uric acid, and oxalates formed the chief constituents of the nuclei. Seven nuclei contained uric acid and urate as their main constituent; four contained calcium oxalate, and only one contained a mixture of uric acid or urate and calcium oxalate. The percentage of nitrogen was in some nuclei higher than it should have been had it existed solely as uric acid, presumably because of the presence of ammonium urate. The presence of ammonia in such nuclei was confirmed by the qualitative test.

From study of Tables IV and V, it is apparent that (1) the chemical composition of the nuclei did not always run parallel with that of the stones of which they formed part, though an approximate parallelism existed in a good many instances; (2) the nuclei were exceptionally poor in moisture, the percentage ranging from 0 to 4·1, with an average of 1·9 per cent of the weight of the nuclei; (3) insoluble ash occurred in only one instance (No. 8) where the stone and its nucleus contained it in nearly the same amounts; and (4) phosphates occurred in only traces in the nuclei, the average content being 0·9 per cent; the stones enclosing them contained it in much larger amounts,

the average being 6·7 per cent of the weight of the moisture-free stone.

Age of Patient and Chemical Composition of the Nucleus

Table VI shows the ages of the patients from whom the stones were removed and the chief constituent of the nuclei.

TABLE VI

Nucleus of stone number	Age in years	Sex	Chief constituent of nucleus
8	7	M	Calcium oxalate.
20	13	M	Calcium oxalate.
25	61	M	Uric acid or urate.
28	40	F	Uric acid or urate.
29	50	F	Uric acid or urate.
46	4	M	Uric acid or urate.
61	30	M	Calcium oxalate.
95	30	M	Uric acid or urate.
139	12	M	Uric acid or urate and calcium oxalate.
150	3	M	Uric acid or urate.
163	55	M	Uric acid or urate.
187	10	M	Calcium oxalate.

It will thus be seen that uric acid nuclei occurred both in the very young (3 and 4 years old) and in persons of advanced age (50, 55 and 61 years). There seems, from this limited series of observations, to be no relationship between the age of the subject and the chemical composition of the nuclei of the stone. These observations do not support the conclusions of Iwano (*ibid.*).

(*To be continued.*)

UNIVERSITY NOTES

(January to July 1935)

THE annual meeting of the Senate was held on the 28th March 1935. The report on the work of the University for the year 1934, the Budget Estimate for the year 1935-36 and the annual accounts (receipts and expenditure) for 1933-34 as audited were adopted at the meeting.

The laws (Statutes) governing the powers and duties of the Syndicate, Convocations for conferring degrees, academic robes, award of Research Studentships and Fellowships were revised and incorporated in their appropriate places in lieu of the previous provisions. Certain amendments to the Statutes relating to the applications for affiliations, recognition and approval of colleges and relating to the suspension of courses of studies were also adopted by the Senate.

On the recommendation of the Syndicate and the Academic Council, the Senate instituted the new degrees of Doctor of Letters (D.Litt.), Master of Letters (M.Litt.), and Doctor of Science (D.Sc.). Regulations for the above degrees were adopted by the Academic Council at its meeting held on the 15th February 1935. The Regulations for the Master of Science (M.Sc.) were also amended.

At the same meeting, besides adopting certain alterations in Regulations governing the ordinary degree courses in Arts and Sciences (B.A. and B.Sc.), and Oriental Titles, a general revision of the Regulations relating to the Intermediate, B.A. Pass and Honours, and B.Sc. Pass and Honours, was in the main adopted, the idea of the revision being that the Regulations in the Chapter should contain all details about the course, scheme of examination and number of marks assigned to each paper, etc.

Provision made in the transitory regulation regarding the holding of the M.A. Degree examination was further extended till the end of the year 1936-37 or till the institution of the new M.A. Degree.

Two new titles in Oriental Learning, Malpan and Soppar, for proficiency in Hebrew and Syriac respectively, were instituted.

Proposals for the institution of a Bachelor's Degree in Oriental Learning were recommended by the Faculty of Oriental Learning.

The Academic Council resolved that the B.A. (Hons.) Degree course and examination be retained and that candidates be awarded the M.A. Degree without efflux of time.

The recommendation regarding the B.A.'s to qualify for M.A. Degree were referred back to the Syndicate for consideration and report.

A supplemental Convocation was held on the 4th March 1935 when Degrees were conferred on candidates.

A special meeting of the Senate was held on the 30th March 1935 to award Diplomas and Titles, viz. Diploma in Geography, Diploma in Indian Music, Diploma in Midwifery, Diploma in Modern European Languages and Titles in Oriental Learning, viz., Siromani, Vidwan, Afzul-ul-ulama and Munsh-i-Fazil.

The following endowment lectures were delivered during the period :—

Sir William Meyer Lectures. By Dr. Radha Kamal Mukerjee, on 'The Balance and Optimum of Population; an ecological theory and its application to India'.

Principal Miller Lectures. By Mr. P. N. Srinivasachari, M.A., on 'The Inner Meaning of Progress'.

The Sir Subrahmanya Ayyar Lectures. By Mr. V. Appa Rao, M.A., L.T., on 'The Positron : its discovery and properties'.

The Gokhale Lectures. By Mr. T. K. Duraiswami Ayyar, M.A., L.T., on 'India and Recent Trends in International Trade'.

The Sankara Parvathi Lectures. By Mr. C. S. Srinivasachari, M.A., on 'The Extension of South Indian Culture in Indonesia'.

The Dr. Elizabeth Matthai Lectures. By Dr. Miss H. M. Lazarus, on 'Toxaemias of Pregnancy'

The Travancore Lectures :

In Medicine. By Dr. T. Bhaskara Menon, on 'Problems in Filariasis'.

In Engineering. By Mr. M. K. Ranganathan, on 'The Automatic Shutters in Channels'.

In Agriculture. By Rao Bahadur M. R. Ramaswami Sivan, on 'The Manurial Problems in India'.

Sir P. S. Sivaswami Ayyar redelivered the Kamala Lectures

on 'The Evolution of Indian Moral Ideals' which were originally delivered in the Calcutta University.

The following three endowments were accepted by the Syndicate :

(1) The Kerala Scholarship.
(2) The Diwan Bahadur K. Krishnaswami Rau Lectureship.
(3) The Sir Mannath Krishnan Nair Gold Medal.

PUBLICATIONS

The following are the University Publications—Research theses, Bulletins of the Departments and University Lectures—issued during the period (1934-35) :

The Colas, Vol. I. By Mr. K. A. Nilakanta Sastri, Professor of Indian History and Archaeology.

The Matsya Purana, A Study. By Mr. V. R. Ramachandra Dikshitar, Lecturer in Indian History.

The Samkhyakarika of Isvara Krsna (2nd Edition). By Mr. S. S. Suryanarayana Sastri, Reader in Indian Philosophy.

Unadi Sutras in various Recensions, Part VI. By Dr. T. R. Chintamani, Senior Lecturer in Sanskrit.

Raghunathabhyudaya of Ramabhadramba. By Dr. T. R. Chintamani, Senior Lecturer in Sanskrit.

Rgvedabhasya of Skandaswamin. By Dr. C. Kunhan Raja, Reader in Sanskrit.

Vajasaneyi Pratisakhya. By Pandit V. Venkatarama Sarma, former Fellow in the Department of Sanskrit.

Critical Studies on Katyayana's Sukla Yajurveda Pratisakhya. By Pandit V. Venkatarama Sarma, former Fellow in the Department of Sanskrit.

Vishnumayanatakam. Edited by Mr. K. Ramakrishnaiya, Senior Lecturer in Telugu.

Studies in Dravidian Philology. By Mr. K. Ramakrishnaiya, Senior Lecturer in Telugu.

Burhan's Tuzak-I-Walajahi, Part I (The history of the Nawabs of the Carnatic). By Mr. Muhammad Hussain Nainar, Senior Lecturer in Arabic, Persian and Urdu.

Purpose and Progress (Principal Miller Lectures of 1934). By The Rev. John Mackenzie.

Some Aspects of Ancient Indian Polity (Sir S. Subrahmanya Ayyar Lectures of 1914). By Rao Bahadur K. V. Rangaswami Ayyangar, 2nd Edition.

Inter-Statal Law (The Sundaram Ayyar-Krishnaswami Ayyar Lectures of 1933). By Mr. K. M. Panikker.

Tamil Lexicon. Three Parts in Vol. VI were issued during the period.

The amount expended to the end of December 1934 is Rs. 3,73,144. The Lexicon is expected to be completed in April 1936.

REVIEWS

THE MAKING OF THE STATE. By M. RUTHNASWAMY, C.I.E., M.A. (Cantab.), Barrister-at-Law. London, Williams & Norgate, 1932.

THE modern State is a territorial society divided into government and subjects, claiming within its allotted physical area supremacy over all other institutions. It is the most important instrument evolved by men to enable them to realise social good on the largest possible scale and the highest expression of their social spirit: Gierke has said there is nothing similar to it that is above it. To understand the meaning of the State and the factors that help to mould its life is a duty cast upon the citizen not only because its decisions affect the contour of his life; the democratic character of the modern State places on him the duty of contributing his instructed judgment to public good.

A right understanding of the State, however, requires an understanding of its history. The State was not made once and for ever. It has been continually changing not only in its forms and institutions but in the motive power which has sustained it. What are the factors and influences which have entered into the making of the State? What is their value to the modern State in its task of making the life of its citizens richer and happier? Above all how will those institutions and ideas help or retard the making of India? A full and convincing answer to these questions is essential if we are properly to appreciate the place of the State in the Great Society and to utilize it for the betterment of India.

The book under review attempts to provide such an answer. Its distinguished author has had exceptional opportunities to enable him to perform that task adequately and well. As Professor of History and Politics at an Arts College and later Principal, Law College, Madras, he has had opportunities of getting acquainted with the best masters of political and legal thought. Later, as he mentions in his Preface, 'he has learnt in the halls and lobbies of the Madras Legislative Council and of the Imperial Legislative Assembly . . . things which he could not have learnt in his library'. This experience is a rare

combination. Added to these the author has a highly cultured mind and a balanced judgment which are evident in every one of the pages of the book. The result is a useful and fascinating book which bears on its face the impress of vast research and scholarship, clear thinking, a careful sifting of materials and a sympathy which comes from right understanding.

The book begins with an outline history of the State in which the author traces the origin and development of the State from its humble beginnings in Asia where the first foundations of the State and of government, as of religion and civilization and culture were laid. War and conquest expand the State. He sets before us the early and simple form of past political societies down to their latest and most complex developments : the patriarchal system, the village community, the Greek City-State, the Roman Empire, the mediaeval State and the modern nation State. In this survey, he assesses, with great care, the contribution of each to the making of the modern State. The State in Greek hands became homogeneous, compact, self-governing. The City-State in the hands of Rome tried to expand; it broke and gave way to the country-State of the Middle Ages, leaving behind its legacy of law, unity and order. The mediaeval State, with its groups and corporations, its decentralization and self-government and rule of law and morality, showed how a large State should be organized if it was to endure. The absolutist State of the eighteenth century made the State centralized and uniform. Both mediaéval and modern ideas are necessary : the marriage of the mediaeval ideas of self-government and group life with the modern idea of centralized government and unity has given us the State which holds the future in its hands.

Next, in ten chapters, he estimates the influence of various factors in the making of the State. The land and people obviously form the first factor. *Land* largely determines the structure and character of the State. The political importance of land leads to the right conclusion that the more evenly distributed land is, the sounder a State will be. The *people*, associated in groups, the family, guilds, church, race, nation and society exercise a real influence : it is the group that gives life to the State and liberty to the individual. While groups are necessary, they can only supplement but cannot supplant the

State—a wise caution against extreme pluralistic views. *Religion* is the cement of society. In these days when religious influences are being slowly undermined, it is refreshing to read what in fact is an outspoken plea to bring more of the religious attitude in daily life : for religion makes man realize that sacrifice and not selfishness is the law of social life. It did good service in the infancy of the State by inculcating the habit of political obedience and peaceful social life, and by sanctifying the institutions of family, marriage and property. Particularly is religion necessary for democracy; for the rule of numbers would become a terrible tyranny if the citizens of democracy are not restrained and refined by religion. We may add that this was the dream also of Mazzini : to make democracy more religious so that men may think more of duties than rights. A wise government will be careful not to act against religion except in self-defence or to correct abuses. Not a free church in a free state as was Cavour's formula but a free church by the side of a free state is the formula that expresses the right relations that ought to exist between religion and the State. The influence of *Custom* and *Law* is then analysed and the conclusion is drawn that the habits and customs of the people, their history and traditions, their qualities of character and conduct and the defects of these qualities, the social life of the people and their religious beliefs, all these must be taken into consideration by statesmen legislating for a people. But within the limits placed by the facts of social life, the capacity of law for improving social and political life is undeniable : at once a wise caution and an encouragement to our legislators in their great task of adjusting law to life.

Institutions are then taken up. Institutions are defined as bodies of rules and regulations, whether governed by custom or law, embodying and related to some social principle. They give the State the core of that conservative force which is as necessary for its life as change. They are of two kinds, social and political. Examples of the former are the family, slavery, caste and property. The family is a natural institution required by the needs of man; it is also the nursery of the State. Governments will gain by the warning here given that no intervention of law is so fraught with danger as that which is directed against the intimacies of family life. Social institutions could not,

however, by themselves, have endowed the State with its distinctive characteristics: its independence and coercive power. These are given to it by its *governmental organs*, the army, judiciary, administration and legislature. In discussing the part played by them, the author makes two or three important contributions to political theory which are worth emphasis. The first is in regard to the relation between the army and the civil power. One of the cornerstones of accepted English constitutional theory is the subordination of the army to the orders of the civil government. Its value is it preserves the constitutional character of the political organization of England. Its danger, however, is that the army which is the servant of the civil authority may well be called upon to help that authority to change the constitution of the State, thereby helping revolutions. The true view suggested by him, viz., as the army represents the power of the State, that power must be used, not as a servant of any particular authority in the State, but as the guardian of the state as a whole, is worthy of more exploration. A second contribution is in regard to the relation between the Administration and Legislature. Accepted theory tells us that the executive is the subordinate of the Legislature. This theory of subordination is not only not in keeping with existing facts, but wrong because of the inherent importance of the executive function in maintaining the existence and welfare of the State. 'Responsible, modern administration is to people or to legislature, but not subordinate.' A third idea, worthy of further exploration, is the possibility of separating the functions of representation and legislation, which on account of historical causes have come to be united in one body. The experience of native states like Travancore and Mysore in this direction, of keeping separate the representative assembly, focussing the opinion of the people on the questions of the day, from the legislature, which is only a law-making organ composed of people qualified for legislation, is full of interest and may be expected to yield fruitful results.

A history of *ideas* follows. Ideas are never perfectly realized, but as Lord Acton said, the pursuit of them determines history. Equality and justice, liberty and progress have never been perfectly realized on earth but as the author points out, it is good to take the road to them. Other factors the author examines are *civilization and culture*, *modern industry*, the importance of

leadership and *international relations*. It is not necessary to deal at length with them here. Suffice it to say that they all contain brilliant generalizations and judicious conclusions, which, as elsewhere throughout the book, are based on a vast storehouse of knowledge. Finally he examines the causes for the fall and recovery of States and concludes with a well-argued chapter on the making of India.

It will now be clear that as a comprehensive survey of the factors which have shaped the modern State, the book will remain a standard work for a long time to come. Its value to the modern student of Indian politics is, however, enhanced by the fact that the general conclusions reached in each chapter are applied to Indian conditions. We may cite a few instances: Dealing with the influence of systems of landholding on the constitution, it is suggested that much of the unrest and instability of modern India is due to the proletarization of land caused by the excessive and unlimited subdivision of holdings (p. 61). Discussing the evils of caste, he points out 'the greatest mission of statesmen in India is to find some more life-giving groups than the caste groups. . . The formation of groups based on common fellowship of work, service and tastes, life, art and culture, rather than on birth and religion, which divide men from each other seems to be the best way'; 'social reformers would do well . . . to cease to rail at caste or to attempt to abolish it by propaganda and by legislation'; what is required is 'to build institutions for India which embody the ideas of equality, liberty and social solidarity to take the place of caste groups' (pp. 78, 210, 211). A supreme court in India will serve a useful purpose in hammering out a national law for India out of the customary law of the people and bind them into a common life of law, a service which the Judicial Committee of the Privy Council cannot perform, and yet it must be performed, for the lack of legal unity is one of the chief causes of political disunion in India (pp. 140, 148, 150). Communal electorates may not be desirable, but if they are to disappear in India, the communal laws of the Hindus and of the Muslims must also go (p. 162). The use of the army in the suppression of civil disobedience is fraught with danger not only to the army but to the State; the danger is greater in India where the army is organized on a racial basis (p. 221). Federalism suggests itself

as the future form of government in India but 'the prospects of Indian federation will be low, if it is viewed as anything but a distant prospect, or unless all parts of India, including the Indian States, reach the same stage of political development in the direction of free and popular government' (pp. 261-2). And finally, a plea for cultivating a sense of common citizenship: 'The service of the State is a service which can bind all communities together in a life of fellowship. While the service of community or religion may divide man from man in India, the service of the State may bind different parts and different religions and different classes and communities in the bonds that give unity and consequent progress and liberty' (p. 484).

A. APPADORAI

THE CAMBRIDGE SHORTER HISTORY OF INDIA. Edited by H. H. DODWELL. Published by the Cambridge University Press, London (1934), 12/6 net.

JUST like the *Oxford History of India* published by the Clarendon Press, Oxford, the Cambridge University Press have recently brought out the *Cambridge Shorter History of India.* This very readable volume of 1,000 pages follows to a very large extent the published volumes of the *Cambridge History of India.* The plan followed in this volume is somewhat different from the Oxford History, and the whole book is divided into three parts—Ancient India, Muslim India and British India—the epochs being determined, in the words of the Editor, 'by the appearance from time to time of foreign influences'. While Professor Dodwell is the general editor and author of British India, the first two parts are written by equally well-known scholars, Mr. J. Allan and Sir T. Wolseley Haig respectively. The space given to Ancient India is less than half of that devoted to British India. One would wish that some more space had been given to topics like the Culture of the Indus Valley, the imperial history of the Nandas, the history of the Deccan and of South India. The history of the Deccan is traced from the early Cālukyas down to the battle of Talikota in one stretch with dynasties like the Kadambas, the Gangas, etc. intermixed. This plan has its own advantages and disadvantages. Similarly, the Coḷas, Pāṇḍyas and Pallavas are traced,

each by itself, from beginning to end. The sense of contemporaneity is thereby, to some extent, injured.

In this section there are many statements on which there have not been established a general agreement and which we cannot examine in a short notice like this. To mention a few :— The Purāṇas, the Arthasastra and the Kāmaśūtra are said to be works compiled in the third or fourth century A.D. First, we take up the Purāṇas. The Brāhmaṇas, the epics and early Dharmasūtras like that of Āpastamba mention the Purāṇas by name. It may be that dynastic portions were added to them in the third or fourth century. The other portions are undoubtedly very much older. Secondly, to say that Kauṭalya in question is not the Mauryan minister is to set at nought the unanimous Indian tradition, and the equally unanimous opinion of Indian scholars supported by distinguished European Indologists like Fleet, Jacobi and F. W. Thomas. In this connection the *Shorter History* compares very unfavourably with the research represented in the first volume of the *Cambridge History of India*. Stress is laid on the *Fragments of Megasthenes*, but they cannot be accepted as a primary authority for the Mauryan history. The wonderful correspondence between the Arthaśāstra and the terms in the Aśokan edicts is sufficient to establish the priority of the Arthaśāstra to Aśoka. The emphasis laid on Aśoka being a Buddhist is to ignore the other side of the picture, *viz.*, a Brahmanic Hindu who was however quite catholic in his outlook. Again the propositions that the Satiyaputras are probably connected with the Āndhras (p. 44), and that the Pallavas were a family of foreign origin (p. 196), are statements yet to be proved.

The second and third parts will generally be read with approval. In the opening chapter of the Muslim period, the thirteenth century is stressed as witnessing the foundation of the Delhi kingdom. In the chapter on the Khaljis and the Tughluks conquests and campaigns occupy considerable space. The life and career of Muhammad bin Tughluk are very elaborately treated. The same detailed treatment is noticed in the case of provincial Muslim kingdoms like Jaunpur and Bengal. The history of Vijayanagar is dealt with largely from the point of view of its external relations with the Bahmanis and not from the standpoint of its culture and polity and also of its

expansion in the south. The notion of Akbar's illiteracy seems to be accepted and the remark is made that 'his practice fell far short of his precepts'. The later Mughal history is chronicled faithfully down to 1761 (crisis of Panipat).

Part III opens with a chapter on 'the Coming of European Influence' with an estimate of the Portuguese culture and of Dutch power. Of Dupleix it is remarked that 'his policy lacked elements of permanent success and could never have survived a European war' (p. 547). One notices some difference between the chapter on Warren Hastings in the Fifth Volume contributed by P. E. Roberts and that in the book under review. In Chapter V, the wars of the period 1784-1818 are compressed into proper proportions. Separate chapters deal with the growth of political sovereignty over native states, and the growth of the army. The chapter on the Company's Administrative System and Policy 1818-58, is concluded with the remark that the British Government with its western outlook was bound to give a series of shocks to Hinduism which would react sharply and convulsively. The chapters on the Constitutional and Administrative Development after the Mutiny afford very interesting details.

The book is a welcome addition to the single volume histories of India and may be safely placed in the hands of students of colleges. There is erroneous spelling of some proper names, like Jātavarman, Kerāla, in the first part. We hope these would be rectified when a second edition is called for. We offer our hearty felicitations to the learned authors who have co-operated to produce a good and useful book.

V. R. R. DIKSHITAR

BOOKS RECEIVED

1. *A Book of English Verse.* By W. S. Mackie (1935). Macmillan. 190 pp. Price 3*s.* 6*d.*
2. *An English Reader for Foreign Students.* By Wilfred Thorley. Macmillan. 1935. 3*s.* 6*d.*
3. *The Story of English Literature.* By Gerald Bullet—How and Why Series. 2*s.* 6*d.*
4. *Worlds in the Making.* By G. H. Vallins. 2*s.* 6*d.*
5. *For all who Seek to Express themselves in good English.* By William Freeman. A. & C. Black. 3*s.* 6*d.*
6. *Higher School Geometry.* By L. Crosland. Macmillan. 1935.
7. *The Fundamentals of Chemical Thermodynamics*, Parts I and II. By J. A. V. Butler. Macmillan. 1935.
8. *Physical Principles and Applications of Magnetochemistry.* By S. S. Bhatnagar and K. N. Mathur. Macmillan. 1935. 21*s.*

The following books have been received from the Oxford University Press :

9. *Chaucer Troilus and Criseyde.* Abridged and Edited by R. C. Goffin. Rs. 2.
10. *La Narration Francaise.* By M. L. Lebonnois. 1*s.* 9*d.*
11. *Heat* (Intermediate Standard)—Indian Edition. By Robert W. Hutchinson. 3*s.* 6*d.*
12. *A Modern English Course for Schools.* By A. M. Walmsley. 3*s.* 6*d.*
13. *Elementary Mechanics and Hydrostatics.* By Frank Barraclough. 3*s.* 6*d.*
14. *Text-book of Biology.* By E. R. Spratt and A. V. Spratt. 9*s.* 6*d.*
15. *Elementary Electricity and Magnetism.* By Robert W. Hutchinson. 6*s.* 6*d.*

AMONG OUR EXCHANGES

Bombay University Journal.
Annamalai University Journal.
Madras Agricultural Journal.
League of Nations' Weekly Bulletin.
The New Review, Calcutta.
Half-yearly Journal of the Mysore University.

PUBLICATIONS OF THE MADRAS UNIVERSITY

(Text-books, Calendars and Question Papers have been omitted)

	Name of Publications	*Price* Rs	A	P
1.	**Some South Indian Villages,** by Dr. G. Slater. Available at the Oxford University Press, Madras ... ... each	5	0	0
2.	**Sources of Vizianagar History,** by Dr. S. Krishnaswami Ayyangar, available from the Superintendent, Govt. Press, Mount Road, Madras... ... ... each	4	8	0
3.	**Dravidic Studies,** (available from the Superintendent, Govt. Press, Mount Road, Madras).			
	Volume I	0	2	0
	Volume II	0	8	0
	Volume III	0	12	0
	Bound Vols. I–III	2	4	0
4.	**History of Sri Vaishnavas,** by Mr. R. Gopinatha Rao	0	10	0
5.	**Psychological Tests of Mental Abilities,** by Dr. A. S. Woodburne	2	8	0
6.	**The Nayaks of Madura,** by Mr. R. Satyanatha Ayyar, available at the Oxford University Press, Madras	8	0	0

TO BE HAD OF MESSRS.

C. COOMARASWAMI NAIDU & SONS, GEORGETOWN, MADRAS

7.	**A Study of the Optical Properties of Potassium Vapour,** by Dr. A. L. Narayan	1	12	0
8.	**Absorption Spectra and their bearing on the structure of atoms and molecules,** by Dr. A. L. Narayan	0	8	0
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10.	**The Kavari, the Mukari and the Sangam Age,** by Mr. T. G. Aravamudan	2	4	0
11.	**Dravidic Studies—No. IV on the Octaval System of Reckoning in India,** by Dr. Mark Collins	0	12	0

University Publications—(*continued*)

	Name of Publications	*Price* Rs	A	P
12.	**Stone Age in India,** by Mr. P. T. Srinivasa Aiyangar, M.A. ...	1	0	0
13.	**Anatomical and Taxonomic Studies of some Indian fresh and Amphibious Gastropods,** by Mr. H. Srinivasa Rao, M.A., D.SC. ...	1	4	0
14.	**India through the Ages,** by Dr. Jadunath Sirkar, M.A., Ph.D.	1	8	0
15.	**Political Theory of the Govt. of India,** by Mr. M. Ruthnaswami, M.A., C.I.E. ...	1	0	0
16.	**Ante-natal, Natal, Neo-natal mortality of infants,** by Dr. A. Lakshmanaswami Mudaliar, M.D., L.R.C.P.	2	0	0
17.	**History of Pallavas,** by Mr. R. Gopalan, M.A.	5	0	0
18.	**Industrial Welfare in India,** by Mr. P. S. Lokanathan, M.A.	4	0	0

This is a critical study of the work and achievement of the three great agencies of the workers' welfare—the State, the employer and organized labour. The first part deals with industrial legislation and the second describes the Welfare Work carried on by the employers, emphasis being laid on the need for a new orientation in the relationship between the employers and workers. In the third part a history of the Trade Union Movement is given.

19.	**Critical Survey of the Malayalam Language and Literature**	0	8	0
20.	**Records of the Indian Museum, Vol. XXXI, Part I,** by Mr. K. S. Padmanabha Ayyar	1	0	0
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22.	**Kuchalavirtham and Krishnavilasam,** by Mr. C. Achuta Menon, B.A.	1	0	0
23.	**Hindu Administrative Institutions,** by Mr. V. R. R. Dikshitar	6	0	0
24.	**Tamil Sangam Age,** by Mahamahopadhyaya S. Swaminatha Ayyar ...	1	0	0
25.	**Agastiya in the Tamil Land,** by Mr. Sivaraj Pillai, B.A.	1	0	0
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	In this work, Srikantha's commentary is analysed and considered in great detail. The work is published critically with a translation, introduction, and notes in English.			
29.	**Sivadvaita of Srikanta,** by Mr. S. S. Suryanarayana Sastri	5	0	0
	A critical exposition of the philosophy of Srikantha, otherwise known as Nilakantha Sivacarya, the author of a Saiva commentary on the *Vedanta Sutras*. The first chapter determines Srikantha to be possibly a contemporary of Ramanuja. Chapters II–IV give an account of his philosophy, under the heads of Preliminaries, Criticism of Rival Theories, Brahman, the Jiva, and Release. The last chapter is an estimate.			
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56.	**Rasaratnakara by Salva,** Ed. by Mr. A. Venkata Rao	2	4	0
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58.	**Pushpadanta Puranam,** Ed. Mr. A. Venkata Rao and Mr. H. Sesha Ayyangar	4	0	0
59.	**Rig Vedanukramani of Madhava Bhatta, Vol. I,** Ed. by Dr. C. Kunhan Raja	3	8	0
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65.	**Inter-Statal Law** The Law affecting the Relations of the Indian States with the British Crown—by Sirdar K. M. Panikkar (Sundaram Ayyar—Krishnaswami Ayyar Lectures for 1933-34)	1	0	0
66.	**The Colas,** Vol. I By Mr. K. A. Nilakanta Sastri	8	0	0
67.	**The Matsya Purana—A Study** by Mr. V. R. R. Dikshitar. ...	1	0	0
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74.	**Katyayana Pratisakhya** Ed. by Pandit V. Venkatarama Sarma ...	4	0	0
75.	***Critical Studies on Katyayana's Sulka Yajurveda Prati Sakhya*** by Pandit V. Venkatarama Sarma	4	0	0

Supplement to the Madras University Journal

THE HAND-LOOM INDUSTRY
IN
SOUTH INDIA

BY

K. S. VENKATARAMAN, B.A. (HONS.), B.L.

(SIR PARASURAMBHAO COLLEGE, POONA)

"There is only one way of seeing things rightly and that is seeing the whole of them."

MADRAS

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THE HAND-LOOM INDUSTRY IN THE MADRAS PRESIDENCY

CHAPTER I

INTRODUCTION

'The handloom weaving industry of India is still of great importance in the natural economy and has up to the present shown remarkable vitality in the face of competition with factory products. It is likely to remain the principal form of village industry and there is no immediate reason to fear its decline.'—*Royal Commission on Agriculture in India.*

'The revival and expansion of rural industries on an economic footing is a desideratum of any policy which contemplates the extension of arable farming.' *Ibid.*

'I hold the opinion that *the handloom may remain in India for many years the commercial weaving machine*, provided the loom is suited to the work to be done and is supplied with properly prepared materials.'—Prof. T. W. Fox.

NEXT to agriculture hand-loom weaving is the most important industry in India. It is the primary means of livelihood of a large number of persons. It is also the means of subsidiary income to many agriculturists and forms the main auxiliary to agriculture. It is important both as an urban and a rural industry, giving employment to millions of men, women and children of all communities.

The term 'hand-loom weaving' has a wide connotation. It comprises weaving of fabrics of cotton, silk, wool, jute, coir and cora-grass, weaving in each of them obtaining in such areas as there are natural facilities. Jute is woven on hand-looms in Bengal and the Northern Circars. Coir manufactures obtain on the West Coast. Woollen spinning and weaving as cottage industries are found in many provinces, especially in the Punjab, the Indian States of Hyderabad, Kashmir and Mysore. Silk-worm rearing, and silk reeling and twisting are common in Mysore, Bengal, and Kashmir; while silk weaving is carried on in many important cities all

over India. But all these can never equal either in magnitude or in value the cotton textile home industry.

The importance of the cotton textile industry cannot be exaggerated. The three main human physical needs are food, clothing and shelter; while agriculture provides all of them in a sense, it is the cotton textile industry that supplies the bulk of the cloth required. Cotton is the natural clothing of the people of India. It is light, and cool and best suited to the tropical climate. The needs of the people are simple; besides, they are poor and cannot afford costly luxuries. It is estimated that the proportion of cotton cloths to other fabrics such as silk, rayon or artificial silk and woollen consumed in India is 30 to 1. Cotton weaving, therefore, plays the same part in the Indian industrial system as the woollen industry did in England. Next comes silk weaving as a cottage industry. Silk is locally available. Besides, its use is decreed by Indian customs—Hindu and Muslim—on religious and ceremonial occasions. Practically all the silk fabrics that are manufactured in India are produced by craftsmen in their homes on hand-looms.

No doubt a large part of the cloths required by the people is met by manufactures of mills in India and by foreign imports. There are more than 300 cotton spinning and weaving mills and about 17 woollen mills.[1] Still home industries in cotton, silk and woollen fabrics play a very important part. Not less than a fourth of the total consumption of cotton cloth in India is prepared on hand-looms. Silk weaving and weaving of woollen blankets and carpets are primarily cottage- and hand-industries. It is difficult to estimate the total consumption of silk and wollen fabrics; but it can be roughly stated that more than half of the silk and a very considerable part of woollen blankets and shawls consumed in India are produced on hand-looms.

Out of 146 million actual workers in India, textile industries of all kinds (cotton, silk, woollen, jute, coir and

[1] The Statistical Abstract of Br. India, 6th issue, mentions 613 cotton weaving and 6 cotton carpet factories. This includes ginning and pressing factories.

other fibres) account for 4 million workers.[1] Deducting 800,000 persons who are employed in all textile factories (including both skilled and unskilled labourers in seasonal and

[1]CENSUS OF 1921 AND THE INDUSTRIAL CENSUS TAKEN THEREWITH

Manufactures of	Census of 1921 (*a*)		Industrial Census, 1921 (*b*)			Workers in Cottages *c* = (*a*-*b*)	
	Men Workers	Women Workers	Number of Factories*	Men employed	Women employed	Men	Women
Cotton ...	1,803,054	1,172,168	2,037	334,719	99,177	1,468,335	1,072,991
Jute, Coir, etc.	365,626	224,229	484	258,636	51,875	106,990	172,354
Wool ...	69,636	42,396	88	9,652	887	59,984	41,509
Silk ...	34,034	46,688	174	8,428	995	25,606	20,693
ALL TEXTILES	2,455,296	1,575,378	2,889	616,019	157,046	1,839,277	1,418,332

NUMBER OF FACTORIES, FACTORY WORKERS AND HOMEWORKERS IN COTTON TEXTILE INDUSTRIES—(*Census of* 1921)

—	Census of 1921		Industrial Census, 1921			Workers in Cottages	
	Men Workers	Women Wokers	Number of Factories	Men Employed	Women Employed	Men	Women
Cotton cleaning, ginning and pressing.	148,240	87,434	1,418	56,941	26,114	91,299	61,320
Cotton Spinning ...	115,030	352,670	613	277,696	72,983	1,377,118	1,011,751
Cotton Weaving ...	1,539,784	732,064					
Dyeing ...	64,549	33,502	63	3,482	380	61,067	33,122
Lace and embroidery ...	118,014	55,845	28	347	3,478	117,667	52,367

regular factories) there are still more than 3 million textile workers who carry on their work in their own homes. Thus the importance of the textile home industry is striking.

Importance of the Cotton hand-loom Industry

Taking the cotton textile industry alone, cleaning, ginning, pressing, carding, spinning, sizing, weaving, bleaching, dyeing and printing support 5.8 million persons of whom about 3 millions—1,903,054 men and 1,172,168 women—are actual workers. Of them about 530,000 persons alone are employed in factories.[1] The rest are connected with hand-weaving and other connected home industries. These figures are quoted here to show the real magnitude of the handicrafts in cotton textiles, which support nearly a sixth of the total Indian industrial population.

The hand weaving industry, besides offering full time employment to many weavers, is also the subsidiary

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[1]Persons employed in cotton factories of all kinds in British India and Native States in 1926

Description	British India		Native States		Total	
	Number of Factories	Number employed	Number of Factories	Number employed	Number of Factories	Number of persons employed
Cotton ginning, baling, pressing ...	2,092	145,014	610	39,380	2,702	184,394
Cotton spinning and weaving	273	338,684	46	40,028	319	378,712
Cotton hosiery	18	1,358	1	49	19	1,377
Dyeing and bleaching ...	32	4,886	5	700	37	5,586
Clothing factories ...	4	1,923	...	...	4	1,923
Total ...	2,419	491,865	662	80,157	3,081	572,022

means of income to agriculturists.[1] In the Madras Presidency the industry is mainly a caste specialisation and the primary occupation of such castes. Even here though there is a tendency for the industry to concentrate in certain centres it is still primarily a rural industry. In other provinces, Assam, the Central Provinces and Rajaputana weaving is mainly found in villages. Excepting in a few urban centres where it is the only occupation of weavers who manufacture special kinds of cloths, as the laced cloth of Madura, solid bordered cloths of Salem, the Madras handkerchiefs and lungis etc., hand-weaving is still mainly carried on in villages. Even in centres where the industry is localised and the weaver is fully employed at the loom, he depends on agriculture to some extent as a subsidiary source of income. Thus agriculture and hand-loom weaving are closely related in our rural economy.

In the beginning of the 19th century the cotton textile industry—from the cleaning of cotton to the dyeing and finishing of manufactures—was the work of the artisan. In that society a part of the growing population was always absorbed by this expanding industry and thus restrained the pressure of population on land. But the introduction of machinery threw a large number of those dependent on this industry out of employment and led to overcrowding in agriculture and aggravated the problem of rural unemployment. The present attempt to revive the charka and the hand-loom is intended mainly to solve the problem of unemployment and under-employment in villages and to provide subsidiary means of livelihood to agriculturists with only small holdings.

Lastly, the revival of the hand-loom industry will solve the problem of general unemployment and lead to a better distribution of work, wealth and welfare. A century of unabated enthusiasm for industrialism and mechanisation of industries has created a sense of insecurity even in the minds of

[1] 'There are periods in the cultivator's year when all the members of the family are busy in the fields; but there are periods also when they are idle. At such times there is much labour running to waste and ample scope for some form of secondary occupation. If the cultivator could bring himself and his family to learn the art (of weaving) and face the initial expenditure of Rs. 25 he could earn a few rupees more. Hand-weaving conducted on these lines would be as sound economically, as it would be acceptable to the sentiments of the people.'—MR. EDYE, *Census Report, 1921*

its most ardent advocates. It has not only not solved the problem of unemployment but has aggravated it. The introduction of mechanical power may mitigate the physical strain of workers and lessen their hours of work to some extent. But it leaves more permanent sores elsewhere. The labour displaced by machinery and power cannot be fully absorbed in other fields and so unemployment, conflict of labour and capital and further unemployment follow. The philosophy of machinery and power is too sanguine. The power of machinery to solve our problem is limited. This is now slowly recognized. If India is to make history and avoid all the evils and horrors of Western Industrialism, the path lies not in rapid industrialisation with the aid of gigantic imported machinery and in the indiscriminate substitution of mechanical power for man-power but elsewhere—viz., in the avoidance of the waste of human life and in the subordination of machine to man. Hand-loom weaving, in the present circumstances, satisfies this test and its encouragement will give employment—which no other industry can claim to do—to several million persons, who are famishing for want of work. The charge of 'making work' cannot be made against it. The cost of its revival and protection will not be greater than the cost of protecting the mill industry. The ultimate burden on the taxpayer and the consumer will be much less. It will further have the decided advantage of avoiding the evils of excessive industrialism.

Thus the hand-loom industry is important:

(1) as supporting a large number of persons who have hand-weaving as the only ostensible means of livelihood;

(2) as a means of providing subsidiary occupation to agriculturists who have a long off-season;[1]

(3) as a means of solving the problem of the increasing unemployment of the working classes;

(4) as a measure of relief in tracts where agriculture is almost precarious; and

[1] Hand-loom weaving is the only dependable ancillary to agriculture. In precarious tracts—which are too many in India—inactivity may be almost unavoidable for a whole season or even for a whole year. Where the cultivator pursues some crafts which will employ himself and his family at times when they are not required in the fields—a craft in which continuity of employment is not essential—the proceeds of the craft are a saving from waste and therefore clear gain. The most typical of such craft is the production of home spun cloth.—MR. EDYE. *Census Report. 1921.*

(5) as a means of securing economic justice in the distribution of work and wealth.

The cotton hand-loom industry is most important in the Madras Presidency. While the mill industry has developed in the Bombay Presidency, it is in Madras that the hand-loom weaving industry, in spite of the rapid growth of mills, still maintains its own and consumes more than a fourth of the yarn available for hand-looms in India.

There are certain factors which have helped the development of this industry in this Presidency. First, a regular supply of yarn is assured by the spinning mills of the Madura group. Secondly, the growth of the dyeing industry in Madura has enabled the country weavers to manufacture coloured fabrics with which mills do not compete. Thirdly, Madras is fortunate in having from the days of the East India Company a flourishing export trade in handkerchiefs and lungis which are manufactured on hand-looms.

It may now be asked: can the hand-loom be revived in the teeth of mill competition? The answer is in the affirmative. It is not based on mere sentiment or on the fashionable creed which denounces everything modern but on the opinions of textile experts and on the peculiar economic conditions prevailing in India. Sir Alfred Chatterton, to whom many South Indian industries owe their existence, declared: 'The hand-loom weavers, who have already achieved wonders in the age of machinery, will be able to turn the tables on the power-loom if but a fraction of the capital, energy and organisation were devoted to their trade that have been expended in pushing power-loom.' The late Prof. T. W. Fox of the College of Technology, Manchester, stated more emphatically: 'The hand-loom will remain in India *a commercial machine,* provided the industry is properly organised'. In what respects the present organisation of the industry is weak and on what lines it can be improved to render the hand-loom a commercial machine is the thesis of this book.

CHAPTER II

HISTORY OF THE INDIAN COTTON TEXTILE MANUFACTURES

A SHORT history of the Indian cotton textile industry with special reference to the hand-loom may be relevant in this connection.

THE INDUSTRY IN THE PRE-MOHAMMEDAN PERIOD

India was the original home of cotton manufactures. From very early times it was well known as the cotton producing and manufacturing country, and even today it is the second cotton producing and the third cotton manufacturing country in the world.[1] The arts of cotton spinning and weaving were in a high state of efficiency even two thousand years ago as recorded in the memoirs of Herodotus and

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[1]I. WORLD'S PRODUCTION OF COTTON IN 1930-31
(From the Indian Finance Year Book, 1932.)

Country	Yield of Cotton crop (Todds)	Area under cotton in hectares
U. S. A. ...	14,932,000 bales of 500 lbs.	30,881,000
India ...	4,820,000 ,, 400 lbs.	8,774,000
China ...	2,400,000 ,, 500 lbs.	4,100,000
Egypt ...	1,603,000 ,, 500 ,,	3,680,000
U. S. S. R. ...	1,723,000 ,, 500 ,,	4,450,000
World's production	27,474,000 ,, 500 ,,	56,000,000

II. WORLD'S CONSUMPTION OF COTTON IN 1930-31
(International Cotton Federation Estimates)

Country	Consumption in 1,000 bales	Percentage of increase (+) or decrease (−) over 1912-13.
U. S. A.	5,240	− 8
United Kingdom ...	1,964	− 54
Japan	2,565	} + 208
China	2,329	
India	2,513	+ 15·4
Germany	1,086	− 37·1
U.S.S.R.	1,821	− 12
Total of world's consumption[a] ...	22,483	− 1

Pliny. Dr. Ananda K. Coomarasami, after a careful study of the historical material, writes, 'Cotton weaving was a true domestic industry, practised even by ladies of rank, or at least a part of the household work. But in most parts of India weaving was already in Buddhist days a distinct profession and carried on largely, though not exclusively, by men.' The export of Indian cotton fabrics was also important during this period. The importance of the industry has been noted by many foreign historians and travellers; Renaudot,[1] the French writer, Chao-Ju-Kua,[2] the Chinese traveller, and Marco Polo,[3] the Italian, have recorded the glory of the Indian cotton industry. Before the rise of the Moghul power Gujarat, Cambay, Telingana, Malabar, Bengal and the Coromandal coast had fully developed their cotton manufactures. The Dacca and the Broach muslins, the Masulipatam chintz and palampores, the coloured chintz of Gujarat, and the calicos of the Coromandal coast had become world famous. It is now accepted that India was not merely the accredited birthplace of the cotton manufactures[4] but it had the practical monopoly both in the production of raw material and in the manufacture of finished cotton goods.

Cotton weaving was a true domestic industry which was practised in every household. Spinning and weaving and other processes were done only by hand. Even the best fabrics were made with crude tools by people in their own homes. Foreigners wondered at the very simple methods of the Indian weaver which were far superior to the elaborate mechanical devices of the western countries. These methods received the encomium of foreign writers. 'In spite of the raw material not being brought to its high state of cultivation, despite crude machinery and little division of labour, the products were fabrics of exquisite delicacy, unrivalled by any other nation, even those best skilled in the mechanical arts'.[5]

Even in early times the Indian export trade in cotton fabrics was not negligible. The Arabs and the Greeks traded

[1] Renaudot has translated the journal of an Arab, named Sulaiman, who visited India in the 9th century, A.D.

[2] Chao-Ju-Kua travelled through Bengal in the beginning of the 13th century.

[3] Marco Polo visited India at the close of the 13th century.

[4] J.R.A.S. Vol. XVII, page 347.

[5] Baines, *The History of Cotton Manufactures.*

in cotton manufactures which they carried from Patila, Ariake, Baryagaza (said to be modern Broach) and Masalia (the present Masulipatam) to the Red Sea.[1] Pliny in his *Natural History* describes how the Indian trade in luxuries, especially in cotton fabrics, was draining the wealth of the great Roman Empire.

The extent, nature and conditions of the industry are described by the author of the *Indian Cotton Textile Industry*. 'That the industry was wide-spread can be seen from the fact that almost every household prepared cloth, at least sufficient for the needs of the family. The industry was exclusively a cottage industry and the members of the family helped the weaver in the preparation of the cloth. Craftsmanship did not hold an inferior status and was supposed to be under the special protection of the kings. . . .The hand-loom industry and the spinning industry afforded excellent by-employment in ancient times. It is, however, rather difficult to bring oneself to believe that this industry which reached such a high pitch of excellence, could really be the occupation of leisure moments only. The best artisans must have been wholetime workers who spent their whole life on this one industry and earned their living from it. There was no exploitation of labour by capital since setting up for oneself was but the normal thing for the artisans of those days'.[2]

The Industry during the Mohammedan Period

It is generally asserted by certain historians that during the Mohammedan rule in India chaos reigned everywhere and that, with the growing political insecurity, social anarchy and economic disruption followed and that all arts and handicrafts declined and that cotton manufacture shared the common fate. This is not wholly true, at any rate as regards the later Mohammedan period. During the earlier years of the Mohammedan invasion every industry suffered as it was inevitable in such times of unsettled life. But with the beginning of the Moghul power the cotton industry, along with

[1] *The Periplus of the Erythroean Sea.*
[2] M. P. Gandhi, *The Indian Cotton Textile Industry.*

other handicrafts, recovered its former stature.[1] All the Moghul Emperors, Aurangzeb with all his religious bigotry not excluded, were great patrons of handicrafts. The chintz of Masula, we are told, was the craze of the Imperial Durbar. Moreland, a severe critic of Moghul administration, observes, 'the details go to show that the cotton industry was at this period much the most important handicraft in India'.[2] Another historian writes, 'on the coast of Coromandal and in the province of Bengal it is difficult to find a village in which every woman and child is not employed in making a piece of cloth. At present much of the greatest part of the provinces are employed in the single manufacture. The progress of the linen manufacture includes no less than a description of the lives of half the inhabitants of the Hindoostan'.[3] The writings of other historians, foreign travellers and ambassadors indicate that the industry was universal and that the cotton manufacture was carried on in villages and towns to meet the demand at home and abroad. Gujarat supplied Persia, Tartary, Turkey, Barbary, Arabia, Ethiopia and other places with silk and cotton stuffs.[4] Some centres specialised in the production of certain varieties chiefly for exports to foreign countries. Bengal, the Coromandal Coast, Cambay (drawing goods from Ahmedabad, Baroda, Broach and Surat) and the Indus Valley (deriving its supply from Lahore, Multan and Sukkur) supplied the foreign markets.[5] The superior muslins of Dacca, called in admiration the *Evening Dew*, the *Textile Breeze*, the *Running Water*, the printed calicos of the Coromandal, the plain white and coloured cloths from many parts of the country, the celebrated handkerchiefs from Madras and the gold and silver embroidered silks and cotton fabrics of Ahmedabad and Benares formed the bulk of the cotton manufactures of India.

[1] 'The waves of conquest which commenced from the 11th century no doubt greatly hampered Indian industrialists and industries for some time. But the establishment of the Moghul Empire and the safety and security of the reign of Akbar seem to have fully revived Indian industries and handicrafts.' (*Industrial Commission Report*, page 296, Dissenting minutes of Pt. M. M. Malaviya.)

[2] Moreland, *India at the Death of Akbar*

[3] Orme, *Historical Fragments of the Moghul Empire*, p. 413.

[4] Ludovico di Varathema quoted by Moreland in his *India at the Death of Akbar*, p. 172.

[5] M. P Gandhi, *The Indian Cotton Textile Industry*, pp. 10-11.

The causes of the excellence of cotton manufactures are not far to seek. The climatic conditions, the environment, the inherited skill of workmen, the patronage of kings and nobles and the discipline of the guilds explain the unique superiority of the Indian manufactures. 'It is then a physical organisation of the natives, admirably suited to the processes of spinning and weaving, to the possession of raw materials in the greatest abundance, to the possession also of the most brilliant dyes for staining and printing the cloth, to a climate which renders the colours lively and durable and to the hereditary practices by particular castes, classes and families, both of the manual operations and chemical processes required in the manufacture :—it is to these causes with very little aid from science and in almost barbarous state of the mechanical arts, that India owes her long supremacy in the manufacture of cotton'.[1]

The industry received the special patronage of the State. It maintained palace *Karkhanas* where silk brocades, fine muslins, gold embroidery, etc. were made by artisans under the supervision of a master.[2] The nobles and high officials of the State maintained their own workshops as well.

It is instructive to study the economic organisation of the cotton industry at that time. Originally caste was the sole economic factor in industry. Different professions were carried on by separate castes and weaving was confined to a few only. But with growing external trade other castes as well took to weaving. These castes, while maintaining their entity and subject to their own caste guilds in respect of their social life, became members of the craft-guild which regulated the industry. There was little division of labour from the point of view of internal technical organisation of the industry. The weavers and their dependents, working for themselves, caused a fusion of labour approaching almost the modern co-operative production which avoids all conflicts between labour and capital.

Side by side with this there were also guilds. Each trade had its guild representing many castes and the business of the guild was carried on by chiefs called the *Natamakarans* in the south, *sheths, gumastas* or *nagarsheths* in North India.

[1] Baines : *History of Cotton Manufactures*, p. 75.
[2] Cf. P. J. Thomas in the *Modern Review*, February 1924.

Under this system the workers in an industry pledged themselves to protect one another. Membership of the guild was regulated but was hereditary. The guild perfected a system of apprenticeship which, while safeguarding the interests of the craftsmen, secured efficiency and accounted for the Indian pre-eminence in arts.

Production in this period was on the small scale. At first there were not many intermediaries between the producer and the market. But with the expansion of the market, the individual artisan could not cope with the demand which required a larger capital and a greater specialisation of functions. Those were beyond the means of the weavers. Several classes of middlemen—*Mahajans, Chettis*—sprang up who provided the capital and acted as the link between the producer and the consumer. This, while accelerating production, had reduced the artisan to the position of a wage-earner depending on the middlemen for work. This is termed the domestic system and marks a distinct stage in the industrial evolution and is intermediate between the old and much praised system of the independent craftsman and the modern systems of the workshop and the factory.

The Industry under the East India Company

The history of the industry under the East India Company has two distinct phases—the one upto 1780, when the industry was at its best, and the other after 1780 when the industry began to decline as a result of the development of the power-loom. During the first period the Company was more interested in securing commercial and trading rights than political power. It, therefore, developed a lucrative trade in cotton manufactures and other East Indian specialities in spite of the growing opposition of certain interests in England. The Directors of the Company sought to encourage the Indian industry by sending out hempdressers, spinners and weavers from England to train the Indians in the manufacture of sail cloth, and by sending out dyers and throwsters to develop the silk industry of Bengal and they also proposed to develop the calico industry in Bombay. All this indicates the sympathetic attitude of the Company, though the measures

were of doubtful benefit to the Indian artisans, for, they were far more advanced than their masters in their technique.

During the 18th Century in spite of the political turmoils in the country the cotton manufacture was thriving and expanding. India after clothing her vast population exported to the West 1½ million pieces of muslins, calicos, doreas, handkerchiefs, longcloth, betellus etc., valued at £2.9 millions. The uninterrupted prosperity of the foreign export trade of India in cotton manufactures during the last quarter of the 18th century and the extent of the same from Bengal, Surat and the East Coast and also from China (Nankeen) can well be understood from the following table prepared from the Reports of the Select Committee appointed to take into consideration the export trade from Great Britain to the East Indies upon the subject of cotton manufacture, published in 1793:—

NUMBER OF COTTON PIECES SOLD BY THE E. I. CO., IN THE ENGLISH MARKET DURING 1770-1790.

Year	BENGAL	SURAT	E. COAST	NAN-KEEN	TOTAL	VALUE in £
1771	604757	131198	114710	17692	868357	1,435,475
1772	626160	147029	273766	20497	1067452	1,653,912
1773	761489	58138	134789	9818	964234	1,797,508
1774	616226	38366	207086	12506	874184	1,815,008
1775	517761	47405	181950	5000	752116	1,609,597
1776	607878	18822	209538	6180	842418	1,621,777
1777	655332	83024	224183	10299	972838	1,660,892
1778	805010	61285	296182	14990	1177467	1,663,069
1779	338465	31525	74676	12537	457203	747,121
1780	474703	18605	107130	8024	608462	1,257,868
1781	301617	33144	95868	14608	445237	850,703
1782	446488	36597	72188	24635	579908	1,287,110
1783	437802	82966	...	28201	548969	1,143,046
1784	516088	31130	44810	18698	610726	1,055,722
1785	768228	26767	45352	...	840347	1,560,847
1786	764173	...	43240	37741	845154	1,570,217
1787	745449	41882	38641	26524	852496	1,439,043
1788	594728	41806	96455	12805	745794	1,202,871
1789	614839	44715	112216	48329	820099	1,229,360
1790	866282	33131	126221	29060	1054694	1,752,356

The export of cotton manufactures by the French East India Company in 1791 is given in the accompanying table:—[1]

[1] Cf. The Select Committee Report, 1793

PARTICULARS OF THE SALE ADVERTISED AT THE L'ORIENT BY THE FRENCH COMPANY IN 1791

Name of cloths	Number of pieces	Value in £
Surat and Bombay	65025	45,678- 1-0
China (Nankeen)	241993	76,438-15-0
Coast Calicos (white)	134673	4,85,137-10-0
Coast Muslins	37383	44,261- 8-0
Coast Prohibited[1]	85478	1,01,265-16-0
Bengal Calicos	93381	1,43,747-15-0
Bengal Prohibited[2]	18382	13,014-10-0
Bengal Muslins	40727	3,18,343- 5-0
Total	717412	1,227,887- 0-0

But for the slight decline in the export trade from Bombay and Surat during the Mahratta wars and from the East Coast during the Mysore wars, the export trade has been on the whole steady. Madras contributed nearly a third of the export and Bengal had the lion's share. The exports from Madras were chiefly (*a*) white calicos comprising longcloth, percaulas, salempores, izzrees, Goudaloor dimities and (*b*) muslins comprising handkerchiefs, doreas and betellus.

[In 1820, even after the development of power-spinning and weaving in England the export of Indian piecegoods to England by the East India Company and the private merchants amounted to £1,839,258 excluding the trade in Nankeen (China Cloth).[3] Between 1815-1818 the export of piecegoods from different parts of India in American vessels was also considerable.[4]]

[1] Some of the manufactures of India were prohibited from being imported freely into the European countries as Demy Blue Longcloth, Sastracundees, Sassergates, Pondichery Ginghams, Rumals and Percaulas of Pondichery, Narpaley, Ventepaleon and Madras of the East Coast manufactures and Barangores, Romal and Seet Romals, Copees, Cushtaes, Phoetaes, Tepoys, Soofeys and Teaffaties of Bengal. *The Select Committee Report* 1793.

[2] *Ibid.*

[3] Evidence of Messrs. G. A. Robinson and T. Reid before the Board's Committee on foreign trade of the country, 1821—page 105.

Imports of	By E. I. Co.	By private merchants
Bengal piecegoods ...	£ 576,402	£ 27,545
Coast and Surat goods ...	1,199,502	45,809
Nankeen and China Silk ..	38,666	133,214

The details of imports are given in page 353 of the same report :—
Calicos 624618 pieces, muslins 5654 pieces, prohibited 408781 pieces and Nankeen 523853 pieces.

[4] Board's Committee on Foreign Trade, 1821, page 344.

Since 1660 there had been a considerable opposition in England to the increasing importation of Indian calicos and chintzes. The woollen manufacturers of England complained that their goods were beaten out by the cheaper and the more attractive goods from India and their complaints gained strong support from Mercantilists who feared that England was being drained of its precious metals. Such opposition came to a head in 1700 when the importation of printed and painted calicos was prevented by an act of Parliament. Plain calicos, however, continued to come in and were printed in the country to meet local demand. Parliament again interfered and in 1720 passed an act prohibiting the wear of printed calicos. Other governments of Europe also took similar measures in the interest of their national industries. But these measures did not affect the textile exports of India to any great extent; and it has already been shown that there had been an increase in the last quarter of the 18th century.[1]

The Industrial Revolution and after

But the inevitable came. The Industrial Revolution in England enabled English spinners to make yarn strong enough for warp; and thus grew the great cotton industry of Lancashire. The use of steam-power made production incredibly cheap and soon the course of foreign trade under-

EXPORTS OF INDIAN PIECEGOODS IN AMERICAN VESSELS

	1815–16		1816–17		1817–18	
	Bales	Rs.	Bales	Rs.	Bales	Rs.
Bengal ...	12,559	31,16,366	16,040	35,99,324	5,921	15,23,725
Fort St. George ...	4,929	27,210	37,795	19,67,748	21,467	1,28,350

[1] P. J. Thomas, *Mercantalism and the East India Trade* (1926), pp. 111–17; 157–59.

went a revolutionary change. Indian exports to England died out and English exports to India began to increase. And this was considerably helped by the high tariffs imposed in England on textile imports and by the fiscal policy of the East India Company.[1]

The following table will bring out this great change :—

FOREIGN TRADE IN COTTON MANUFACTURES OTHER THAN YARN, HOSIERY, SHAWLS AND HANDKERCHIEFS

Year	Exports to England from India	Number of Power-looms in England	Imports to India from England
1814	1,266,608 pieces	.....	818,208 yards
1821	534,495 ,,	14,150	19,138,726 ,,
1828	422,504 ,,	55,500	42,822,077 ,,
1835	306,086 ,,	109,626	51,777,277 ,,
1846	.....	.....	213,840,000 ,,

The cheapening of spinning and weaving by power meant a great handicap to the Indian spinner and weaver. The cost of producing a pound of yarn fell from 13.4 pence in 1814 to 5.9 pence in 1830 and the cost of producing a piece of cloth fell from 7*s*. 8½*d*. to 2*s*. 8*d*. during the same period.[2] Hence the shrinking market for the handspun yarn and hand-woven cloth, and the great hardship caused to spinners and weavers in India.

In the next half of the 19th century the increasing import of cotton manufactures from the United Kingdom and other foreign countries, stimulated by a policy of free trade in India, and the increase of the cotton factories within the country led to a further decline of the Indian cotton handicrafts as will be seen from the accompanying tables.

[1] Lord Ellenborough, in his evidence before the Select Committee, said 'While the cotton manufactures of England are imported into India on payment of a duty of 2½ per cent., the cotton manufactures of India are subjected to a duty on the raw material of 5 per cent., to a further duty on yarn of 7½ per cent., to a duty of 2½ per cent. on cloth and finally to another duty of 2½ per cent., if the cloth should be dyed after the *rowannah* has been taken out for it as white cloth.' (1848).

[2] Select Committee Report, 1832.

IMPORT OF COTTON MANUFACTURES INTO INDIA

Annual Average for	Value of Cotton Twist and Yarn	Value of Cotton Goods
	£	£
1850–54	1,199,893	5,176,943
1860–64	1,613,417	9,302,071
1870–74	2,750,908	14,812,750
1880–84	3,302,136	20,734,517
1890–94	3,311,061	26,203,756

[1]PROGRESS OF COTTON MILL INDUSTRY IN INDIA

Year	No. of Mills	No. of Spindles	No. of Looms
1851	1	29,000	.....
1866	13	309,000	3,400
1876	47	1,110,000	9,100
1880	56	1,461,590	13,502
1890	137	3,274,196	23,412
1900	193	4,945,783	40,124

During the period under review the import of cotton goods had increased five times and the power-loom production in India twelve times. A certain increase in the import and Indian mill production can be accounted for by the growth of population but the increase of power-loom products shows unmistakably the displacement of hand-loom manufactures. From an economic point of view this increasing import of machine-made manufactures benefited the people who obtained cheaper clothing, but they had lost to a much larger extent by the loss of their weaving industry. For, this loss was not replaced by any new industry and millions of weavers sank to the level of agricultural labourers.

In the present century the power-loom competition further increased. The import of manufactures from the United

[1] From the Bombay Cotton Annual, 1932–33.

Kingdom continued unabated till the late war. The wave of *Swadeshi* enthusiasm, the loss of yarn trade with China, the fall in the import of cotton manufactures from Britain during the war and the post-war boom led to a rapid development of power-weaving in India. Further the import of cotton manufactures from Japan, which was insignificant before the war, began to grow to the detriment of the hand-loom and the power mill alike. The tables A and B at the end of this chapter will show the place that the hand-loom has in the supply of cotton manufactures required for consumption in India.

Even in the year 1932-33 the hand-loom supplied a little over a fourth of the total cotton goods consumed in India. Whatever may have been the extent of the decline of hand weaving in the nineteenth century, there has undoubtedly been an increase in the production on the hand-loom during the last thirty-five years for which more definite statistics are available. From 784 million yards in 1896 the production on hand-looms has increased to 1588 million yards in 1933. This does not include the production of rayon and silk goods on hand-looms. This increase is significant considering the fact that the hand-loom had been handicapped by the imposition of duties on yarn, rayon and gold and silver lace imported for its use.

The Present Position of the Hand-loom Industry

We may now proceed to study the geographical distribution of the industry in India, and in particular, in the Madras Presidency.

According to the Census of 1931 there are 1,678,453 men and 5,402,97 women in India including Native States who have cotton spinning, sizing and weaving as their primary occupation; and 82,814 men and 582,009 women are classed as working dependants. Besides, these industries are the subsidiary occupation of 189,205 men and 101,128 women. Thus nearly 3½ million persons are wholly or partially engaged in the above mentioned industries. Excluding the number of persons employed in cotton factories, there are

still about three million persons depending on cotton handicrafts for their livelihood. The table below gives the provincial distribution of workers in cotton spinning sizing and weaving according to the census of 1931, and the distribution of hand-looms as estimated by the Indian Tariff Board in 1932.

TABLE SHOWING THE GEOGRAPHICAL DISTRIBUTION OF COTTON TEXTILE WORKERS

Province	1931 No. of persons engaged in cotton spinning, sizing and weaving						No. of hand-looms as estimated by the Indian Tariff Board in 1932
	as principal occupation		as subsidiary occupation		working dependants		
	Men	Women	Men	Women	Men	Women	
Assam ...	1,104	7,580	2,201	17,348	1,672	192,036	425,000
Bengal ...	127,692	30,394	18,006	1,711	4,116	4,879	200,000
B. & Orissa.	81,427	37,364	37,849	3,406	1,607	5,668	150,000
Bombay ...	207,854	47,705	3,249	776	4,716	17,582	100,000
Burma ...	2,568	40,091	791	45,346	1,458	144,637	569,000
C. Provinces.	86,310	22,811	10,624	2,248	5,423	29,021	100,000
Madras ...	333,611	82,453	22,279	479	12,627	28,513	225,000
N.-W.F.P....	8,373	829	382	7	384	167	500
Punjab ...	214,381	36,671	12,514	3,674	12,346	24,991	140,000
U. Provinces	253,526	90,846	21,025	3,489	3,449	29,680	75,000
Total for British India	1,329,239	399,052	129,438	83,013	47,950	477,943	2,086,423
Total for Native States	349,214	141,245	59,767	18,115	34,864	104,066	414,577
Total for India	1,678,453	540,297	189,205	101,128	82,814	582,009	2,500,000

Though there are certain discrepancies between the census of workers and the estimate of hand-looms, the importance of the industry to each province is clearly brought out. Madras has the largest number of workers. The Punjab and the United Provinces come next in importance. In respect of the number of looms Madras comes third, yielding the first and second places to Burma and Assam respectively. But this importance of cotton hand-weaving in Burma and Assam as

indicated by the number of looms is doubtful, for, the number of workers in these provinces is far less. The pre-eminence of Madras in the hand-loom industry is unquestioned. Though definite statistics are not now available regarding the consumption of yarn by hand-looms in each province, Madras must be considered to rank first in respect of production. For it takes very nearly a fourth of the yarn available for hand-looms in India. It is estimated by the Superintendent of the Census, 1931, Madras, that this Presidency accounts for the consumption of 75 million lbs. of cotton yarn by hand-looms. As a subsidiary occupation, cotton industries are still important in the provinces of Bihar and Orissa, Burma, Assam, Madras and the United Provinces.

The industry is found in all parts of the Madras Presidency excepting the Nilgiris. The accompanying map and Table C at the end of this chapter will indicate the importance of the industry to each district at different periods. Taking male workers as the basis of comparison (Census of 1931), the districts of Cuddapa, Chingleput and Salem have over 40 male weavers per 1,000 principal male workers in all occupations. Guntur, Coimbatore, Vizagapatam, Nellore, Bellary, Anantapur, Madras and N. Arcot come next in importance with over 30 but less than 40 per mill. East Godaveri, Kurnool, Tinnevelley, Ganjam and Chittoor have over 20 but less than 30. Other districts have less than 20.

Hand-looms that survive in this Presidency not only produce fabrics which are not as yet produced on power-looms but also manufacture different kinds of cloth in direct competition with power-looms. Though we cannot estimate, in the absence of a special survey, the extent of this competition, it is undoubtedly considerable; for out of 225,000 looms in the Presidency over 40,000, according to the estimate of the Department of Industries, Madras, are producing handkerchiefs and lungis alone; and probably an equal number of hand-looms is employed in the production of such fabrics as sheeting, dhoti, towel, carpet, chaddar, khadi napkin coating, shirting, muslin etc., which are also made on power-looms. This is very significant.

TABLE A

Statement showing the Indian Import, Export and Production of Yarn and the Amount of Yarn Available for the Hand-loom

Year	Net Imports of Foreign Yarn	Indian Mill Production	Export of Indian Yarn	Yarn consumed in mills for production of woven goods; 100 lbs. of yarn = 112 lbs. of cloth.	Balance of Yarn available for the Hand-loom
1	2 Million lbs.	3 Million lbs.	4 Million lbs.	5 Million lbs.	6 Million lbs.
1871	28·7	...	...	...	...
1881	45·8	...	27	...	...
1896–97	45·7	423	96	74	196
1897–98	53·0	463	200	81	231
1898–99	39·2	512	220	91	237
1899–00	37·1	514	244	87	220
1900–01	30·1	353	122	88	173
1901–02	31·6	573	278	107	220
1902–03	27·9	576	255	110	239
1903–04	23·1	579	260	123	219
1904–05	25·4	578	256	142	205
1905–06	40·8	681	305	146	271
1906–07	32·2	654	251	148	287
1907–08	30·7	638	223	169	277
1908–09	35·0	658	242	171	280
1909–10	34·7	628	234	204	225
1910–11	27·1	610	191	220	226
1911–12	34·7	625	161	238	261
1912–13	40·7	688	215	254	260
1913–14	35·9	683	207	245	267

TABLE A—*contd.*

STATEMENT SHOWING THE INDIAN IMPORT, EXPORT AND PRODUCTION OF YARN AND THE AMOUNT OF YARN AVAILABLE FOR THE HAND-LOOM—*Continued.*

Year	Net Imports of Foreign yarn	Indian Mill Production	Export of Indian Yarn	Yarn consumed in mills for production of woven goods; 100 lbs. of yarn = 112 lbs. of cloth	Balance of Yarn available for the Hand-loom
1	2 Million lbs.	3 Million lbs.	4 Million lbs.	5 Million lbs.	6 Million lbs.
1914-15	34·0	652	143	247	296
1915-16	31·7	722	168	314	272
1916-17	22·8	681	178	337	189
1917-18	13·3	661	130	340	204
1918-19	32·0	615	73	312	262
1919-20	7·9	636	161	343	140
1920-21	43·7	660	89	328	287
1921-22	53·5	694	88	361	299
1922-23	53·0	706	64	362	333
1923-24	39·5	617	46	359	252
1924-25	50·5	719	46	410	314
1925-26	50·6	686	32	415	290
1926-27	48·5	807	49	472	334
1927-28	50·9	809	22	510	328
1928-29	43·7	648	24·3	404	265
1929-30	43·9	833	24·6	506	346
1930-31	29·1	867	23·5	531	342
1931-32	31·6	966	22·0	611	364
1932-33	28·7	1016	15·1	632	397

[From the Indian (Textile) Tariff Board, 1927.]

TABLE B

Statement showing the Consumption of Cotton Piecegoods in India and their Sources

Year	Net imports of foreign piecegoods	Mill production	Hand-loom production	Exports of Indian piece goods	Net balance of goods available for consumption	Consumption per capita	Population
1	2	3	4	5	6	7	8
	Mil. yd.	Mil. yd.	Mil. yd.	Mil. yd.	Mil. yd.	Yards	Million
1896–1897	1932	354	784	105	3063	10·59	289
1897–1898	1800	389	924	97	3113	10·73	290
1898–1899	2000	436	948	90	3384	11·63	291
1899–1900	2053	419	880	112	3244	11·10	292
1900–1901	1875	422	692	111	2878	9·80	294
1901–1902	2042	511	880	120	3313	11 23	295
1902–1903	1986	524	960	109	3361	11·31	297
1903–1904	1903	589	872	125	3239	10·83	299
1904–1905	2152	678	828	135	3523	11·70	301
1905–1906	2335	700	1084	129	3990	13·21	302
1906–1907	2193	708	1148	115	3934	12·89	305
1907–1908	2401	808	1108	112	4205	13·69	307
1908–1909	1870	824	1116	113	3697	11·96	309
1909–1910	2070	964	896	126	3804	12·23	311
1910–1911	2162	1043	908	134	3979	12·71	313
1911–1912	2262	1136	1044	118	4324	13·72	315
1912–1913	2847	1220	1040	125	4982	15·81	315
1913–1914	3042	1164	1068	130	5146	16·28	316
1914–1915	2327	1136	1184	110	4537	14·35	316
1915–1916	2019	1442	1048	161	4348	13·37	317
1916–1917	1771	1578	816	309	3856	12·16	317

TABLE B—*contd.*

STATEMENT SHOWING THE CONSUMPTION OF COTTON PIECEGOODS IN INDIA AND THEIR SOURCES.—*(contd.)*

Year	Net imports of foreign piecegoods	Mill production	Handloom production	Exports of Indian piece good	Net balance of goods available for consumption	Consumption per capita	Population
1.	2	3	4	5	6	7	8
	Mil. yd.	Mil. yd.	Mil. yd.	Mil. yd.	Mil. yd.	Yards	Million
1917-1918	1405	1614	812	234	3597	11·34	317
1918-1919	955	1451	1048	187	3267	10·27	318
1919-1920	836	1640	564	239	2801	8·80	318
1920-1921	1405	1581	1148	170	3964	12·42	319
1921-1922	980	1732	1190	187	3715	11·64	319
1922-1923	1467	1725	1341	186	4347	13·50	322
1923-1924	1374	1702	1005	201	3880	11·94	325
1924-1925	1710	1970	1256	230	4806	14·65	328
1925-1926	1529	1954	1160	164	4479	13·55	331
1926-1927	1758	2258	1336	181	5161	15·45	334
1927-1928	1935	2356	1312	216	5387	16·00	337
1928-1929	1912	1893	1060	187	4678	13·76	340
1929-1930	1919	2419	1384	146	5576	16·21	344
1930-1931	873	2561	1368	98	4704	13·54	348
1931-1932	760	2989	1456	105	5100	14·50	352
1932-1933	1204	3169	1588	66	5895	16·50	356

(Taken from the report of the Indian (Textile) Tariff Board, 1927.)

N.B.—(1) The quantity of handloom production in yards is derived from the estimated weight of yarn available for it in Col. 6 of Table A on the assumption that 4 yards of cloth are produced per pound of yarn.

(2) In the spinning and weaving statistics both weight and yardage of cloth woven in mills are given. But the weight of yarn consumed in the production of cloth by mill is ascertained on the assumption that 112 pounds of cloth can be made out of 100 lbs. of yarn.

TABLE C

Census of Hand-looms and Weavers in the Presidency of Madras for the Years 1901, 1921 and 1931

District	1901			1921				1931 Census Total earners, weaving as principal occupation		
	Weavers		Number of looms	Weavers including unspecified		Number of looms	Number of looms			
	Men	Women		Men	Women			Men	Women	
1	2	3	4[1]	5	6	7[2]	8[1]	9	10	
1. Agency ...	10,592	2,874	...	5,621	2,976	1,526	3,125	...	...	(1)
2. Ganjam ...	15,459	5,737	10,320	3,045	4,780	5,582	4,949	12,452	4,420	(2)
3. Vizagapatam ...	26,865	16,900	1,461	22,307	13,841	7,438	1,809	23,587	7,075	(3)
4. Godavari ...	22,015	4,256	5,407	10,414	4,856	5,078	9,124	12,883 / 5,950	3,553 East / 1,399 West	(4)
5. Kistna ...	27,505	9,654	12,203	18,178	2,409	6,349	4,419	6,872	2,238	(5)
6. Guntur ...	...	...	...	10,127	5,786	14,974	19,035	23,114	3,884	(6)
7. Nellore ...	23,230	6,658	8,325	1,208	5,944	10,494	10,550	13,136	1,980	(7)
8. Cuddapah ...	21,582	10,732	11,505	8,842	4,113	6,251	13,433	12,687	1,716	(8)
9. Kurnool ...	12,366	4,315	8,146	10,228	2,178	4,419	8,850	8,290	1,829	(9)
10. Bellary ...	12,934	3,171	9,284	4,269	2,420	5,102	9,845	8,786	3,629	(10)
11. Anantapur ...	12,086	4,842	2,299	5,743	2,198	4,841	6,050	9,163	2,054	(11)

12.	Madras	...	3,224	775	...	6,748	531	1,527	...	6,253	788	(12)
13.	Chingleput	...	13,664	6,560	11,255	14,238	3,097	10,600	10,600	19,991	4,676	(13)
14.	Chittoor [3]	...	...	...	...	8,682	3,350	3,862	2,446	9,490	2,943	(14)
15.	North Arcot [3]	...	25,668	13,768	9,751	15,797	5,651	12,743	...	20,484	3,317	(15)
16.	South Arcot	...	15,615	7,713	6,964	10,830	4,375	4,646	12,241	11,857	937	(16)
17.	Salem	...	33,233	19,876	16,341	13,782	8,811	10,841	23,890	29,466	6,851	(17)
18.	Coimbatore	...	22,781	11,154	15,040	19,664	7,684	7,714	17,899	24,909	6,742	(18)
19.	Tanjore	...	12,425	2,184	9,598	11,291	6,493	6,299	14,858	8,583	1,369	(19)
20.	Trichy	...	10,754	5,736	4,515	8,790	3,070	5,898	10,001	9,788	2,442	(20)
21.	Madura [3]	...	23,819	11,291	7,551	19,372	9,294	6,493	8,948	11,823	3,985	(21)
22.	Ramnad [3]	...	...	...	...	13,601	2,339	4,989	5,472	10,640	4,242	(22)
23.	Tinnevelly [3]	...	23,194	10,301	10,196	8,910	5,353	11,394	13,038	13,611	5,257	(23)
24.	Malabar	...	12,269	3,299	6,328	11,330	3,127	7,886	10,696	16,230	4,343	(24)
25.	South Kanara	...	1,826	1,142	1,317	4,181	792	1,528	3,344	3,544	1,071	(25)
26.	Nilgiris	...	26	8	...	8	1	..	...	...	...	(26)
27.	States	...	1,414	703	...	435	271	929	...	796	178	(27)
		Total ...	38,45,46	1,63,739	1,67,806	2,77,217	1,15,369	1,69,403	2,41,622	3,34,407	83,131	(28)

[1] From the Statistical Atlas of the Madras Presidency for 1901 and 1921
[2] From the handloom census taken along with the general census in 1921
[3] These districts were separately constituted only after the census of 1901

CHAPTER III

THE HAND-LOOM STILL SURVIVES!

IT is surprising to find that the production on the hand-loom has not been affected during the last forty years though the number of power-looms has increased nearly four times. Now a fourth of the cloth consumed in India is produced on hand-looms. The hand-loom exists in industrially advanced countries; but the causes of its survival in those countries are different from the causes of its survival in India. In the United Kingdom the existing hand-looms mainly employ linen and where cotton looms exist they are plied as a means of subsidiary income by agriculturists. In some European countries they survive where they are run by cheap electric power. In France, Italy and Japan[1] hand-looms manufacture mainly cotton decorative patterns or silk fabrics. In most other countries they are simply manufacturing silk and artistic fabrics. But nowhere does the hand-loom exist in so large a number as it does in India and China, manufacturing plain cotton fabrics and competing with power-looms.[2] They exist in these two countries because of their peculiar economic conditions. Some causes of the survival of the hand-loom in other countries also apply in the case of India and of China. Many looms manufacture silk and mixed goods and special cotton fabrics which cannot be manufactured on power-looms on a commercial scale. There are looms which are owned by weavers who are partial agriculturists

[1] In Japan there were in 1926, 261,332 power-looms and 104,638 hand-looms. *Arno Pearse.*

[2] The estimated world consumption of cotton in mills is 10,000 million pounds of which more than 12 per cent is the share of the hand-looms. There are only two countries where the hand-loom production of cotton fabrics is important —China and India. In China nearly three-fourths of her cloth consumption are produced by home workers on their country looms. It is estimated that hand-looms in China produce 870 million lbs. of cloth. In India the share of the hand-loom production is one-fourth of her total cloth consumption and the average annual production in hand-loom is 300 million lbs. The reasons for the survival are: 1. absence of more remunerative employment, 2. abundance of labour, 3. local market, and 4. raw products locally available. (Cf. *the Report of the Committee on Industry and Trade*, Part III, Survey of Textile Industry 1028.) (G.B.)

and agriculturists who are partial weavers.[1] It is also true that a large variety of coloured cloths which cannot be manufactured on power-looms are produced on hand-looms. It is difficult to ascertain, for no census of hand-looms is taken on that basis, how many looms there are in the country owned by agriculturists, how many are devoted to the manufacture of special patterns and coloured fabrics etc. While other causes explain their survival to some extent, the abundance of labour and hereditary skill and the absence of other remunerative occupations can alone account for the existence of hand-looms producing almost a third of the cloth required in India in direct competition with the power-loom.

The secret of the survival of the hand-loom in India in such a large number is explained by Sir Alfred Chatterton: 'The hand-loom weaver still survives to-day because there is no alternative open to him . . . He can easily hold his own for a long time to come since he is content to exist on but little more than bare necessaries of life'.[2] The industry survives because the weaver is content with low wages and the women, who do winding, warping and sizing, are either very low paid or not paid at all as they are members of a weaver's family. This low standard of value for human labour is at once the cause of hand-weaving still surviving and the great stumbling block to the progress of the weaver. This is a hard fact and the weaver is not to blame; and it is in the light of this fact that schemes of economic reconstruction must be formulated. The weaver will, for a long time, hold his own and he will not be driven out, as the spinner is forced out, to other means of livelihood so long as these are not more remunerative than hand-weaving. The hand-spinners cannot

[1] According to 1921 census there were 1,27,175 men and 35,063 women who had returned themselves as partial agriculturists out of 15,39,784 men and 7,32,064 women weavers.

[2] Sir Alfred Chatterton writes in his book *Industrial Evolution in India* p. 213, 'The hand-loom has not died out in Europe, but wherever it is found working, investigation generally shows that there are special reasons why it continues to be employed. The hand-loom weaver in India still survives to the present day because there is no alternative open to him but in the struggle, he has been reduced from prosperity to poverty and even with the assistance of his women and children he is only able to earn a bare livelihood. In many cases he is no better off than an unskilled labourer and in times of famine and scarcity, the cessation of demand for his cloths reduces him to complete destitution at once. Whatever may be the ultimate fate of the hand-loom weaver, he can easily hold his own for a long time to come since he is content to exist on but a little more than the bare necessaries of life.'

fight the mill competition; and agriculture, however overcrowded, is certainly more remunerative than hand-spinning and that has led to the disuse of the charka and the spindle.[1] They find that they can earn more as general labourers than by plying the wheel monotonously. Weavers on the other hand are not yet reduced to such desperate straits. With the help of labour-saving devices and other ameliorative measures of their well-wishers, they can, with all their increasing difficulties, still earn better wages by working at their looms—perhaps for longer hours—than by taking to agriculture.

Other equally remunerative lines of employment are few and cannot absorb even a small fraction of the weavers. Even the establishment of new mills will not absorb the unemployed weavers. Nay, if all the cotton produced in India is converted into yarn and then all the yarn is manufactured into cloth, even such a large cotton mill industry will not give employment for more than two million workers. But the hereditary caste weavers number several millions. Further, it must be noted that the introduction of one power-loom means the unemployment of four weavers at the least, not to mention the extent of unemployment of others who do the preparatory processes.[2] The acceleration of the mill industry will not by itself bring about salvation. It will only create more unemployment and accentuate the problem of poverty which, at this stage of our economic development, will become in-

[1] The hand-loom was improved but not the spindle during the last 60 years. The progress of hand spinning depends on new inventions.

[2] The editor of *The Indian Textile Journal*, Bombay, attempts to defend the introduction of labour-saving appliances and to refute the objection against the use of machinery in industry, viz. that it results in the employment of fewer workers and thereby creates unemployment. 'Possibly the mistake' says he, 'may originally have been created by the defintion "labour-saving" —a far more accurate description of machinery being the title recently applied to it by the Prince of Wales as of "labor-aiding"—of machinery. It reduces the amount of heavy manual labour necessary before its introduction, reduces the cost of production, and develops new processes and industries, thereby increasing, instead of diminishing employment.' He supports his last point by quoting figures of employment and production in cotton textile industries in England during the last eighty years. 'Owing to the introduction of machinery it was estimated in 1840 that one man can produce as much as 320 men did in 1769 when Arkwright invented his spinning machinery. In 1855 one workman could produce as much as 700 men. The official returns show that while in 1835 the number of cotton operatives in the United Kingdom was 218,000, in 1870 it increased to 450,000 and in 1914 to 689,000 the increase in population being from 24 to 45 millions.' (*The Indian Textile Journal*, July, 1927, page 304.) The facts, as stated above, are true but what is claimed for machinery is disputed. It is now recognised that the strain to the worker is much greater in many mechanical processes than in handicrafts. The worker is

tolerable. The grinding poverty of the unemployed worker will only enable him to offer battle to the mill-worker under conditions still more degrading and miserable and he will go on working for lower wages and sweating for longer hours till either the mill supply of yarn is cut short or he is, otherwise, squeezed out. This is a grim fact which must be recognized.

There is another important cause but for which the hand-loom industry could not have expanded so much. A feature of the origin and the growth of the Indian cotton mill industry is that it began as providing yarn for the hand-loom, first

Year	Excess of spindles in factory[1]	Estimated excess of yarn[1]
1876	8·3 lakhs	83 million lbs.
1886	17·5 ,,	175 ,,
1896	29·0 ,,	290 ,,
1906	35·1 ,,	351 ,,
1916	31·0 ,,	310 ,,
1926	38·9 ,,	389 ,,

in India, and later on in China. The mills continued to increase their spindles. Even when power-looms were installed the total number of spindles catering to the needs of the hand-loom and not required for power-looms also increased, though slowly. In the first decade of this century the loss of the Indian yarn export trade to China led for a while to

much more easily fatigued in factories. The increase in outturn and the fall in the cost of production are the merits of machinery. But its weakest claim is in respect of increased employment. It has got its limitation. The development of the mill industry in the United Kingdom increased the scope for employment there but at the tremendous cost of the human power now wasted in other countries. The extent of unemployment of handicraftsmen in other countries who catered to the local demand and markets which are now captured by the Lancashire industry is great but difficult to ascertain. The benefit of machinery to the United Kingdom—nay to all countries—is mainly due to its building of an Empire and Imperial economic policy. An empire cannot be claimed by all countries aspiring to develop their power industries. Except in a highly communistic society the benefit that machinery can confer is limited.

[1] Calculated on the basis of 30 spindles to a loom.

benefit the hand-loom weaver by making a larger supply of yarn available for him. But the spirit of *Swedeshi* first and the Great War later on accelerated the tendency for the installation of new looms in Indian mills. But side by side, the spinning industry also developed catering to the demand of the hand-loom. The cheapening of the price of mill yarn and its superior quality, compared with that of the hand-spun yarn, caused a steady expansion of the hand-loom industry. And this was a great service; and it would have been greater if power-looms were not indiscriminately installed. Probably they would never have been so rapidly installed but for the post-war fiscal policy of the Government of India. At present with the recovery of the import trade, the Indian power-loom, finding it difficult to face the competition of foreign imports in spite of the protection against them, is compelled to capture increasingly the preserves of the hand-loom to the great detriment of hand-loom weavers.

The present difficulties of the weaving mills in India are partially the result of competition from hand-looms from within the country. The future development of the cotton industry depends on the adjustment between mills and hand-looms. Certain fabrics can be produced perhaps cheaply only on power-looms; but where labour cost is a large item in the cost of production the hand-loom has the greater advantage. In most cases of manufactures the hand-loom has the advantage at least so long as the particular skilled labour is cheap and abundant and no revolution is made in the processes of power-weaving. The mills, therefore, must supply yarn to the hand-loom weaver in specified qualities at reasonable prices. Herein lies the mutual adjustment.

The survival of the hand-loom is attributed to yet another fact viz., that it uses fine counts mainly. It is true to some extent; but it is an exaggeration to state that the hand-loom survives because it consumes mainly fine counts. For, as the accompanying table will indicate, 65 per cent of the yarn used on hand-looms is coarse and medium (being less than 30s) even on the extravagant assumption that all yarns above 30s, imported and manufactured in India including rayon mercerised yarn and yarn of unspecified count, are consumed by the hand-loom exclusively.

TOTAL YARN OF COUNTS ABOVE 30s and ABOVE 40s AVAILABLE IN INDIA.

(*STATED IN MILLION POUNDS.*)

Particulars	Average for			
	1900-3	1911-14	1924-27	1928-31
Indian yarn				
1. Between 30s & 40s	13·4	19·8	22·3	48·0
2. Above 40s	1·2	1·7	7·7	17·5
Imported				
1. Color yarn				
Between 30s & 40s	...	15·6	4·8	2·4
above 40s	...	1·6	0·5	0·4
2. Grey yarn				
Between 30s & 40s		9·7	21·3	21·2
above 40s		6·6	6·7	6·2
3. Mercerised, bleached, art silk and other unspecified yarn	...	5·8	11·2	12·0
Total of 30s and above including mercerised etc.		59·8	74·5	107·3
Percentage[1]		24·1 %	25·1 %	33·7
Total of 40s and above, including mercerised, bleached and art silk		15·7	20·1	36·1
Percentage[1]		6·3 %	6·7 %	11·4
Total yarn consumed on hand-looms		248·0	297	318

This assumption is very extravagant. The increase in 30s is mainly due to the imports while the increase in the finer counts is the result of increased production of finer yarns in Indian mills. They have also increased their output of 30s to 40s. Considering the increasing outturn in Indian mills of fine fabrics as muslins, nainsooks etc., with counts

[1] Percentage of the total yarn consumed on hand-looms.

up to 120s, it must stand to reason to assume that what finer yarn the mill requires for its use, it produces. It is estimated by Mr. G. S. Hardy, I.C.S., that Indian mills consume nearly 7 million lbs. of yarn above 40s. Therefore the increase in the quantity of yarn imported alone more correctly indicates whether hand-looms use finer count yarns. The increase in this respect is very negligible.

However, as regards Madras Presidency there is an increasing import of foreign yarn of finer counts and it has also an increasing share of the finer counts made in India. The import of yarn of counts above 40s into Madras is nearly 20 per cent and of counts above 30s is 80 per cent of the total imports into India. As regards coloured yarn Madras accounts for 75 per cent of the imports. All this is required for the manufacture of kailis and kerchiefs, and for the celebrated grey cloths of Madura, Salem, Narayanavaram, Tugili, Torayur, Chicacole, etc.

It must however be admitted that though the percentage of fine count yarns to total yarns available is very small the number of looms employing such finer yarns for manufacture is not negligible. They account for nearly 30 per cent of the total number of looms. But it cannot be said with reference to all-India that the survival of the hand-weaving industry is mainly the result of increasing consumption of finer counts.

The survival of the hand-loom is traced to the increasing use of artificial silk and mercerised cotton. It would be mere guess work, without a proper survey of the hand-loom industry, to state whether rayon has affected or benefited the silk- or the cotton- hand-loom weaver. From a study of the foreign trade in silk and art silk it is evident that the export of raw silk has increased and its import fallen. And while there is nothing to indicate an increase in the production of raw silk in the country it may be concluded that less silk is now consumed on hand-looms. But there has been a considerable increase in the import of artificial silk yarn. Therefore it would be safe to state that the increased import of rayon has benefited silk-weavers more than cotton-weavers.

Further, there are certain kinds of cloth which are the virtual monopoly of the hand-loom: viz., the coarse cloths and the superfine cloths. Mills in India are gradually

discarding the manufacture of cloths of counts below 14s.[1] In coarse yarn there is less tensile strength and therefore it is not possible to manipulate it on the power-loom with economy. The coarse counts produced in mills are mainly for the use of the hand-loom weavers who manufacture dupaties, bedsheets, carpets, jamakkalams, tapes, ropes and strings.

Again in out-of-the-way districts hundreds of looms are engaged in producing cloth from the coarse and medium yarns (partly spun locally on the charka) where none but hand-woven cloths are in demand. It is really fortunate for the weavers that such is the case. The Indian mill-made and the imported cloths have not yet much penetrated those markets. Motives of economy recommend to the masses of the poor people these coarse hand-woven cloths. There are many places of this type far interior into the country and the improvement in the means of communication and transport alone are likely to affect the weavers. Even where the mill cloths have reached the rural markets the local hand-made cloth is preferred for its price and durability to the heavily sized white cloths of the mills. Again the rural economy of those places favours the production of hand-woven cloth. In many parts of Salem and Tinnevelly, even prior to the national propaganda for the revival of the charka there had been and there are still a number of Vellala villages where women spin and the local weavers convert the yarn into cloth.

Besides, there are certain kinds of hand-made cloths which cannot be manufactured with economy on the power-loom, e.g. the Conjeevaram and Kornad saris, the solid bordered grey and coloured cloths of Salem, the fine laced cloths of Madura and the Northern Circars, and a number of other types, special to each locality, of which the slow moving custom decrees the use. It has been observed that fashion is at once the best friend and the deadliest foe of the hand-loom weaver. This is very true. Local tastes and ideas of fashion and respectability account for the manufacture of such cloths on hand-looms. The survival of hand-loom weaving is in a large measure due to the fact that those tastes and

[1] Mukerjee: *Foundations of Indian Economics*.

ideas of fashions of the masses of the people have not materially changed. Western ideas of dress have affected the tastes of the educated few to the detriment of the industry. The rich and the middle classes are now aspiring to be fashionable. But the masses still prefer the hand-woven fabrics for their durability. The decline in the industry is in respect of certain patterns only, such as the broad-bordered Conjeevaram cloth. It must be said that with all the changes in the fashion the weaver is trying to adjust himself to the changing conditions and is producing new patterns. And this accounts for the survival of the hand-loom.

Again it is the conservatism of the South Indian women that preserves the hand-loom industry in a sense. The women prefer the artistically and elaborately figured garments —either pure silk or cotton and silk—and the varieties of cloths thus demanded in each small centre are so numerous that they can never be supplied cheaply by mills. On hand-looms alone it is possible to manufacture varieties of cloths with different patterns and colour designs to suit the tastes of different communities. It is true that mills have now captured much of this trade and manufacture many of the varieties hitherto produced only on hand-looms; yet the sovereignty of the hand-loom in this realm remains undisputed. Individual tastes and fancies are satisfied more effectively by the hand-loom weaver. Also weaving as a work of art is possible on the hand-loom alone while the mill can only perpetuate monotonous reproduction of stereotyped patterns. In the manufacture of cloths where the skill of the weaver rather than his mere power is required the hand-loom has still the undisputed sway.

Again it is stated that the difficulties which the mills have to face encourage the development of the hand-loom. 'Duties levied on mill goods afforded a certain protection to the hand-loom industry.'[1] This is true of the pre-war time when there was an excise duty on cloths manufactured in mills in India and an import duty on the imports of cloths while yarns were imported free. Even then the protective effect of the excise duty was merely incidental and it was not in fact designed to be a powerful lever for the expansion of hand-loom

[1] D. M. Amalsad : *Hand weaving in the Madras Presidency.*

weaving. But this does not hold good now. For it was after the abolition of the excise duty in 1925 while the import duty on yarn is retained, that there has been a great expansion of the hand-loom weaving as the accompanying table will illustrate.

STATEMENT SHOWING CONSUMPTION OF YARN BY HAND-LOOMS.

(in million lbs.)

Year	Production in mills		Estimated production on hand-looms
	yarn	cloth [1]	
1921-2	694	361	299
1922-3	706	362	333
1923-4	617	359	252
1924-5	719	410	314
1925-6	686	415	290
1926-7	807	481	334
1927-8	809	507	328
1928-9	648	445	264
1929-30	833	562	343
1930-1	867	590	342
1931-2	966	672	364
1932-3	1016	694	397

It is again said that the strength of the hand-loom industry lies in the weakness of the mill industry in some respects. This is an underestimate of the true vitality of hand-weaving. The reverse is nearer the truth. It is the weakness of the hand-loom industry, especially in respect of technical equipment and business organization, that accounts for the greater efficiency of the mill industry. It is claimed 'mills have to meet labour troubles, strikes and lockouts, increasing

[1] The weight of cloth given in the Weaving and Spinning statistics is reduced on the basis that cloths manufactured out of 100 lbs. of yarn will weigh 112 lbs.

cost of production due to increased prices which are great obstacles to the development of the power-loom weaving and these difficulties are likely to increase in future and it may be expected that hand-weaving may find scope for development'.[1] This is emphasising too much the weak side of the mill organization and ignoring the vitality of the hand-loom. It perhaps overlooks the fact that all this will adversely affect the hand-loom weaver as much as it would affect the power-loom for the weaver depends for the supply of his yarn on these mills.

Therefore, it must be here noted that it is the strength of the hand-loom that is responsible for its survival and expansion. It is claimed, and it is true, that cloths are produced on hand-looms with much better wearing qualities and sometimes at a much lower price than on power-looms. Expert opinion is in favour of the hand-loom. 'Hand-weaving is capable of competing with power-weaving'.[2] 'The Handloom can turn the tables against the power-loom'.[3] 'There are splendid possibilities open to the hand-loom in India'.[4]

[1] D. M. Amalsad : Memorandum to the Textile Conference, Madras.
[2] Manager, Empress Mill, Nagpur, at the Indian Industrial Conference, 1907.
[3] Prof. Fox : From the Correspondence of the Department of Industries, Madras.
[4] *Bulletin of the Department of Industries, Bihar and Orissa.*

CHAPTER IV

THE DECLINE OF THE HAND-LOOM INDUSTRY: ITS CAUSES

WRITERS on the hand-loom industry generally attribute the decline of the industry to the competition from mills. 'The rapid development of machinery and manufactures', writes the author of *The Progress of the Madras Presidency during the last forty years*, 'and the cheapness with which cotton cloths were produced in England led to India being flooded with Manchester goods to the further injury of the weaving classes here. . . . Now the tide has turned and the development of the factories in India bids fair to enable her to manufacture the goods required for her own population even more cheaply than in England. . . It is clear that the deterioration of the spinners and weavers will now be even more rapid than in the past. . . The whole trade of the hand-loom weavers has now shrunk to small dimensions'.[1] This was true at the beginning of the factory industry in India; for a large range of goods that was formerly manufactured on hand-looms was captured by power-looms and thus the hand-loom was driven to explore new fields, which had become increasingly difficult because of its lack of resources and organisation. The development of the mill industry affected the other branches of the cotton home industries more disastrously than hand-weaving, which has not only tided over the storm of competition but is now regaining much of its lost ground. Though it must be admitted that the hand-loom is benefited by spinning mills which have cheapened the price of yarn and created a new demand for the hand-woven cloth, it cannot be denied that the hand-loom suffers from the competition of weaving mills. In this connection it must be noted that the Indian Millowners' Association claims that the power-loom does not compete with the hand-loom and that the mills far from being antagonistic to the development of the hand-loom industry are unreservedly in favour of its encouragement

[1] A similar view is expressed by Mr. E. B. Havell: 'The European goods had their great advantage in point of cheapness and therefore the native manufactures have suffered.' Most probably he meant by 'native manufactures' cloths woven on hand-looms out of hand-spun yarn.

and improvement.[1] This claim is supported by Dr. Radhakamal Mukerjee[2] and Mr. R. D. Bell, formerly Director of Industries, Bombay. The latter writes: 'the mill industry and the hand-loom industry are not really antagonistic to one another. A great part of the output of the hand-loom is composed of specialised types of cloth which are not suitable as regards quantity or quality for mass production. The amount of direct competition between mills and hand-looms is at present very restricted'.

'Hand-looms provide an enormous market for mill-spun yarns. Probably the greatest improvement in the hand-loom industry has been the provision of ample quantities of mill spun yarns of all counts and of regular twist and strength in substitution for the irregular and usually coarse handspun yarns of former days.'

The latter part of Mr. Bell's remarks is substantially correct. A great development in the hand-loom production took place after the development of the power spinning industry in India. But it cannot be ignored that power-loom weaving has not only driven the hand-loom from some of its former close preserves but is seeking to oust it from some others as well. The increasing outturn of dhoties, chaddars etc., is an instance of the mill competition with the hand-loom. The Salem *Gundanju*, the Conjeevaram *Pattai*, the Tugili *angavasthrams*, to cite only a few instances, are now increasingly produced on power-looms in India, Japan and Lancashire. In other respects also the mill competition tends to increase.

The growing rationalisation of hand-loom production, in order to keep pace with the progress in power weaving has created more unemployment among weavers and in many cases a fall in their earnings. This is inevitable in a changing and progressive world. The decline in the industry which

[1] M. P. Gandhi, *Indian Cotton Textile Industry*, pp. 87–88.

[2] Dr. Mukerjee writes in his *Foundations of Indian Economics*, page 164, The notion of competition between hand-loom and power-loom is wrong. The hand-loom does not compete with the mill but it supplements it in the following ways: (1) it produces special kinds of goods which cannot be woven in the mills (2) it utilises yarn which cannot at present be used on the power-loom (3) it will consume the surplus stock of Indian spinning mills which need not be sent out of the country (4) being mainly a village industry it supplies the local demand and at the same time gives employment to capitalists, weavers and other workmen and (5) lastly it will supply the long-felt want of an honest field for work and livelihood for educated Indians.'

every one bemoans is not quantitative, for the hand-loom has increased its output; but it relates to the human factor in the industry which is most deplorable and for this the mill competition is partly, if not solely, responsible.

The changes in the tastes and ideas of fashion of the people have also led to the decline of the industry. 'Both in fine and more especially inferior cloths the spread of Western ideas has had more prejudicial effects on the industry than the mere cheapness of the European goods'.[1] This is woefully true. Formerly rajas, courtiers and zamindars patronised hand-weaving which supplied celebrated muslins, sateens and other fine fabrics. At present persons in liberal professions, the merchant-princes and industrial magnates who occupy a high social position have become patrons of cheap foreign fineries and pseudo-works of art. This aspect has been much deplored by many writers.[2] The imports of foreign piecegoods are meant simply to satisfy their demand. Thus because of the change in the tastes of the rich and the ideas of respectability prevalent among the masses of the urban and semi-industrial population who care more for cheapness than for art and more for show than for quality, mill production advanced and the hand-loom industry suffered a severe set-back. Now, we witness the rapid supersession and base imitation of the many hand-loom patterns. 'The long-cloth has displaced the plain white cloth with a narrow border of coloured cotton'. The individual weaver cannot compete with the mill which has elaborate organisation, resources and power. He has to submit himself to the ever-growing competition of the mill and weave his own philosophy of resignation and contentment.

[1] E. B. Havell.

[2] Mr. D. R. Gadgil expresses a similar opinion. He writes in his *Industrial Evolution in India*, (p. 45) : 'The next class which was the natural successor to the position of the nobles was the newly created educated class. This was mostly an urban and professional class, somewhat corresponding to the professional section of the "bourgeoisie" of the West. This new class might have been expected to patronise the handicrafts. But it may be said that the demand from this class did not amount to even as much as the demand from the Europeans. Indeed with a few exceptions they entirely turned their back on the indigenous arts. One of the most harmful effects of foreign rule is the imposition on the conquered people of the ideals of the conquerors and the newly created Indian "bourgeoisie" showed itself during the latter half of the last century extremely ready to accept European standards and pour scorn on everything Indian. This was especially so in the case of the arts. To follow European fashions was considered the hall-mark of enlightenment. Consequently the products of indigenous industries suffered.'

It is also said that the cause for the decline of hand-weaving is the weaver himself. 'Weavers are as a class ignorant and illiterate with no business experience, knowledge, or intelligence, with no spirit of co-operation among themselves, trodden down by the influence of the money-lender on the one hand and by extravagant social customs on the other'. It is also said that he is the least receptive to new ideas and is almost unwilling to help himself out of his present miseries. It is possible to blame the weaver but, to be fair, let us ask: what have education, capital, organisation, and energy done for the weaver?—nay, what has society done for him or for his craft that he should have improved his status or developed his art, and, in failing to do it, he deserves this strong condemnation? Society has all along been indifferent and capital and energy and organisation were diverted to other channels which were more lucrative; and now we have the sorry spectacle of the growing, vast, uneducated, unprogressive and poverty-stricken rural population and rural artisans, on whose material and moral advancement depends the progress of society.

Technical experts have attributed the decline of the art to the almost crude and primitive and slow processes adopted in weaving. Technical deficiency may have retarded the growth of the industry previously in some provinces; but now everywhere in many respects many improvements have been made in the technique of the industry.[1] It must, however, be admitted that the decay of the industry is due to the unremunerative, wasteful and slow preparatory processes adopted by the ordinary weaver. 'Ancient and primitive types of tools were used by weavers who were averse to adopt economical preparatory processes and to increase their production by introducing small labour-saving appliances'. 'The weavers persist in the slow, laborious, wasteful and costly methods in their preparation of warp'. No doubt the processes are crude and wasteful and the division of labour is rough and ready.

[1] The number of frame looms, flyshuttles, drawboy devices, warping mill etc. in use is increasing in the Madras Presidency (Refer Appendix, Salem Dt. Hand-loom Census). Mr. M. P. Gandhi writes that the number of flyshuttle looms is 84,392 as against 31,042 other looms in the Hyderabad Dt. About a third of the hand-looms in Bengal are with flyshuttle. A study of the annual reports of the working of the Provincial Departments of Industries supports this view.

It must be noted, however, that the weaver is not unwilling to adopt improved methods. Nor must it be said that he is incapable of adjusting himself to the changing conditions, and benefiting himself by the improved technique. It is his crushing poverty that is the bane of his life. Left to himself, he cannot carry on the battle against the mill. He stands in need of help from enlightened capitalists and businessmen.

Thus, it becomes evident that the lack of organisation more than the competition of the mill goods or the technical deficiency is the real cause of the present stagnant condition of the industry. Sir Alfred Chatterton said, 'If only a portion of the capital, organisation and energy that have been spent on the mill industry is devoted to his trade, the hand-loom weaver would have turned the tables on the power-loom.' The master craftsman is a small capitalist and the reorganisation of the industry is both beyond his individual means and imagination and his present function is more trading than industrial in character. Unlike the English clothier, who was the industrial entrepreneur improving the technique of the industry and organising production, the merchant in hand-loom products cares more for trading profit than for industrial advancement. He has not organised the industry on scientific lines; nor has he rationalised production and created the necessary organisation for effecting economy in the purchase of raw materials required for the industry and in the marketing of cloth. Nor is there co-operation among small merchants and craftsmen. Anything like organisation of the hand-loom industry dates only from the last decade and to-day we have a number of hand-loom factories which indicate how organisation of hand-loom weavers, however small, can help the weaver and the industry.

There are other causes which have also led to the loss of patronage and the decline of the industry. Certain practices resorted to by weavers to meet the mill competition have injured the reputation of hand-loom products. The weaver is not alone to blame. The merchants are the worst culprits who have encouraged these practices in many cases. They met outside competition by deteriorating the quality of weaving. The use of bastard reeds, irregular weaving, false description of cloths, absence of standardisation and the failure to observe

time deliveries are the factors which led to the loss of patronage. The revival of the industry depends on its reorganisation in these respects.

Again, in the industry as at present organized there is no proper division of labour nor is there a proper division of functions, the advantages of which are so well known and so commonplace that they require no detailed mention here. The cloth merchant is a Jack of all trades; he finances the industry; he regulates production; he himself markets the manufactures. There is not much of specialisation in any one branch. And even where it obtains, it is crude and unscientific. The means of the merchant are meagre and naturally his methods are inefficient. Unlike the mills or organised hand-loom factories he cannot study the needs of the market and thus adjust production to the demand nor can he effect internal economies in the industry as he is not himself a technical expert.

Above all there is one other cause which seriously handicaps the hand-loom weaver and it is here he has to depend on the mercies of his foe. He gets his supply of yarn from mills which invariably give a poor quality for the price paid. It was observed as early as 1908 by Mr. Churchill of Ahmednagar[1], and this view was later on confirmed by Sir A. Chatterton and others, that 'As regards the quality of the yarn I find it impossibe to buy in the open market yarn of good quality for its number such as that used in mills. The mills usually have two classes of spindles, one producing yarn for their own use and the other for the market. The hand-loom weaver gets a poor quality of yarn or can get a proper quality only at a prohibitive price'.[1] As regards imported yarn it was observed that the price of imported yarn is proportionately higher than the price of cloths[2] and leaves no margin for weaving charges. Besides the yarn is not obtainable in the most economical form. A similar complaint was made

[1] Proceedings of the Hand-loom Conference, 1907.

[2] Mr Churchill said 'I find it strange that the cost of yarn we import is greater than the cost of the imported cloth of the same weight. It is not possible to produce mulls of the well known 1703 type even at the cost they are sold in the bazaar though we use the same yarn and weave at the lowest possible cost. My experience tells me that the price of imported yarn is especially raised by some combination of foreign spinners and cloth manufacturers.'

before the Textile Tariff Board, 1926, by Mr. Amalsad. 'It is supplied only in the form of bundles which are deficient in length and seldom come up to the reputed count'.[1] Where good yarn is obtained hand-weaving is thriving. The Madras Presidency owes the present magnitude and prosperity of its hand-loom industry to the mills of the Madura group which are spinning mills exclusively.

Thus, the real limiting factors in the further development of the industry are (1) organisation and (2) steady supply of good yarn. Now the first step, therefore, in the revival of the hand-loom industry is the creation of an organisation which will, on the one hand, secure a steady supply of good yarn at a reasonable price; and, on the other, educate the weavers and the merchants in business methods, in the advantages of adopting improved appliances and processes and of manufacturing standardised quality goods; give them necessary financial help and technical advice; and also educate them in the efficient means of production and marketing.[2]

[1] Amalsad: Evidence before the Textile Tariff Board.

[2] In the Census Report of 1921, Mr. Edye, I.C.S., writes about the difficulties of the weaver and the survival of the hand-loom against mill competition thus:—'The difficulty of the hand-loom weaver is two-fold—(i) when he purchases his hanks of mill yarn, he has to pay also the cost of reeling, bundling, and baling; for the mill-owner's profits, the salesman's commission, the freight, the middleman's commission, to say nothing of the fact that he has himself to fetch it from the market and rewind it for his weft before use—all of which charges the rival mill-owner escapes but (ii) worse than this, the mill which supplies the yarn is also a rival weaver of cloth and well aware of the fact. It is indeed surprising that the hand-loom weaver, existing as he does, at the tender mercies of the mills which can produce 95% of the different kinds of articles which he produces, just as well, if not better, manages to maintain his place in the sun. The secret of his success appears to lie in the fact that he has at his disposal the labour of his wife and children who otherwise would not be engaged in production of any kind. Consequently he is able to get all his preliminary processes done free of charge. His relation with the mills will always be a source of weakness to him, but he has managed to struggle against it so far and there seems to be no room why his position should not be strengthened as his other handicaps are minimised by the introduction of improved appliances and methods of marketing.'

CHAPTER V

THE DECLINE OF THE HAND-LOOM INDUSTRY: ITS NATURE AND EXTENT

THE necessary data are not available regarding the changes in the production of cloths on hand-looms since the first cotton mill in India was started. Regular and reliable statistics regarding the production, export and import of yarn and its consumption in mills came at the close of the 19th century. Nothing definite is known about the quantity of yarn spun on country wheels—for in the early part of the last century the production on the charka was very considerable—and even as late as 1870 the charka consumed several million pounds of cotton.[1] No systematic trade returns were made regarding the foreign trade in cotton manufactures prior to 1870, when the Annual Statement of the Sea-borne Trade was first published. Later on came the inland trade returns which throw light on the localisation of the industry and its migration. But it is unfortunate that they were discontinued as a measure of retrenchment in 1922.[2] The statement regarding spinning and weaving in mills in India was for the first time compiled in 1896 when the cotton excise duty was imposed. Thus there is nothing like a sure ground for discussion regarding the changes in the quantity of production on hand-loom since the introduction

[1] In 1869 S. S. R. Iyengar estimated that the charka and the hand-loom consumed about 1·8 million cwts. of cotton while the mills in India consumed 0·25 million cwts. only

[2] The Indian Economic Enquiry Committee observed (para. 30 of the Report): 'The annual publications relating to the inland trade of India (Railborne and Riverborne) gave import and export trade in staple articles, of each of the 5 or 6 blocks into which every province was divided and the imports and exports of 18 bigger blocks forming the trade divisions of India as a whole. The figures related to quantity only . . . . . These internal trade returns were by no means satisfactory. The trade within a block was not recorded and there was obvious evasion on railways and trade by road which is not negligible. Nevertheless, the discontinuance of the publication has removed a very important check on provincial figures of production . . We think the publication of internal trade returns should be revived and brought into line with the more up-to-date statistics of countries like the United States of America.'

of cotton mills in India, and it cannot be said how far the growth of the mill industry in India has affected the handicrafts.

But many writers have deplored the conditions of the cottage textile workers in the last century and they have attributed their miseries to the development of cotton mill industry. Mr. Royle, Mr. T. N. Mukerjee and Sir George Birdwood and others have noticed the steady decline of hand-loom weaving in India. Mr. E. B. Havell in his *Enquiry into the Arts and Crafts of the Madras Presidency* (published in 1882) observed that because of the competition of the mill cloths the Indian manufacturers who had supplied the wants of the low castes suffered most. He writes, 'Both in fine and inferior cloths the profits of the weaver seem to be reduced to a very low margin.' It is noticed by another writer 'The sufferings of the weavers are great and such as to excite commiseration. The present conditions will hasten the decline in native weaving; in fact it is obvious that in no very distant time the whole of the native industry in the low counts cloth or purely cotton cloth will give way to mills.'[1] Others found that the number of persons supported by the hand-loom industry was rapidly falling and concluded that it was a sure sign of its decay. Sir Alfred Chatterton, however, rightly pointed out that the decline of the handicrafts in textile industries was beyond hope of recovery so far as hand ginning, cleaning and spinning, were concerned, but hand-weaving had maintained its own. 'I think therefore that we may safely conclude', wrote Sir Chatterton in the Madras Census Report of 1911, 'that in the last forty years the unmber of hand-loom weavers has remained the same but owing to stress of foreign competition they now turn out a larger number of finished goods'. He also observed that there was no decline in the number of hand-looms working in the Presidency; only a majority of the weavers had to work hard to make a bare living.[2]

Now the weaver also complains of his lot. He earns, he

[1] S. S. R. Iyengar : *Progress of the Madras Presidency in the Last Forty Years.*

[2] The Madras Census Report for 1911.

says, miserable wages. In some cases he does not earn even as much as an ordinary unskilled labourer. This is as it would be in a free competitive market. But when the weaver speaks of the decline in the industry, not only does he refer to the fall in his money income but to his increasing period of unemployment and the change in his economic status. Formerly he was independent. He was his own employer and capitalist and he himself marketed his goods. From this independent position he is now reduced to one of dependence on the merchant or the moneylender for the supply of raw materials, for financial help, for the disposal of his manufactures, nay for everything. This means an intolerable slavery. The merchant, on the other hand, says that the trade in the hand-woven cloth is failing and his profits, shrinking rapidly, are not worth his continuing in the business. And the consumer is also disappointed with the quality of the cloth. The artist also has his complaint. He deplores the steady decline in the art of weaving. All are unanimous in their opinion that mill competition is the root cause of the decline of this industry in all these respects.

Vague as these assertions are, there is much truth in them. It is now necessary to define what we mean by saying that an industry is declining. Does the economist's conception of industrial decline differ from that of others? 1. Does the decline of an industry mean that it has not expanded and increased its output corresponding to the growth and the needs of the population? 2. Or does it mean that the industry fails to maintain as many workers as before? 3. Or does it mean that the economic or social status of the weaver has suffered a change for the worse? The second is no satisfactory test; for it is the very essence of progress in the technique and business organisation of industries that the introduction of scientific methods creates a temporary displacement of labour. But if this were to create permanent unemployment and the industries fail to absorb displaced labour directly or indirectly, this would constitute a menace to the social order. But of the other two, each by itself will constitute a symptom of its decline, especially when it relates to the human factor in the industry.

The Economic Status of the Weaver

It is difficult to state with any precision whether the economic conditions of the weaver have changed for the better or for the worse. But a study of the available literature invariably creates the impression that his conditions have changed for the worse during the last 120 years. No doubt he is now producing more cloth than before but that has not increased his purchasing power. The technical progress in the industry has not much helped the weaver to maintain his own, not to speak of the betterment of his conditions. The number of the unemployed and under-employed is increasing; the increase in his production has not improved his material conditions; nor have his earnings kept pace with the rise in prices and rise in the cost of living; added to it, one finds less continuity of employment and greater fluctuations in his wages. Thus unemployment of many workers in cotton textile industry on the one hand and the stationary economic conditions of those who still remain in the industry on the other are the two grim facts which indicate that the human factor has been ignored in the so-called industrial progress.

It is necessary to examine the available statistics regarding the changes in the industry itself under the heads: 1. hand-loom production and total consumption of cloth. 2. the number of persons supported by the industry as revealed by the censuses. 3. the number of looms working as stated in the industrial censuses and 4. the trade returns relating to the export of hand-loom manufactures. All these throw light on the conditions of the industry.

1. *Proportion of the hand-loom output to the total consumption of cloth*

A statement is given below showing the quantity of yarn consumed on hand-looms (1) in India and (2) in the Madras Presidency from the year 1896 when the statistics of mill production of yarn and cloth were first made available.

Average annual consumption of yarn by hand-looms stated in million lbs.

Year	All India[1]	Madras Presidency
1869	180	31½
1889	200	34½
1896-1900	233.8	
1901-1905	211.6	
1906-1910	267.6	63
1911-1915	262.2	67
1916-1920	214.4	59.5
1921-1925	297.0	Imports of yarn
1925-1926	288.9	by rail not
1926-1927	333.8	known since
1927-1928	328	1921
1928-1929	264	
1929-1930	342	
1930-1931	343	
1931-1932	364	
1932-33	397	

The consumption of yarn by hand-looms has increased steadily except in the quinquennia following 1900 and 1915. The famine of 1900-02 and the Great War during 1914-18 account for the decrease in the hand-loom production in those periods. Besides, in 1901-5 while the Indian mill production of yarn was normal, both the export of yarn to China and the mill consumption of yarn had increased. Speaking generally, apart from the temporary depression, the consumption of yarn by hand-looms during the last 60 years has increased rather than diminished.

But is this increased consumption of yarn commensurate with the increase in the total consumption of cloth in India? From an examination of the accompanying table it is evident

[1] *Report of the Indian Textile Tariff Board*

that the production of cloth on hand-looms has increased but it does not keep pace either with the growth in the

Average for	*Per capita* consumption of cloth		*Per capita* Production on hand-loom		Percentage of hand-woven cloth to total consumed	Population	
	Yards	Index No.	Yards	Index No.		Millions	Index No.
1896-1900	10·9	93	3·10	95	28.5	293	98
1901-1905	*11·7*	*100*	*3·27*	*100*	*28*	*299*	*100*
1901-1915	14·6	125	3·42	105	23·4	309	103
1921-1925	13·3	114	3·50	107	26·3	328	108·3
1926-1930	14·8	126	3·80	116	25·6	340	114

population or with the increased *per capita* consumption of cloth.

2. *A study of the occupational census: renumber of persons supported by the industry*

It is unfortunate there is no uniformity in the occupational returns of the censuses. In 1871 women were not classified according to profession and there was a male weaving population of 540,061 as against 431,733 men in 1881. Thus there was a decline of 20 per cent during that decade. The famine of 1876 and the growing mill industry are the two causes for this rapid decline. In 1881 there were 839,457 actual workers (excluding dependents) in all cotton textile industries i.e. ginning, cleaning, spinning, sizing, weaving, printing, and dyeing. No distinction is however made between the factory labourer and the home worker. There are two important heads of classification (*a*) cotton manufacturers (188,157 men and 354,577 women workers) and (*b*) weavers otherwise not described (196,610 men and 96,597 women workers). In 1891 there was again a reclassification of workers. Here the figures indicate an increase of 40 per cent because dependents are included and they are not separately shown from actual workers. In 1901 'actual workers' are again separately

enumerated from dependents and a distinction is made between workers in mills and in the home industry. The classification of workers in the different branches of the textile industry was also altered. In 1911 the distinction between factory and home workers disappeared and there was again a change in the classification of workers. In 1921 cotton spinners, sizers and weavers and unspecified spinners and weavers are enumerated separately while in the Census of 1911 they were grouped together under one head. In 1931 there is again a fresh classification. Spinners, sizers and weavers who were separately enumerated in 1921 are grouped together. The head of unspecified spinners and weavers of the last census was omitted. Though the new classification of persons following the occupation into (*a*) principal workers, (*b*) working dependents, and (*c*) persons following it as a subsidiary occupation is an improvement on the previous censuses, one cannot however state how many persons are supported by the particular industry or profession. Besides in some earlier censuses e.g. the Census of 1881, the cloth weaver and cloth seller, the spinner and the yarn dealer, the manufacturer and seller of all kinds are mentioned under one head. A statement is appended to this chapter showing the changes in the occupational returns since 1881 and it illustrates that the value of the census is lost by the constant changes in classification and by the absence of uniformity and continuity in the different heads of the returns.

Agriculture and hand-loom weaving are the main industries of this country and care must be taken in collecting useful information regarding them. The present census operation is far from satisfactory. Attention was drawn to it long ago by Sir Alfred Chatterton: 'We desire to point out to the unsatisfactory means provided by the ordinary census for the collection of useful occupational statistics and to suggest the adoption of special enquiries; for, the object is at least as important as the ethnological discussions that have hitherto figured so largely in the census reports'.[1]

Inadequate and imperfect as the censuses are, it is possible to note certain tendencies. Since 1871 there is a pronounced decline in the number of workers in the cotton textile

[1] *Census Report of 1911.*

industries as a whole but the number of cotton weavers alone shows a slight increase or at least remains stationary so far as the Madras province is concerned.[1]

The total number of actual workers in the Presidency has fallen all round if we compare 1901 and 1921 census figures. But figures for 1901 and 1911 indicate a slight increase over those of 1881. All these figures are not exacty comparable and so it is difficult to state definitely whether the number of workers has increased or decreased; but in all probability it has remained practically stationary in the case of men workers but there has been a decline in the case of women workers. The introduction of machinery in the process of cleaning, ginning and spinning and of improved preparatory process of warping in the home industry accounts for the decline in the number of women workers.

As regards hand-loom weaving in the Madras Presidency cotton weavers, as distinguished from spinners and sizers, are for the first time separately enumerated in 1881. A useful comparison may be made between 1891 and 1921. In the former period there were 1,090,685 persons supported by the

[1]*Cotton textile industries (both Factory and Home) in the Madras Presidency*

Year	Actual workers		Total supported	Index No. of workers.	
	Men	Women		Men workers	Women workers
1871	540,061 [1]	not stated	not stated	139	...
1881	388,024	451,433	839,457	100	100
1891	not stated	separately	1,250,021	...	...
1901	408,896	243,487	1,218,666	106	53·3
1911	406,696	206,898	1,177,881	105	45·5
1921	299,507	141,735	938,790	77	31
1931	334,407 [2]	83,131 [2]	not stated	86	19

[1] This includes workers and dependents.
[2] This excludes working dependents.

industry as against 822,571 in 1921—a decline of 25 per cent. But these figures include factory hands, mill managers etc. A more useful comparison may be instituted between 1901 and

COTTON WEAVING IN THE MADRAS PRESIDENCY

Year	Actual workers		Total supported
	Men	Women	
1881	384,767	451,174	not stated
1891	not stated		1,090,685
1901	384,546	163,739	1,067,589
1911	386,598	194,350	1,118,628
1921	277,711	115,740	822,571
1931	334,407	83,131	not stated

1921. There were 24,359 men and 18,686 women spinners and sizers (actual workers only) in 1921 as against 6,414 men and 59,456 women in 1901—a decline of 70 per cent. in the case of women and an increase of 400 per cent. in the case of men and a decline of 35 per cent. in the case of both men and women workers. This can be explained by certain changes in the industrial practices. Firstly, hand spinning has become nearly defunct. A careful study of the practice of the industry will show, however, that men have taken the place of women sizers who have gradually disappeared as a result of the introduction of long warps. Weaving employs 192,105 men and 83,907 women workers in 1921 as against 384,546 men and 163,793 women workers in 1901. Thus in the course of two decades there is a decline of 40 per cent. in the number of actual weavers alone. This can be accounted for by the peculiar circumstances that obtained at the census operations in 1921. The hand-loom industry was at a low ebb and it had not as yet recovered from the effects of the war, high prices, cotton crop failures, etc. This is supported by 1931 figures. As weaving is fast ceasing to be the partial occupation of agriculturists and the ideal domestic industry of women and is tending to become more and more the

specialised calling of a distinct group of workers as a result of the advances made in the technique of the industry, there is naturally a fall in the total number of cottage workers.

3. *Hand-loom Censuses*

Special censuses of hand-looms were taken occasionally. In the Census of 1921 the number of hand-looms was ascertained in some of the provinces. But it does not mention how many of them were actually working and how many of them were cotton looms. A careful scrutiny shows that there are more looms than actual weavers in some provinces. Also the Census of the looms in the United Provinces and other important hand-weaving provinces was not taken. Nor is the special census of looms available for any earlier period. In the Presidency of Madras, however, a census of the hand-loom was first taken in 1856. In 1871 the Board of Revenue stated in its report that there were 280,000 looms and noticed that there was an increase of 42 per cent over the 1856 census. In 1889 the Board again estimated the number of looms in the province to be 300,009.[1] The Statistical Atlas of the Madras Presidency, 1901, mentions 167,806 looms. According to the special industrial census of 1921 there were 169,403 looms while according to the returns of the Statistical Atlas compiled in the previous year there were 242,000 looms.[2] How far these figures are

Census of hand-looms, 1921

Provinces	No. of hand-looms	Total supported by cotton industries
Ajmere-Merwara	1,587	6,195
Assam	421,367	13,362
Bengal	213,886	472,839
Bihar and Orissa	164,592	284,422
Burma	479,637	65,213
Delhi	1,067	7,584
Madras	169,403	601,178
Punjab	270,507	667,333
Hyderabad State	115,434	242,410
Rajputana Agency	89,741	190,783

[1] S. S. R. Iyengar: *Progress of the Madras Presidency.*

[2] The Special Officer for cottage industries puts down the number of hand-looms at 259,451 (in 1928) as against 169,451 of 1921 census. At present it is estimated by the 1931 Census to be 193,474. The Superintendent considers this figure to be an under-estimate and believes that the estimates of the Special Officer for cottage industries indicating an increase of 60% over 1921 figures are easily justifiable. He estimates that the consumption of yarn by hand-looms in the Madras Presidency has increased from 60 million pounds in 1921 to over 75 million pounds in 1931.—Cf. *Report of the Superintendent, 1931 Census, Madras.*

usefully comparable, to what textile manufactures they refer are matters delightfully vague. The returns of the Board of Revenue belong to a period when statistical compilation was in its initial stage and therefore they are imperfect. They indicate an increase in the number of looms contrary to what may be expected from the growth of the mill industry; far from affecting the cottage industry it has actually accelerated the outturn of the hand-loom and led to an increase in its number. The former can be understood but not the latter.

A more detailed study of the statistical compilations of the Revenue Department, however, reveals the absolute unreliability of the data. The cattle census and the village statistical registers are supposed to enumerate the number of looms, of indigo vats, oil mills, and sugar cane presses. An examination of these data showed that the actual number of looms in villages seldom corresponded even approximately to the number entered in the registers. In some districts special censuses are also taken by Weaving Superintendents of the Department of Industries. And here again the information is furnished by the village officers. Their figures never tally with either the census figures or with the figures of the Statistical Atlas. To cite an instance, in Salem District there are 10,841 looms according to the census reports, 23,000 looms as stated in the Statistical Atlas and 28,000 looms according to the report of the Weaving Superintendent. How far these figures, obtained occasionally with no definite system of collection of statistical information, can be relied on for the discussion of the questions relating to the decline of the industry, its migration, and its present economic tendencies, it is difficult to say.[1]

[1] 'We must on the whole conclude that any estimate of the tendency of the home weaving industry based on the census figures is at present inconclusive. But the record of the hand-loom census, if it is to be continued, may afford material for a better estimate at a future census'. This was the remark made by the Editor of the Indian Census, 1921. In 1925 the authors of the Report of The Indian Economic Enquiry Committee stated 'the statistics have not been compiled hitherto with a view to their being utilized for shaping the economic policies of the country'. How true it is! They further emphasised the importance of a census of production, especially of cottage industries. 'We consider it of great importance that an estimate of the quantity and value of the total annual production of the cottage industries should be ascertained along with the estimated value of raw materials used up. It would be interesting to

4. *Export Trade in hand-loom manufactures*

The Madras Presidency is, as it has been mentioned before, consuming nearly a fourth of the yarn available for hand-looms. And nearly 25 per cent of the looms manufacture lungis and saris mainly for export to Penang, Federated Malay States etc., and handkerchiefs to Africa. When other things remain the same an increase in the exports of these goods is an indirect proof of the increasing production on hand-looms.

Total piece goods exported from the ports of Madras Presidency.

Year	Export in million Yds.	Value in lakhs Rs.
1875	7·5	28
1880	5.3	22
1885	13·1	48
1890	13·6	46·0
1905-10	23·0	78·2
1911-15	25·0	92·4
1916-20	30.0	160·2
1921-25	37·6	230·0
1926-30	38·5	195·0

The annual export of lungis amounted to 18,800,000 (pieces ?) yards before the War and it now amounts to 22,200,000 yards—an increase of 20 per cent during the decade. The export of lungis and saris was separately enumerated for the first time in 1914. Therefore it is not possible to ascertain whether there has been an increase or decrease in their export as compared to the pre-War period. However, as lungis and saris form the bulk of the export of coloured goods from the Madras ports and as a great deal of these piecegoods is the product of the hand-loom, an increase in the export of the coloured goods from this presidency indicates that so far as these manufactures are concerned the hand-weaving industry has expanded.

ascertain, at the same time, the number of persons engaged wholly or partially in such industries, distinguishing dependents and hired workers. In weaving the number and kind of looms might be ascertained and similarly in cottage industries using machinery of one kind or another, the number of such machines might be recorded. Where the production varies in quality, the grade might also be noted.' (*Report* para. 60.) A very highly ambitious proposal! The 1931 census has not merely ignored this but failed to carry out even the modest suggestion of the authors of the 1921 census. Besides abandoning the scheme of industrial census and the census of hand-looms—valuable additions to 1921 census,—the Editor of 1931 census has adopted a new classification of cotton textile workers, making comparative study impossible. In the name of the improvement of statistics, the thread of continuity should not be broken.

This examination of the statistical position regarding the hand-loom industry has well brought out the following facts :—

1. The number of workers engaged in the cotton handicrafts has decreased; but quantitatively the hand-loom production has not suffered; on the other hand it has increased.

2. The fall in the number of home workers in ginning, cleaning and spinning is great. Workers engaged in these processes have suffered most by the introduction of mechanical power.

3. The power-weaving industry had not affected to the same extent the hand-loom which till 1915 produced nearly as much in value and quantity as the cotton mills in India, as the mill industry has affected other indigenous cotton textile industries. It was only after the War that the mill production outstripped the hand-loom production.

4. The growing rationalization of production—viz. the introduction of power and mechanical appliances in factories and the increasing adoption of labour-saving appliances by hand-loom workers—has thrown out more women than men out of the industry. The scope for the employment of women in factories with gigantic machinery and uncongenial surroundings being limited, the number of women workers in cotton power industries has fallen.

5. An important feature of the development of the hand-loom industry is that it is fast ceasing to be, at least so far as this presidency is concerned, the partial occupation of agriculturists; and it is becoming more and more the specialised occupation of particular classes of workers. But the monopoly of hereditary skill and of caste workers is not yet broken. The weavers however are slowly concentrating in towns and in colonies where there are certain facilities viz., the preparatory processes being done cheaply and quickly by special warpers and sizers. This means that women who are generally employed as winders, warpers and sizers in a self-sufficient cottage system of production are now thrown out. Perhaps there is nothing to lament in the decline of the number of women workers as their labour has nearly no value at all.

TABLE

Statements Illustrating the Changes in the Classification of Workers in Cotton Textile Industries according to the Various Censuses since 1881

NUMBER OF WORKERS IN THE COTTON TEXTILE INDUSTRIES IN THE MADRAS PRESIDENCY

I. CENSUS OF 1881

	Actual workers		Total supported
	Men	Women	Not mentioned
1. Cotton manufacturers	188,157	354,577	
2. Weavers otherwise not described ...	196,610	96,597	
3. Calico printers	198	9	
4. Cotton dyers	1,059	250	
Total ...	388,024	451,433	

II. CENSUS OF 1891

	Actual workers	Persons supported by the industry (workers and dependents)	
	Number of actual workers not available	Men	Women
1. Cotton spinners and sizers ...		16,302	117,529
2. Cotton weavers, mill-owners and managers ...		580,783	509,902
3. Cotton factory hands undefined ...		1,829	1,127
4. Calenderers and fullers ...		10,065	10,221
Total ...		610,068	639,953

III. CENSUS OF 1901

	Actual workers		Total supported
	Men	Women	
A. Mill industry—			
Cotton ginning, cleaning, spinning and weaving	112	4,757	17,245
B. Hand industry—			
1. Cotton cleaning, ginning and pressing ...	10,754	11,272	38,609
2. Spinners and sizers	6,414	59,456	71,086
3. Weavers	384,546	163,739	1,067,589
4. Cotton carpet and rug makers ...	575	775	2,491
5. Printers, fullers and calenderers ...	714	1,122	2,476
6. Cotton dyers	5,781	2,366	19,170
Total ...	408,896	243,487	1,218,666

IV. CENSUS OF 1911

	Actual workers		Total supported
	Men	Women	
1. Cotton cleaning, ginning and pressing...	20,098	12,548	59,253
2. Spinning, sizing and weaving ...	386,598	194,350	1,118,628
Total ...	406,696	206,898	1,177,881

V. CENSUS OF 1921

	Actual workers		Total supported
	Men	Women	
1. Cotton cleaning, ginning and pressing	5,773	5,700	20,844
2. Spinning	23,128	18,028	84,938
3. Sizing	1,231	658	4,392
4. Weaving	192,105	83,907	597,753
5. Spinners unspecified	1,660	1,609	6,645
6. Weavers unspecified	75,606	31,833	224,818
Total ...	299,507	141,735	938,790

VI. CENSUS OF 1931

	Workers in the Madras Province						
	No. of Persons following occupation	As principal occupation		As subsidiary occupation		As working dependents	
		Men	Women	Men	Women	Men	Women
Cotton ginning, cleaning and pressing ...	28,905	16,994	7,584	1,180	288	1,189	1,668
Cotton spinning, sizing and weaving ...	486,248	334,407	83,131	22,604	4,919	12,653	28,534
Total ...	515,153	351,401	90,715	23,784	5,207	13,842	30,202

CHAPTER VI

SYSTEMS OF PRODUCTION

A STUDY of the business structure of the hand-loom industry will show how it is organised for production and marketing; and how far its organisation is defective. The following are the important systems under which the industry is at present carried on :—

1. Where THE INDEPENDENT COTTAGE WEAVER carries on production with the help of the members of his family and sells his product locally to a dealer or directly to consumers by hawking or in shandies.

2. THE COMMISSION AGENCY where master-weavers or cloth-dealers through middlemen, analogous to clothiers in the English woollen industry, employ weavers in their own homes, advance materials, pay wages, receive back the finished products and sell them;

3. THE COTTAGE WORKSHOP where master-weavers equip the factory with looms etc., employ weavers, give them yarn and other raw materials, pay them wages and themselves sell the finished products;

4. THE HAND-LOOM FACTORY where the owner erects the building, equips the factory with necessary looms and other plant, employs weavers, winders and sizers and other technical assistants and trading agents and conducts the business on modern lines;

5. THE CO-OPERATIVE SYSTEM where weavers are organised on a co-operative basis for production and sale. This is a recent phase of the development of the industry which seems to be full of promise in the future; and

6. Lastly the POWER-LOOM FACTORIES which are beyond the scope of the present enquiry.

It must now be noted that these different types of organization obtain in the case of all small industries—especially in the case of silk, wool and rayon industries.

We shall now enquire into the working of each system in detail with reference to the financing of the industry, the conditions of production, the organization of trade, the scope

and function of capital, labour and organization, their respective importance in each system and their relation with one another.

1. The Independent Weaver

He comes first in historical sequence. He was once the commonest unit in India as he was elsewhere. But now he is fast disappearing. He is found in centres (*a*) where the industry is unorganized, (*b*) where the self-sufficiency of the village is not much affected by the development of the means of communication, (*c*) where there is not enough work in the locality to attract middlemen-capitalists and (*d*) where weaving is the secondary means of livelihood of agriculturists. This system is also in vogue in respect of products which have a ready local market. The weaver invests his small savings or borrows the capital required and invests it in the business. He purchases the yarn from local yarn merchants or travelling yarn dealers in shandies. He owns his loom and works in his own house. The members of his family assist him in winding, warping, sizing and occasionally in weaving too. The women throw the warp and wind the yarn for pirns. They sometimes assist him in sizing. The children help him in bobbin winding or in the manipulation of the harness if it is the draw-loom. The weaver sizes and weaves. When the cloth is ready he takes it to the nearest bazaar every evening or to shandies every week for sale. In some places he himself hawks it in streets. Thus he is thoroughly independent of any outside agency and the difference between the cost of the yarn and the price he is able to realise for the cloth represents the wages for the labour of all the members of his family who help him in production and of his own labour. It is very rarely that he employs outside labour. It is usual that weavers who thus work independently have their own groups of customers who place orders with them for their own requirements.

The economic position of this class of weavers is theoretically ideal. The weaver is his own capitalist. He is his own employer. He is thoroughly independent of the money-lender or the middleman. The market for his product is free. But

his position in fact is anything but enviable. His earnings are miserable—miserably low when the amount of labour involved is taken into consideration. His market is narrow and limited; his period of employment is irregular and uncertain; the fluctuations in the prices of yarn and cloth are too great for his slender means; the demand is unsteady. In times of scarcity and slack season and falling prices—such hard times occur but too often—there is every danger of his running serious risks and consequently running into debt. When thus he ceases to be self-dependent and becomes indebted to the sowcar-merchant or the cloth-dealer, who alone is interested in advancing him loans, he seldom regains his former independence. This is but the beginning of his slavery. The extent of the credit facilities now available and their effects on the economic condition of the weaver is an interesting point for further investigation. But generally speaking the absence of industrial financing institutions which will give easy credit and assist the weaver to tide over his temporary difficulties and the constant and rapid fluctuations in the yarn and cloth market often drive him to bankruptcy and wage serfdom. This is but the consequence of the weakness of his financial position. Thus weavers who have lost their independent position begin to slave for master-craftsmen and contracting middlemen, and we come to the second stage of the *System of Commission Agency*.

2. The System of Commission Agency.

This is the system most common now. It obtains in places (*a*) where weavers are financially too weak to undertake the responsibility of production and the risks of fluctuations in prices, (*b*) where weavers are attached to employers by reason of their indebtedness and are obliged to work for them alone, at least so long as the debt remains unpaid, (*c*) where weavers cannot have easy access to the consumer by reason of the distance of the market and (*d*) where the demand for the cloth, being seasonal and limited, necessitates the locking-up of capital for a long time which the poor weaver cannot afford. Most workers under this system are those who are deeply involved in debt. It is well known that the weavers are obliged to remain idle for a good part of the year

or are given insufficient employment. The sowcar and the cloth merchant are the only persons who are ready to advance them loans without any valuable security and they stipulate that they should work for them at a fixed rate of wages (which is usually less than competitive wages) at least, so long as some work is given by them. But this low rate of remuneration has no corresponding advantage; there is no guarantee of work throughout the year. The worker, thus indentured, has no more employment than the independent weaver. He is overworked for a very low wage when the market is brisk and is burdened with apparently generous advance of money when the market is slack, which only keeps him and his family in bondage for ever. Loans are advanced usually against looms for they are all the property the weaver has. But the significance of such loans, as distinguished from ordinary loans, is that the worker is bound to work for the merchant who advances the loan and there is no free market for his labour.

It is often said that 'the sowcar knows his business better and understands the needs of the weaver; and, but for him the weaver would have been long since extinct. To criticise the sowcar adversely betrays a lack of proper understanding of the relation and the interdependence of the weaver and the sowcar'. This is partially true but it cannot be denied that the system as it does obtain works out to the disadvantage of the weaver.

This system has different local variations, each of which has its bearing on the status of the weaver. In some cases where the money-lender is also the cloth dealer and merchant and deals directly with weavers, he gives them yarn and advances them wages. The weavers get it wound, warped, sized and woven into cloth which they return to the merchant. Sometimes yarn advances are treated as loans and bear interest. Cash advances are also made which carry interest and a running account is maintained by the sowcar. The merchant fixes from time to time the rate of wages and the amount of work to be given. He regularly purchases the yarn and other raw materials required for the industry and undertakes the responsibility of finding the market for the manufactures. In some places the merchant instead of deal-

ing directly with weavers finances the middlemen-contractors. The middlemen undertake to supply the merchant with stated quantity of cloths. Sometimes the middlemen receive the yarn from the merchant which they distribute to weavers. And sometimes the middlemen must purchase the yarn and get it converted into cloth and deliver it to the merchant. Each middleman has his group of weavers who live in villages and who for some reason or other are obliged to work for him alone. To them the yarn is given and fixed wages are paid on delivering the finished cloth. This type differs from the other one in this respect, namely, that there is a middleman between the sowcar-merchant and the weaver and there is a greater division of functions. The merchant finances the industry; the contractor organizes production and brings together the producer and the capitalist; and the weaver gives his labour. There are two distant contracts: one between the merchant and the middleman and the other between the middleman and the weaver. The dependence of the weaver on the middleman and the dependence of the middleman on the merchant vary in degree in different places.

This system is most commonly found in the trade of the Madras handkerchiefs, lungis and kailis in the East Coast districts. It is also found in many places in Coimbatore and Salem districts. There is no personal contact between the merchant and the weaver; the workers are indebted to the middlemen and they are not in direct touch with the cloth market and this invariably results in their exploitation. How the system works out in practice in the case of the lungi trade and of the sari trade in Salem is worth notice. The cloth dealers of Salem, to cite an instance, place orders with the middlemen for coarse saris which are manufactured by weavers in villages somewhere near Erode. The Salem merchants give them coloured yarn and for each sari contract to pay 14 annas as wages and commission. The middlemen give 12 annas per sari to the weaver and get the cloth manufactured. The merchant sells it for Rs. 2-12-0 or Rs. 3-0-0 thus making a profit of 6 to 9 annas per sari. The middleman gets 2 annas. The weaver gets 12 annas (1928). After paying the cost of winding and warping which is very nearly 2 annas the weaver gets only 10 annas per sari. He

does 5 or 6 saries a week. Each middleman has a number of weavers who work for him and he goes to the village every week, gives them yarn and collects the manufactured cloths and pays them wages. The weaver earns about 3 to 4 rupees a week while the middleman by merely distributing work can earn easily that amount, perhaps much more.

The worst feature of this system is that there is always a tendency to exploit the workers. They are remunerated at a rate far lower than the rate at which the contractors are paid by the merchant. The absolute dependence of the weavers on these middlemen for work is the root cause of the evil. Where the weavers are obliged to work for the contractor or the money-lender the market for their labour is restricted and not free; but where they are obliged to sell their products to the sowcar-merchants there is no free market for their production; and where they depend for the work provided by the merchant or the middleman, there is no regularity of employment—which is as demoralising as, perhaps more than, wage slavery.

Yet another defect. In all these cases the mechanical equipment of the loom etc. for production is the weaver's responsibility. He owns the loom and all other plants connected with weaving. Neither the merchant nor the middleman takes any interest to know whether the loom is suited to the work or whether it is efficient. The weaver being very poor and leading almost a hand-to-mouth existence and groaning under his debt cannot have up-to-date cottage appliances. The plant in use for the preparatory processes, in some cases the loom itself, is most primitive and crude. It is a sad fact that neither the merchants nor the contracting middlemen are willing to finance the weavers for the purpose of equipping their looms with improved sleys and harnesses. Nor are they within the means of the individual weaver. The improved means of winding, warping and sizing done by special groups of workers are availed of by the weaver if he can get more work which would compensate for the members of his family giving up winding, warping and sizing and taking to weaving by introducing a second loom in the family. Else the weaver, irrespective of the time and labour involved in doing these processes, attempts to earn as much

as he could by doing himself all processes connected with weaving.

Now it must be noted that it is this class of hand-loom weavers that is at once the object of sympathy—for 'their conditions enlist our commiseration'—and of adverse criticism by industrial enthusiasts—for 'they are slow in adopting improved appliances and are unwilling to help themselves'. The workers, as it has been pointed out before, have not resources enough to adopt modern inventions; the sowcar is unwilling to finance them for this purpose so long as it does not increase his profits. The result is that the whole system, from the view-point of scientific and technical equipment, is very primitive.

Again the profits of middlemen and merchants are a big slice in the price of the cloth, while the labour cost is despicably low. In Salem, as it has been just pointed out, the weaver usually gets 10 annas, the middleman gets 2 annas and the merchant 6 to 9 annas per sari which includes interest and depreciation charges and cost of retail trade. The contractor in the Madras handkerchief trade gets Re. 1-0-0 per piece while the weaver gets Rs. 3-0-0. Though everything obtained by the middlemen cannot be said to be the result of the exploitation of the workers, still a large portion of it is due to the advantage taken of the unfortunate position of the weavers.

3. The Cottage Workshop System.

Here the master-weaver is also the merchant and he invests the capital required for the industry. He is the owner of the business. He purchases yarn etc. required for the industry, sets up looms, gets the yarn warped and sized, employs weavers in his home and pays them mostly by result. The worker here is a mere wage earner. There are no regular hours of work and the weaver has no guarantee of employment. Those workers who are not indebted to the master-craftsman are at liberty to determine their contract of labour at will but the others—and this class is numerically the stronger—have no freedom of employment. They are bound to work for him at least so long as some work, sufficient or insufficient,

is given. There is nothing different in the conditions of the workers of this group from those of the workers in the commission system. But it is generally said that this system is less rigorous, less exacting and less inhuman than the former.

However, one redeeming feature of this system deserves notice. Wherever the master-craftsman is rich and intelligent enough he equips the workshop with all labour-saving devices and thus helps the weaver in increasing his productivity, reduces the cost of production, increases his profits and the wages of the worker as well. But such rationalisation of production by the master-craftsman is rare, for he finds it difficult to expand his market if the output is increased. Generally, his means also are slender.

This system is much in vogue in the silk weaving industry and in the weaving of costly cloths. In Salem among carpet weavers this is common. But the small workshop system with the master-craftsman is a feature of that branch of the industry which requires the constant intelligent guidance of the master-weaver or where strict supervision of the work is required in order that lace and silk are not embezzled by workers.[1]

4. The Hand-loom Factory.

The cottage workshop is the forerunner of the hand-loom factory. Great hopes are entertained of the factory as a means of reviving hand-loom weaving. It is just here that the scope and functions of capital, labour and organization become definite. In all systems mentioned above management has hardly any place in the economy of production. Even here the owner of the business is not different from the organiser or the entrepreneur. The joint-stock principle has

[1] The small workshop obtains in other countries where the workers can get some advantage by co-operation : as in finishing in Switzerland, dyeing in Italy, common ownership of costly plants in Netherlands.

This system often leads to sweating and slavery of the worker to the advantage of the employer. This is again a point for fuller investigation (wherever this system obtains) regarding the outturn of the worker from day to day and the wages he is paid from time to time and the loans he is advanced. All this will indicate how he is worked in busy seasons, under-paid when the market is dull and under-employed in some months of the year. If the study is continued for a sufficiently long period it would yield useful results regarding the influence of the conditions of their employment on their economic, social and moral progress.

not yet been extended to the hand-loom organisation. It is very common that the owner of the business is also the organiser. The functions of the industrial organiser and the business organiser are not distinct.

Hand-loom factories are chiefly found in the Malabar district, though they are now slowly springing up in other parts of the Presidency: cotton hand-loom factories in Tanjore, Salem and Madura; silk hand-loom factories in Ganjam; woollen factories in Mysore and Bellary; and coir factories in the West Coast. The cotton hand-loom factory is by far the most important system in Malabar. In Cannanore alone there are nearly 50 factories. Five of them employ more than 100 persons each. All the hand-loom factories are producing coatings and shirtings and are competing directly with the power-loom. With the advent of rayon new hand-loom factories are springing up in other parts of the province. The introduction of rayon inaugurated new patterns, and extended the market for goods. More capital and organisation followed the extension of the market for hand-loom products.

Here all the operations—from winding to finishing and packing—are done in the factory itself. The real advantage of the factory organisation lies in the possible economy of time and cost effected by introducing labour-saving appliances as the hand-driven bobbin winding machine, the warping mill, the beaming machine, etc. Another advantage lies in the employers' command of resources enabling them to make such fabrics as are in demand or to explore the possibilities of the market for new manufactures. It is worth noting that most of the hand-loom factories in this Presidency and some of the hand-loom factories in the Punjab have the monopoly of the trade in shirtings and certain types of coatings in Upper India. The third advantage is the possibility of employing technical experts and departmentalising production and distribution. The weaving section, the dyeing section and the commercial section are even now the common departments in hand-loom factories. There is also an increasing division of labour. The progress is more satisfactory in respect of commercial organisation. The mail order house, the travelling canvassing agent, the commission salesmen, effective

advertisement, participation in exhibitions and attractive showrooms are the common features of these factories.

Such elaborate organization requires a large capital for the erection of the factory and up-to-date weaving and other appliances. Here caste weavers meet with a strange discipline; for the factory is open for work between specified hours. They are paid piece-wages. Some members of the special staff e.g., the dyeing expert, the weaving master, the manager and the sizer are paid monthly salaries.

However, there are some short-comings in the factories as at present organized. The workers have to submit themselves to the factory discipline and have to come to the factory punctually and work regularly. This is said to cause hardship to the caste-weavers who are never accustomed to such a discipline. Therefore the factory fails to attract hereditary weavers with skill. In most factories, it is interesting to note, the workers are mostly non-weavers by caste and hereditary profession. A new class of workmen has thus been brought into existence, especially in the West Coast. In Madura, Salem, and Tanjore, on the other hand, the workers are weavers by caste.

Another defect is that most of the factories are small with limited resources. They cannot employ technical experts with proper training and qualifications. Most of them are very poorly paid. Besides, many factories are factories only in name. Where only a few weavers are employed complete technical equipment is not possible. Even where there are many factories in one place there is very little co-operation among them and each works as an independent unit on a ruinous competitive basis.

The beginnings of the hand-loom factory can be traced to the efforts of the Christian Missions in India to provide work and honest means of livelihood to those who had embraced Christianity. The German Basel Mission in the West Coast was the first to start a factory at Cannanore and their example was soon followed by other Missions. Weaving schools, which are in essence hand-loom factories, were first started. A great deal has been since done for the development and organisation of the hand-weaving industry by the Christian Missions in India, especially the Salvation Army.

It is only quite recently that other private non-missionary organisations have come into existence to develop the industry on commercial lines.

It was thought in the beginning of this century that the revival of hand weaving against the competition of the power-loom was possible only on its organisation on factory lines. Accordingly, the Government of Madras started a hand-loom factory in Salem in 1906. The Government explained that it was an experiment to ascertain whether it was possible to improve the condition of the hand weavers in South India (*a*) 'by substituting for the native hand-looms improved looms which enable the weavers to produce a greater length of the cloth in a given time without in any way sacrificing the essential characteristics of native hand-woven goods, (*b*) by introducing the factory system among the weavers, so that they may work under the management of men with commercial and manufacturing experience and so that capital and organisation may be introduced into the industry to render hand labour more productive, and (*c*) by introducing, if possible, improved preparatory processes to diminish the cost of preliminary warping and sizing which the yarn undergoes before it is placed on the loom'.[1]

This factory worked for about five years and was closed down in 1910 on the ukase of the Secretary of State for India disapproving in strong terms the industrial policy of the Government of Madras.

Government succeeded in making improvements in the preparatory processes and popularising to the weaver the use of the fly-shuttle, the warping mill and other useful weaving appliances evolved by the Industries Department. But the experiment was in fact a failure in so far as it did not succeed in introducing the imported automatic looms or in substituting power-sizing and central warping for the indigenous methods. It had also failed to attract the hereditary weavers to the factory. Efforts were made subsequently by private individuals to establish hand-loom factories, and excepting the one at Tondiarpet managed by the late Sir P. T. Chetty, all others failed. Their failure is due to the lack of technical knowledge on the part of the management,

[1] Sir Alfred Chatterton's paper in the Indian Industrial Conference, 1907.

to the inability of the directors to work harmoniously together, and to the dislike of the weavers to subject themselves to discipline and control. But these difficulties are neither inherent nor insurmountable as is shown by the recent rapid growth of hand-loom factories in the country, some owned, managed and worked by weavers themselves.

Generally men are employed for sizing and weaving while women, for bobbin and pirn winding. In some factories children are employed for doubling the thread and knotting the ends. The fear, that the organisation of the factory will eliminate women labour or that women would not come to the factory for work, is unfounded. For, in the West Coast the success of the hand-loom factory is due to the greater readiness of women and men of non-weaving castes to come and work there. It must be noted that in Kumbakonam and Madura women are unwilling but this conservatism is slowly disappearing. Another interesting fact is that in Kumbakonam and Salem there are factories which are run and owned by weavers themselves while in the West Coast most of the factories are owned by capitalists belonging to the non-weaving communities.

It must however be noted that with the growth of hand-loom factories the basis of ownership of the business has not been altered. The common characteristic of the artisan, the commission agent and the cottage workshop is that the business is privately owned by an individual and therefore the capital is insufficient for the technical and commercial development of the industry. Nor do these types of organisation permit of expansion; and so there is very little need for large capital. But in the hand-loom factory the capital required is large and one would naturally expect that the ownership of the business would be on the joint-stock basis with limited liability of share-holders so as to attract more capital. But that does not obtain at present.[1] The future of the hand-loom factory depends on its joint-stock basis of organisation for it would then alone be able to attract enough

[1] The joint-stock principle has not yet been applied in this country to small organisations for reasons, (i) their promoters are not well-known to the investing public, (ii) banks are not very much attracted by their business and (iii) the legal obligations imposed by incorporation are often too exacting for small concerns.

capital and develop the business on scientific lines. The application of the co-operative principle to the hand-loom factory deserves careful consideration; but it may not, at this stage of development of the industry and the condition of workers, attract the amount of capital necessary to organise a first-class hand-loom factory on co-operative basis.

5. Co-operative Hand-loom Production

Co-operation as the basis of the hand-loom industrial organisation has not yet been given a fair trial. Some weavers' societies for credit and a few non-credit societies are found but they are languishing for want of proper guidance and support. The experiment of co-operative production in Madura, Conjeevaram, Salem and Itchapur and the causes of the failure of the experiments in some centres are dealt with in a subsequent chapter. But suffice it to mention here that the weavers' co-operative societies for production and distribution are very small and they are weak both financially and commercially. They are ill-equipped; they are never organised on factory lines; and they have not as yet attracted the services of men of industrial experience and ability. The experiments so far made have undoubtedly failed; but power mills are not suited to Indian conditions and to the genius of Indian craftsmen, and co-operation offers the best basis for organization of the weaving industry. The opinions of Textile Experts, Directors of Industries and co-operators are unanimous on this point. 'The weaving industry', writes Mr. Maxwell-Lefroy, 'seems to me to be eminently suited to the Indian craftsman working in his own village if his circumstances can be bettered. If I am correctly informed the success achieved by Japan has been due largely to a splendid organisation of the cottage weaving centred round factories which only collect and finish the fabrics. Whether we achieve the similar result by the individual weaver, the group of weavers or the hand-loom factories is a matter of local circumstances purely—but it cannot be ordinarily obtained by any development of mills'.[1] Mr. Davies and Sir Alfred Chatterton, formerly Directors of Industries, Madras, have declared time and again that co-operation offers the best

[1] Report on Silk Industry in India.

solution and the weavers must be organised in hand-loom factories formed on a co-operative basis.

6. The Power-loom

The mills differ from the hand-loom factories in four important respects: (1) their use of power, (2) economies due to their larger outturn, (3) their mass production and (4) their increased specialisation and employment of technical and business experts. A more detailed enquiry of the organisation of mills is out of place here.

This survey of the systems of production brings out certain facts in the light of which the re-organisation of the industry must be attempted. The domestic system, the cottage workshop and the system of commission agents are the most dominant types of production at present. The entire handicraft is tending to become more dependent on a class of specialised entrepreneurs. While the rise of this class means much to industries in other countries, as persons of this class provide capital, standards and management, or supervise some of the processes, or see that goods are made according to certain standards and made in time, or bear certain risks of organisation, its rise in India has not been beneficial to the industry to the same extent. Besides, the evils characteristic of small industries carried out in isolated homes of the workers are not eliminated. The weavers are sweated—not in the sense that merchants get rich but in the sense that the workers get less than what is necessary for a bare living, not to speak of a decent living. Further, the fortunes of these industrial units are subject to violent vicissitudes. They suffer from a chronic dearth of capital. The tools are simple and primitive. The methods are crude and wasteful. The *morale* of the worker is anything but satisfactory. The present conditions of work can inspire nothing better. The workers are tempted not only to pawn but to steal their employers' goods when they are in distress. On the top of all, as a result of the disappearance of their economic independence in the industrial world, the workers have little or no choice of

employers, and when hungry, cannot refuse work if wages are low. They are helpless without a strong association of their own. But the system of production is not easily susceptible to trade union organisation which can better the conditions of the workers, nor to an organisation of producers for the preservation of the standards, regulation of prices, wages and output and, in general, the betterment of the industry. The revival of the caste and the craft guilds is well nigh impossible. But the creation of an organisation, for bettering the conditions of the workers and of the industry without prejudice to the work being done in villages and in the homes of workers and without creating all the evils of modern industrialism, is one of the problems of the reorganisation of the hand-loom industry.

CHAPTER VII

BUSINESS ORGANIZATION

Supply of Cotton Twist and Yarn

There are three distinct sources of supply of yarn for the hand-loom: (1) from the Charka, (2) from the Indian mills, and (3) from foreign imports. The organisation for distribution of yarn is different in all these cases.

The Home Spun Yarn.

A century ago the only source of supply of yarn was the Charka. Before the advent of the mill industry in India nearly 3 million cwts. of cotton were consumed in the country by the Charka and the hand-loom. In 1869 the total production of cotton was estimated to be 7.1 million cwts. of which 5 million cwts. were exported and 2.1 million cwts. were consumed in India—0.25 million cwts. by mills and the rest by hand-looms. In 1889 the total production of cotton was $9\frac{1}{2}$ million cwts. of which $5\frac{1}{2}$ million cwts. were exported to foreign countries, 3 milion cwts. were consumed by local mills and 1 million cwts. by hand-looms in India.[1] This shows that with the growth of Indian mill industry the hand-spun yarn was very rapidly superseded by yarn made in Indian mills. The writer's enquiries in some places in Tanjore district revealed that 100 years ago the Government of Madras offered certain transport facilities to spinners and weavers of fine cloths. Weavers at Tugili got their yarn of 60s and sometimes 100s from Negapatam, Sikkil, Thachanellore and other places where caste Hindus and Muslim women spun fine yarn of repute which was purchased by them. Cloths when manufactured were collected and were sent to Tirukkoiloor, Panruti, Vridachallam and other places in the north with the

[1] S. S. R. Iyengar; *Progress of the Madras Presidency.*

seal of the Circar which gave them the necessary protection in transport. However with the growth of the mill industry hand-spinning shrank to insignificance. Yet the supply of hand-spun yarn for the hand-loom industry even now is considerable. In Assam spinning and weaving are done by women at home and almost every household has its spinning wheel and its own loom.[1] According to the Census of 1921 there were 229,463 wheels, 95,172 hand gins, and 41,729 hand-looms in Assam. Even now in Vizagapatam and other districts the ryots often spin their own yarn which they hand over to the weavers to be made into cloth. 'In Sripuram and in Pondura,' writes the author of the *District Gazetteer,* 'the Patu-Sales make delicate fabrics from specially fine threads called *patu-salai nool* which the women of their castes spin for them and which is as fine as 150s.' Mr. T. N. Mukerjee in his book on the *Arts and Crafts of India* describes how in Arni fine yarn was spun for good muslins as late as 1880. Even to day in many Vellala villages of Salem district women spin their cotton into yarn and the Panchama weavers who are partial agriculturists convert it into cloth for customary wages i.e. two local measures of ragi and four annas per piece. Similarly, the Special Officer who enquired into the cottage industries in Madras Presidency has also noticed cases of survival of cotton hand-spinning in the districts.

Hand-spinning is now a growing industry due to the vigorous propaganda carried on by the All-India Spinners' Association. The expansion of the industry is marvellous and it shows that in many cases hand-spinning was given up because there was no organization which could provide the necessary facilities for the distribution of cotton, purchase of yarn, employment of weavers and the marketing of cloth. The following figures give us an idea of the growth and

[1] *Census Report* for 1921.

expansion of the hand-spinning industry in India and the Madras Presidency :—

PRODUCTION OF HAND-SPUN CLOTH IN INDIA.
(From A. I. S. A. Reports)

Year	Value of production in lakhs of rupees.			Price of Cotton per Candy (Highest Price)
	India	Madras Presidency :		
		Andhra	Tamil Nadu and Kerala	
				Rs.
1921	... not known ...		...	560
1924	9·5	...	4·7	560
1925	19·0	...	7·0	475
1926	23·76	3·5	8·45	360
1927	23·45	3·8	10·97	360
1928	24·1	2·95	9·97	415
1929	31·5	3·39	11·37	417
1930	54·9	7·78	16·16	354
1931	58·3	7·75	24·42	272
1932	44·6	...	13·94	199

Thus the industry under the management of the A.I.S.A. has increased its output four times since 1924. It now supports more than 60,000 spinners and 3,500 weavers, besides numerous carders, dyers and bleachers. It becomes evident that from the point of view of the number of persons supported by the industry, the khaddar industry is not insignificant. But judged by the percentage of hand-spun and hand-woven cloth to the total consumption of cloth, the industry is still unimportant.

Hand-spinning generally obtains in places where cotton is not an important commercial product but is grown as a garden crop to meet the domestic demand. In many other places it is carried on as a famine relief measure. In Tirupur it thrives as it is fostered by the A.I.S. Association. The cotton is purchased by the Spinners Association, ginned and distributed to spinners who return the yarn to the depot and receive

wages. The depot again distributes the yarn to weavers who convert it into cloth and get wages. The A.I.S.A. has its own sale depots. This elaborate organisation does not obtain in places where hand-spinning is carried on voluntarily as a means of subsidiary income e.g., Uttangarai taluk in Salem district. Cotton is grown by spinners themselves and the yarn is given to the village weaver who converts it into cloth for customary wages.

The question now arises whether this source of supply can still further expand, even after the Spinners' Association withdraws its help, and become more important in the future. The scope for and the extension of the industry is dependent on the following factors :—(1) the nature of the spinning wheel, (2) the necessity for subsidiary employment, (3) earnings in other industries and their possibilities for expansion, and (4) the growth of an efficient organization for the fostering of this industry. Any improvement in the spinning wheel which will increase the outturn, say six times, will make this industry the primary means of livelihood. But during the last hundred years and more very little improvement has been made in the hand-spinning wheel. Inventions have helped power-spinning and not hand-spinning and if the dream of a better spinning wheel materialises in new inventions and improvement of the Charka, its future will be assured. But as regards hand-weaving, inventions have proceeded *pari passu* with those in power-looms. This accounts for the triumph of power-spinning over hand-spinning while the power-loom has not yet vanquished the hand-loom. It cannot be said that in India there is no need felt for the subsidiary means of livelihood but the Charka will not be resorted to unless (1) an organization of the A.I.S.A. type becomes a permanent feature, and (2) earnings in other fields become less remunerative than in spinning. The spinners left to themselves can do nothing.

The case for the Charka is well stated by its advocates, but it is too much to expect that all yarns required for our consumption can be produced on the country wheel. It is estimated that if all the adult male population of India spin for four months consecutively working at the rate of ten hours a day the requirement can be met. But how laborious, tedious

and wasteful! Will people spin? What is the inducement? The doctrine of capitalising idle hours and of using man-power in perference to mechanical power has, even with reference to India, a limited application unless it be that human values further depreciate.

The Mill Yarn: (i) Local Supply

No less than 80 per cent of the yarn consumed by hand-looms is supplied by the Indian cotton mills. Madras Presidency consumes 60 million lbs. of Indian mill yarn. It consumes about 20 million lbs. of foreign yarn; and the yarn available from the local mills is about 40 million lbs. From Bombay the West Coast imports by sea and the Telugu districts import by rail annually about 20 million lbs. The Bombay mills supply finer counts for the hand-looms.

The mills have their own systems of sale. The local mills have their sole agents for each territorial area and all sales must be effected through them alone. The agents are mainly large capitalists. They get 2 per cent commission in the case of local mill yarns and 1 per cent in the case of Bombay mill yarn and also a month's credit. If the sum is immediately paid, a rebate of interest, usually one per cent, is paid. In all these cases the sales to the agents are secured by the guaranteeing brokers, who get 5 annas 4 pies for every bale of yarn sold to agents. The legal effect of this transaction is that mills sell to their agents and the guaranteeing brokers stand surety.

(ii) Foreign Imports

The average annual import of foreign yarn into India during the years 1921-6 was 53½ million lbs. of which

Grey	accounts for	41	million lbs.
White	,,	2	,,
Coloured	,,	7½	,,
Mercerised	,,	3	,,

The United Kingdom and Japan supply all the grey yarn, Japan's share being more in counts below 40s while the United Kingdom supplies all yarns of 40s and above. It has the monopoly of bleached yarn also, its share being more

than 80 per cent. Japan has practically all the trade in mercerised yarn. The United Kingdom again has the lion's share of the trade in coloured yarn. Netherlands, Italy and Switzerland also share in the colour yarn trade.

The import trade is practically in the hands of foreign importing firms. Though Madras consumes more than or at least half the amount of foreign yarn consumed in India it is striking that practically the whole trade passes through Bombay. The direct import into Madras is less than a half of what it actually consumes. The rest is imported from Bombay by rail.[1] The predominance of Bombay in the foreign trade is due to its financial supremacy.

Each importing firm has its own system of distribution; one firm sells to yarn dealers only; another sells to all for cash; a third sells to approved agents for credit and for cash. But the recent tendency for importing firms is to market their yarns directly to small dealers in moffussil towns. Thus the numerous middlemen betweeen the importer and the retailer are eliminated and the trade is so well organised by the importing firms that the best price for yarns is now obtained. This rationalisation of the business has not, however, benefited the weaver directly by any reduction in the price of yarns.

Has the hand-loom consumption of foreign yarn increased? The average annual import into India for the quinquennium 1890-05 was 45 million lbs. and for the quinquennium 1900-05 was 27 million lbs. and 37 million lbs. for 1910-15 and 53 million lbs. for 1921-26. Thus the present increase in the import over 1890 is 18 per cent. The fall in the import of yarn during the 1900-1915 is due to the increasing imports of piecegoods. The share of the Madras Presidency in the increased imports of yarn is not exactly ascertainable as a good part of its imports is got from Bombay by rail. However it can be inferred, from the larger export of her handkerchiefs and lungis which are mainly manufactured out of foreign yarn, that its import has increased.

It may be noted in passing that the price of imported yarn determines the price of local yarn. It is often stated that the

[1] In 1920–21 out of 23 million lbs. of foreign yarn consumed in the Presidency nearly 11 million lbs. were imported by rail, chiefly from Bombay.

imported yarn does not compete with Indian mill yarn. The range of competition is really small, yet it helps to regulate the price of Indian mill yarn. The imports from Japan and the lower counts of the American yarn from the United Kingdom especially determine the prices of Indian mill yarn. 'The imported yarn (of counts below 40s) though it is only a small portion of the yarn used by the hand-loom industry, exercises an important function in that it helps to regulate the prices of Indian mill yarn.'[1] So care should be taken in imposing duties on imports of foreign yarn.

Price of Yarns in the Retail Market

Competition rules in the wholesale yarn market and in important centres as Madras, Madura, Salem and Coimbatore where there are a number of yarn depots. But in villages remote from urban centres and in fairs which are frequented by a few yarn merchants competitive prices do not obtain and there is a more or less rigid rate for yarns of particular brands. The retail prices in those centres are less fluctuating than those of the wholesale and urban yarn markets. Another feature worth noting is that while a rise in the wholesale market is immediately followed by a rise in the retail price of yarn in the rural parts, it takes time for the retail price to adjust itself to a fall in the wholesale prices. This shows the weakness of small buyers. Also in many villages in Salem and Coimbatore districts, the price of yarn is one to three annas per pound higher than it is in headquarter towns.

The Nature of the Yarn Consumption on Hand-looms

The Indian mills supply about 250 million lbs of yarn, of which nearly a fourth is dyed; the import amounts to 50 million lbs and the hand-spun yarn about 2 million lbs. The hand-spun yarn is mostly of low counts, i.e., below 20s. Of the imported yarn in the Pre-War days 50 per cent used to be coloured yarn. Now it is only a fourth of the total imports. Regarding the counts of yarn imported, 10 per cent is below

[1] Speech of the Member for Commerce and Industry in the Legislative Assembly—1921-22.

20s, 60 per cent between 20s and 40s (the bulk of it being 40s), and the rest above 40s.

It is not possible however to state how much of each count of yarn is consumed in hand-looms. The Monthly Returns of Spinning And Weaving Mills In India publish the total production of yarn of each count and the volume of cloth produced without stating how much of each count of yarn is consumed in mills themselves. The mills in India now produce yarns up to 100s-102s but the bulk of yarn produced is below 30s being more than 90 per cent of the total production. In mills the greatest weight was spun in the following counts: (stated in the order of importance) 20s, 21s, 24s, 22s, 11s, 30s, 16s, 14s, and 12s. But it is not known how much of each count is available for hand-looms. It is safe however to assume that the Indian mills supply all counts below 80s while Japan supplies 40s and 60s and the United Kingdom the finer yarn above 40s.

CHAPTER VIII

BUSINESS ORGANISATION:

MARKETING OF CLOTH WITH SPECIAL REFERENCE TO HAND-WOVEN GOODS

In these days the study of markets, and especially the methods of penetration into new markets, has become a matter of immediate interest. The expansion of foreign trade, depending almost entirely on the discovery and exploitation of new markets, and the retention of markets already gained against continual and intense competition, is at once the problem of industry and the main duty of finance.'

'The hold which small shops retain on poor districts rests on solid economic foundations. Some of the foundations are the product of evil and unnecessary conditions and others are likely to endure so long as a considerable part of the population live on small incomes and are inadequately housed.'—A. Marshall, *Industry and Trade.*

'Not a little of the industrial success of modern Japan is due to the attention that has been paid not only to the educational and technical training of cottage workers but to the building of business organisations which take over the products of their industry and disposing them all over the world.'—*The Indian Industrial Commission.*

THE organisation required to market any article depends on various factors. The distribution of the consumers; their habits and tastes; their income, the character of the demand for the article in question; the nature of the article to be marketed and the conditions under which it is produced—all these determine the organisation required to bring the product to the consumer.

THE DISTRIBUTION OF THE POPULATION

India is a vast country with a vast population scattered over many villages. Its area is about 1·8 million square miles. There are 687,981 towns and villages maintaining a population of 352 millions. A comparison of India with the United States of America, another large civilised country, in regard to the distribution of the urban and rural population will explain the types of marketing organizations prevailing in the two countries. The continental United States of America is about 3 million square miles with a population of 112 millions. But its population is more urban in character. The percentage of urban population in America is 51.4 (assuming that places containing more than 2,500 inhabitants are urban centres) while in India the urban population accounts for 27 per cent only (even assuming that places having 2,000

inhabitants are urban centres). The rest 73 per cent of the Indian population are found in 677,232 villages scattered all over the country.[1] The marketing organisation in India for supplying this necessary of life is largely determined by the resources, habits and tastes of this vast rural population. The consumers being found in villages separated by distance from one another cannot be reached by shops and therefore hawkers and weekly fairs play a prominent part in the marketing organisation in India; while the concentration of population in urban centres in America makes it possible to reach the consumer more easily through shops.

The Consumer

Further, the habits, tastes and resources of the consumer will generally determine the nature of the marketing organisation. The Indian consumers can be grouped under two main heads: (1) urban, and (2) rural. These, again, may further be subdivided according to their status and means. The rich landowning classes in the rural area and the professional classes in the urban centres enjoying a higher standard of living consume more cloths than others. Their requirments also admit of many varieties. The urban class as a whole needs more clothing than the rural population which by tradition is frugal and simple. Even the urban artisans and wage-earners use more cloths than those in villages. The regular monthly income of the former and the seasonal earnings of the latter account for the difference in their demand. Social conventions and ideas of fashion regulating the sartorial outfit of individuals differ according to castes and communities they belong to. It is estimated that a fifth of the urban population consume nearly a tenth of the total cloth available and that the urban population—one-fourth of the total Indian population—consume a little more than half the quantity of cloth available. This higher consumption of cloth in towns is partly due to their better economic conditions and partly to

[1] No. of villages with a population below 500—509 : 786 with a total population of 97 millions.
No. of villages with a population between 500—1,000 : 113,541 with a total population of 79 millions.
No. of villages with a population between 1,000—2,000 : 53,905 with a total population of 73¼ millions.

the more efficient marketing systems prevalent there. The congregation of the population with a regular fortnightly or monthly income and a higher degree of literacy enables the traders to effect more sales by show rooms, advertisements, auctions and clearance sales, etc. The difference in demand and consumption of the various classes of the population is also due to the difference in their social and personal habits, age, sex and occupation and income. And on these factors depends the nature of the marketing organisation.[1]

The System of Production Determines the Methods of Distribution

Where the weaver markets the cloth himself hawking obtains invariably. Where cloths are manufactured by the sowcar or the capitalist master craftsman both *shandy* sale and shop systems obtain. But where goods are manufactured on hand-loom factories, regular shop, canvassing agency, mail order house and commission agency are the regular channels of distribution. In the case of mill-made cloth—especially imported cloths—hawking and shandy sales are not so common except in far interior villages of the country. Regular shops are the main channels of making them available to the consumer.

The System of Distribution Depends Largely on the Proximity of the Market and the Buying Habits of the Consumer

Where cloths are produced for local consumption hawking, sale in shandy and 'bespoke system' (i.e., manufacture and sale of cloth on orders placed) obtain. But where cloths are manufactured for purposes of export to other districts and outside the province and also where such cloths are specialities having an extensive market, the capitalist middleman is an invariable factor and the ultimate consumer is reached by the retail cloth shop through one or more middlemen. The

[1] The consumer's spending power is limited by his earning ability. This is a truism. But 'the standard of living', the opinion of the class to which the consumer belongs, as to what may be expected of him in the matter of his clothing requirements has its constant effect on his conduct.—Clark : *Readings in Marketing*.

middlemen purchase the cloth from manufacturers according to the requirements of moffussil retailers and forward it to them. This is what the Komatis of Salem do. Their function is to finance the trade and the moffussil merchants. Where cloths are intended for foreign exports as in the case of Madras handkerchiefs, lungis and kailis, they pass through a series of middlemen ending with the shipper—some finance trade; others, production; and a few, act only as buying or selling agents.

Hawking, shandy sales and sowcar shops are more important in rural areas while 'shop' and 'auction' systems are characteristic of towns. This does not, however, mean that hawking and sowcar shops are uncommon in towns. One can find a host of hawkers and a number of sowcar-cloth-merchants in the area occupied by the working classes in urban centres. Hawking in respect of costly silks and other fabrics is now becoming more usual with the development of the idea that the consumer must be attacked in his own place.

What system—whether hawking, sowcar shop, or the regular shop—obtains in a particular locality is determined by the buying habits of the consumers.[1] With price higgling and the sales for credit which are dominant among the working classes and in rural areas, hawking and sowcar systems obtain. In towns where there are regular shops price higgling is almost eliminated and the sale is based on standardised quality, guaranteed satisfaction and fixed prices. Therefore in these shops the consumer has come to expect that goods can be bought without bargaining. This means that while he is safer in his purchase in this shop regarding the price he pays he is more careless also. This psychology of the consumer is well appreciated by the dealers, and the auction and clearance sales systems are coming more into

[1] The habits of the consumer.—The purchasing habit of the consumer is a deciding factor in the systems of retail-trade. The rich and the upper middle class urban consumers expect quality cloths at fixed prices and they go to regular shops for their purchases. Here the consumer seeks the retailer. In rural areas on the other hand, price higgling, customary prices and careful examination of the quality of the cloths are regular features. The price higgling is partly the result of the consumer's ignorance of the cloth market and his slender means. He has to be reached in his own place by the retailer.

prominence in urban cloth shops. In Madras there are about half a dozen 'clearance sales' in a year : Summer sales, Dasara sales, Deepavali clearance sales, Christmas sales, Stock-taking sales etc., etc.

The kinds of fabrics also determine the type of retail shops. For example, coarse cloths—white and coloured—manufactured on hand-looms and mills, are generally hawked and sold by sowcars in villages and in ordinary cloth shops in towns. But the specialised fabrics for which there is a limited demand and for which the market is narrow, the shop is the only usual channel of distribution. The laced cloths of Madura and Salem, the elaborately embroidered cloths of Kumbakonam and Bangalore are seldom sold by hawkers. The specialised hand-woven cloth depot is the chief distributing agency for such fabrics.

Specialism in the retail trade of cloth is now increasing. Shops dealing only in underwears, saris, or other cloths, are quite common. There are two kinds of shop : one, where only mill piecegoods are sold, and the other, where hand-woven goods alone are available. Their distinguishing features may be noted. In the mill piecegoods shop wholesale purchase, attractive show-rooms, standardised products, fixed and uniform prices, large daily turnover and small commissions obtain while in the hand-woven cloth depots time-to-time purchases from weavers and manufacturers in small quantities, variable prices, bargaining and small daily turnover are common.

CHAPTER IX

SOME TYPES OF RURAL AND URBAN CLOTH MARKETS

(A) The Rural Market

1. *The Weekly Fair or Shandy*

The weekly fair is a special feature of Indian rural trade. Except in Guntur, Nellore and Malabar this is the main channel of distribution.[1] The fairs play a very important part in bringing to the rural consumer necessaries and luxuries otherwise procurable only in towns. They in fact serve the same purpose for the rural area as a number of specialised shops do in towns. These weekly markets are held in convenient distances, to serve a group of villages and the days are so arranged that the same traders may go on from one market to another. These markets are often visited by the weavers living in the neighbouring villages and they sell their cloth manufactured during the week and purchase yarn and other articles required for work for the next week. Also cloth merchants visit these fairs. *Shandy* sale is an integral part of the system of trade adopted in this Presidency.

Prices are to a large extent inelastic and this is almost always the case with coarse cloths and other cloths of common varieties which are brought to the market by the producers. Buyers are accustomed to a fixed movement in prices. There are seasonal variations in prices: The price of cloth is usually higher during marriage, Deepavali and Sankaranti seasons than in other times. Also shandy prices seem to be a bit higher but steadier than the hawker's price. In the shandy retail sale is the rule. The sale is invariably for cash. In small shandies the cloths are brought for sale by small weavers while in the bigger shandies, as the Pollachi Fair, big merchants come there for disposing of their products. In all these rural shandies hand-woven goods are more important than mill cloths. They form nearly 75 per cent of the cloths brought there for sale.

[1] The Madras Census Report 1921.

2. *Special Fairs and Exhibitions* are held during important local festivals (e.g., Conjeevaram and Madura festivals, Park Fair exhibitions, where shops are opened for the occasion). Here thousands of people assemble and this is a rare opportunity for dealers. Besides coarse ordinary cloths, special fabrics also are brought for sale. The weekly fairs are generally attended by the poor people while the fairs during festivals are attended by the rich and the poor alike. The rich seldom go to the weekly fairs. They get their requirements from weavers of the locality with whom they place their orders or they go to shops in the neighbouring towns for the purchase of high class hand-woven and mill goods.

There are three other institutions which play an important part in bringing cloth to the rural consumer:

(*a*) The village pedlar and the hawker in the bazaar

(*b*) The local moneylender or the sowcar who also sells cloths, utensils etc.

(*c*) The seasonal trader called the *Arumasa Kadankaran*.

(3) The *Pedlar* is a general merchant having for sale some articles of necessaries and luxuries. But the cloth pedlar is not a general merchant, but sells cloth alone. He sells usually for cash but recognised customers are given credit also. Such hawking is quite usual during the marriage and Deepavali seasons, when the demand is brisk.

(4) In many villages where there are small *Marwadi money-lenders*, e.g. in Coimbatore district, they combine sales of old and new cloths, ready-made shirting and clothing, utensils etc., with money-lending which is their primary business. This kind of business thrives most in centres where there are a number of wage-earners and artisans. Their prices are often many times higher than those of the hawkers and retail dealers in the neighbouring towns. But the sale is generally for credit and the impecunious wage-earners who are slaves of conventional extravagances and social prestige but who have not the ready means for the purchase of their requirements have recourse to these money-lenders. The scale of business is very small and therefore the prices are high enough to cover the interest, risks involved in transaction and charges for waiting and retail sale. The range of goods is limited and therefore only needed persons resort to these

shops. This system obtains in urban centres also where there are the colonies of the working classes, (e.g. Perambur). It thrives because the customers have not the ready money for the purchase of their requirements and they have accommodation only from these kindly sowcar merchants. Also the sowcars allow easy payments by instalments. In many cases valuable articles are pledged to the sowcars who advance loans and sell cloths for credit. But the high rate of interest and the high credit prices work double havoc on the customers. It is in such cases that co-operative sales depots will be useful and may eliminate the profits of the middlemen to some extent and reduce the price of cloth to consumers.

(5) The *Arumasa Kadankarans* (meaning six-months creditors) are important as rural retailers in South India. They are mainly Labbais coming from Karur and other interior taluks of Trichinopoly district. Their operation is interesting. A number of them subscribe capital, each about Rs. 50 or so, purchase the cloths usually demanded by the agricultural labourers and also some ready made and cheap coats, shirts, underwears and other brightly coloured goods, have their shows in the villages just a few days before Deepavali and sell them to the villagers with the assistance of the local headman. The sales are for credit mainly. The time they visit the villages is very opportune. It is just then there is demand for cloth, for custom enjoins the purchase of new cloths for Deepavali. It is also favourable for credit sales. The agriculturists are just then entering a period of off-season due to rain and temporary cessation of agricultural operations. The ryots are then generally out-of-pocket. Cloths are sold to them at six months' credit. The merchants return at the time of the harvest and collect their dues usually in the form of grain. Here the prices of articles are from 100 to 300 per cent higher than in shops in towns.

The characteristics of this system are: (1) there is an element of barter in this transaction; the merchants accept grains instead of money for payment; (2) while the prices are indeed very high, the profits of the merchant are not high enough to make his business worth his while for there is a large amount of bad debts and (3) the prices of cloth are twice as dear and the commutation rate of grains is some-

what less than the market rate. The whole system persists because of the ignorance, poverty, necessity and illiteracy of the people; and the conventional expenses ocurring at a time when their savings are nil and income is meagre; and the merchants take advantage of the situation.

(B) The Urban Retail Market

1. The Hawker

In almost every town the weavers of the neighbouring villages can be found hawking their manufactures usually in the evenings. In most places they sell direct to consumers but in Salem the daily transactions in the evening bazaar run to several thousands of rupees and the middlemen's transaction is nowhere so extensive as in Salem. The Komati Chettis act as middlemen for mofussil cloth merchants, purchase goods coming into the market and brought down by weavers. For every rupee of transaction they get not less than $2\frac{1}{2}$ annas.

In other places also the cloth hawkers are mainly independent weavers who come to town to sell their goods. In most cases the articles are meant for local consumption. This enables the weavers to eliminate middlemen's profits and compete with mill products.

2. Small Shop

Where articles are of costly varieties and the demand for them is restricted, the weavers cannot sell them directly to the consumers. The capitalist-merchant is a necessary link. He purchases for cash or credit from weavers and retails them to consumers. Here the function of the merchant is really marketing. In most cases the merchant purchases the articles; neither commission nor consignment sale being known in the trade of hand-woven goods. He must necessarily lock up a great deal of capital in stock, for, while he must be purchasing cloths when they are coming into the market, he can sell them only in particular seasons. This means that risks due to fluctuations in prices are borne by the merchant himself. His prices therefore include a heavy charge against such risks. While this is the case with the retail merchant, the merchant who performs the function of a broker, e.g. Salem

Chetti—gets very good profits for no other function than financing the trade, allowing the mofussil merchant a month's credit and paying off immediately the weavers in cash. He pays the weaver taking a discount of 2 annas per rupee and charges the merchant ½ anna for agency function and accommodation and 12 per cent interest on overdue amounts.

3. Sowcar Shop

It is the same as the sowcar's shop in rural areas except that in the urban shop a larger percentage of sale is against pledged moveable properties.

The characteristics of all these systems of marketing are small scale business, price higgling, unstandardised goods, absence of advertisement, different prices for cash and credit.

4. Auction Shop

A recent phase in the development of marketing of handloom products is the *auction system*. This does not always mean that the goods are auctioned for a small commission on behalf of the weavers, but it is a device of retail sale adopted by cloth merchants. The cause for its popularity is the correct appreciation of the mass-psychology. The buyer usually associates cheapness with auction sales though often he is taken unawares and the price he pays is dearer considering the quality of the cloth. This system had its origin in the imitation of the much advertised clearance sales of foreign piecegoods merchants.

The modern shop with advertisement, organised salesmanship, fixed prices and standard qualities obtains only with reference to mill-woven goods and goods manufactured in hand-loom factories. Except in the few co-operative cloth depots where one price system and wide advertisement obtain, the progressive ideas of modern salesmanship do not obtain anywhere in the case of hand-woven cloths.

Some Problems of Marketing Handloom Products

(i) *Standardisation*

It might be noted in passing why hand-woven goods are not favoured by piecegoods merchants. They deal in large stocks of mill goods because the mill product is standardised

and answers to the sample. But there is no standardisation of quality or prices in regard to the handwoven goods. It does not however mean that they cannot be standardised but there is no agency to effect it. Nor is the cost of standardisation prohibitive. The absence of standardisation often results in higgling in prices, more salesmen, slow turnover, high costs, and low profits. Standardisation of prices and quality is a necessary factor in the case of articles intended for wholesale and foreign markets for they must pass through many middlemen before they reach the ultimate consumer. Standardisation of quality, therefore, obtains in the case of Madras handkerchiefs, lungis and kailies.

Again nowhere does the wholesale merchant place huge orders for cloth with small weavers; and the tiny weaving establishments cannot meet his demand. Unless the workers are organised in rural factories their products cannot be standardised or marketed on scientific lines.

(ii) *Organisation of hand-loom factories*

The growth of hand-loom factories has led to the introduction of new business methods in the cloth trade to some extent. Sole agency, commission sale, sale on consignment basis, mail-order house and canvassing agency are some methods of recent development in marketing. These systems of distribution are quite unknown to the ordinary weaver or the merchant dealing in hand-woven goods. The hand-loom factories push their sales in distant parts of the country through commission agents and advertisements. The agents book orders from retail merchants in North India where there is a brisk demand for the kinds of products manufactured in South Indian factories. The consumers are also attracted by advertisement and of late the mail order business is progressing. The amount of business done here, though small, promises to expand in future. Still lack of enterprising advertisement retards its progress. The chief limitation to advertisement is the low standard of literacy of the people. It may be concluded that the advent of the hand-loom factory is a new chapter in the organization of industry both on the production and marketing side; and it is full of promise for the future. If men with greater imagination, resources,

business knowledge and enterprise come into the business the future of the hand-loom is assured.

(iii) *Reduction of marketing costs*

One great handicap that the hand-loom weaver is at present labouring under is the very prohibitive cost of marketing his manufactures especially those intended for distant markets. On examining the cost of marketing hand-loom products, the conclusion is irresistible that due to various causes the hand-loom is now at a very great disadvantage. Economy in respect of freight, purchasing and forwarding commissions, other agency charges, packing cost etc., which generally obtains in the case of mill manufactures is not secured in respect of hand-loom goods as they are produced on a small scale.

(iv) *Middlemen*

It is often stated that the existence of too many middlemen in the hand-loom trade between the consumer and the producer accounts for the high price of hand-loom goods and the low wages of weavers. It is desirable to avoid the dangers of this kind of generalisation. It is admitted that there is enormous waste which can be prevented to the advantage of both the weaver and the consumer; but one cannot expect things to be very much better under present circumstances of hand-loom production in India.

It is a common belief that the existence of many middlemen in the same stage of production and distribution will result in the free play of competition among themselves which in turn will reduce the cost of that service to a minimum. If, on the other hand, middlemen exist in successive stages of production and distribution, competition cannot be so very effective as to reduce the cost of their service to the lowest margin but it may result in the exploitation of workers and consumers. A careful survey of the marketing organisation in respect of hand-loom products shows that—

(1) there are many middlemen between the actual producer and the ultimate consumer.

(2) in towns such as Madras, Salem, Madura, Conjeevaram, the presence of a large number of merchants, middle-

men and master weavers results in competition among themselves avoiding exploitation of workers.

(3) in villages which are generally served by a single merchant or a group of middlemen and merchants, there is very little competition. The weavers have to accept the wages paid to them by merchants who give them work, or they have to starve. The consumers are similarly at the mercy of the merchants. Most of the weavers belong to this category.

(v) *Low turnover*

But from these facts one should not hastily conclude that there are too many middlemen and that the weavers are underpaid; that what is legitimate is withheld from them by the merchants; and the consumers are exploited by the middlemen. An analysis of the conditions of production and distribution shows that the cost of middlemens' service per unit of manufactures is generally greater in India than in Western countries, but yet the profits of the middlemen are anything but enviable. They make a miserable living as a rule. The explanation for this is not far to seek. A village pedlar can hardly sell 30 to 50 yards of cloth per day.[1] It

[1] Certain figures of cloth retail trade relating to India and the United States of America tabulated below are interesting :—

.....	U. S. A.	India.
Volume of cloth consumed (in million yards) ...	7,000	6,000
Population (in millions) ...	105·7	352
Area of the country (million sq. miles) ...	3·02	1·8
Number of dealers and retailers of cloth ...	46,250	335,000
Average area per retailer (sq. miles) ...	65	5·4
Average population served by each retailer.	2,284	938
Average daily sale per retailer (yards). ...	464	50

According to the recent census there are about 65,000 traders in textiles in the Madras Presidency. It means that the average daily sale per trader is about 25 yards, which is only about a twentieth of what it is in U. S. A. It is no wonder that the cost of retail trade is very high in India though the merchant hardly makes a living.

is evident that the ridiculously small average daily turnover of retail dealers, their impecunious circumstances and their difficulties of making a living account for the high rate of marketing cost in India, the low business morality of traders and the primitive state of the trade.

(vi) *Transport difficulties*

The causes which explain the low turn-over of the retailer in India are quite known. First, unlike the people in U.S.A. and other western countries, the Indian population is more scattered and lives in villages and hamlets distant from one another. Though the American retailer covers a large area, he deals with a highly urbanised population which facilitates the adoption of many economic methods of marketing. Secondly, the transport facilities in India are very poor both in mileage and quality.[1] The greater transport facilities in U.S.A. enable the traders to serve a larger area and population than it is possible for them here. Also the larger the turn-over per trader, the lower is the cost of marketing. Thirdly, the people in India are very poor and live on seasonal production. Naturally, therefore, no trade is possible except on credit. Credit sales mean high cost of collection and administration. Fourthly, credit facilities to the rural merchants in India are very dear and inadequate. The average rate of interest against security is seldom below 12 per cent.

(vii) *Other disadvantages of the hand-loom*

It may now be asked: 'The system of rural retail trade is the same both in respect of the hand-loom and the power-loom products. Then, why should the products of the hand-loom alone suffer?' The answer need not be laboured. First, the cost of the hand-loom product includes transport costs twice (i) for conveying the yarn from the mill to the hand-loom weavers and (ii) for conveying the manufactures from the weavers to the consumers. In hand-loom production

[1] The total mileage of all roads in India is 254, 127 including 70,127 of metalled roads and of rail roads about 42,000 ; while the corresponding figures for U. S. A. are 2,941,294 ; and 250,222 ; in India the inland waterways returns are not available. But the volume of the coasting trade is estimated to be five million short tons, while the inland water transport is almost negligible. In U. S. A., on the other hand, the annual freight carried exceeds 375 million short tons (excluding foreign trade).

yarn is produced in one place, cloth is made in another place and it is consumed in a third place, and all have to be linked by a number of middlemen. In the case of the power-looms no middlemen are necessary to secure yarn for weaving and no transport cost is incurred in bringing the yarn to the loom, for most mills in India have their own spinning departments. They enjoy another advantage over hand-looms. As the mills are well organised and bring large custom to the spinning and railway companies, they are in a position to bargain for special rates. The hand-loom weaver and the merchant dealing on a small scale have to send their goods invariably by railway parcel or by goods paying the general class rates which are much higher than the special rates quoted for export and port-to-port tariff for foreign goods and special rates for exports from Ahmedabad, Bombay, Sholapur, Nagpur, and other cotton manufacturing centres. No hand-loom weaving centre, however large, enjoys any such special treatment in respect of yarn imported into that area or of cloths exported therefrom. Also it deserves to be noted that both cotton yarn and cloth—irrespective of their value—are charged the same class freight.[1] Thirdly, the mills, by sole agencies and by offering special facilities to merchants, are able to effect a large sale on the basis of a small commission not exceeding 3 per cent. But the Salem merchant, for example, takes 2 annas per rupee. The turn-over of the hand-loom cloth dealer is very small and a high percentage of commission has to be charged. Also the hand-loom products, especially in the case of foreign exports, have to pass through the hands of several middlemen; they pass through a larger number of middlemen than power-loom products. Taking Ahmedabad cloth for instance, it is obtained by the sole selling agent at Madras who invariably has his branch office in

[1] Cotton piecegoods and cotton yarn and twist are placed in class six (railway risk) or class four (owner's risk). Therefore the railway rates work out at a higher percentage on value in the case of yarn. Also the rates work out at a higher percentage in the case of cheaper and coarse yarns.

The special rate for mill cloths from Ahmedabad to Madras inclusive of terminals etc. is Rs. 2-2-0 per maund while the waggon rate is still less. The ordinary goods rate is very nearly Rs. 5 while the parcel rate is over Rs. 9. It is necessary in fostering the hand-loom industry to give at least the same special treatment to hand-loom products as to mill products, if not more. The rates must be reduced if the yarn is imported for the use of the hand-loom, and also for hand-woven goods.

Madura, Calicut and Bezwada. The retailers, including the village hawkers, purchase from him and these convenient but large distributing centres render it possible to reduce the marketing cost. But in regard to the hand-loom cloth the yarn from the mill to the weaver and the cloth from the weaver to the ultimate consumer have to pass through many independent middlemen with the result that the cost of marketing service is very high. Unless the business is so organised that the daily turn-over per trader increases, that middleman service, wherever possible, is eliminated, and that mass handling of goods is effected, neither the hand-woven cloth can be cheapened in price nor can the status of the weaver be improved.

CHAPTER X

WEAVERS AND CO-OPERATION

'What makes all savage communities poor and feeble? The same cause which prevented the lions and tigers from long ago extirpating the race of men—incapacity of co-operation.'—J. S. MILL, *Civilisation.*

'There must be a very great improvement in the economic condition of the weaver if co-operative organisation can be formed. . . . . There is no extravagant fancy in a mental picture of a network of weaving societies throughout the Presidency, organised into central and wholesale societies which are closely in touch with yarn and cloth trade, can get the weaver his yarn cheap, can advise him what to weave, and can sell his cloth for him.'—F. R. HEMINGWAY, I.C.S., (*formerly Registrar of Co-operative Societies, Madras.*)

THE co-operative movement seeks to help weavers in three ways: (1) in providing easy credits to them and relieving them from their indebtedness to moneylenders, (2) in purchasing raw materials required for the industry at wholesale prices and selling them to members and in selling as agents the products manufactured by weaver-members, thus eliminating the profits of middlemen and (3) in organising producers' societies. An attempt was also made in this Presidency to finance the trade in hand-woven cloths by starting a sort of a loan and sale society for advancing loans to weavers on the security of their manufactures.

We shall examine in this chapter the actual achievements of co-operation in this presidency in these directions. The societies are classified under three heads: (1) Credit societies (2) Purchase, Purchase and Sale societies and (3) Production, Production and Sale societies.

The annual administration reports of the Registrar of Co-operative Societies indicate the lines of progress. They are now more informing but the changes in the classification of societies and the transfer of societies from one group to another render the reports less useful for purposes of comparative study.

I. THE CREDIT SOCIETIES

Credit societies exclusively for weavers are few. But there are some societies where weaver-members predominate. In the Administration Report of the Registrar of Co-operative Societies in the Madras Presidency for 1924-5, the number of

societies where more than 60 per cent of the members belong to weaving communities was for the first time separately stated. In 1930 there were 95 such societies in the Presidency. The following is a statement of the progress of these societies during the years 1926-30:

	1926-27	1927-28	1928-29	1929-30
No. of societies ...	66	76	86	95
	Rs.	Rs.	Rs.	Rs.
Paid-up-share capital ...	38,574	51,117	70,657	92,582
Reserve Fund ...	27,707	35,164	42,847	54,544
Working Capital ...	399,731	520,386	553,284	610,038
Cost of management ...	4,479	5,311	4,991	10,682
Net profit ...	6,297	6,974	12,649	15,051
Net loss ...	3,356	10,403	9,813	8,319

Thus there has been progress all round. There is an increase in the share capital, in the reserve fund, and in the working capital, and a reduction in the cost of management. But it is not clear how many and how much of the loan amounts are given to actual weavers and how far the weavers are benefited by them nor is the purpose of the loans stated.

Loans in credit societies are advanced to members against the security of property or on the surety of two other members. This being the case, it is not known how far these credit societies have really benefited the weavers who are proverbial for their poverty. It is often said that loans are given mostly to cloth merchants who employ weavers for manufacturing cloths they require. Most of the credit societies are on the limited liability basis. Loans are given for useful purposes as enunciated in the bye-laws. It will be interesting to know the amount and the number of loans granted to artisans for the purchase of raw materials and implements required for the industry, for purposes of trade and for the repayment of previous loans. But the annual reports do not contain any information on these points. The societies could not have helped the poorer weavers very much for the following reasons:—(1) they are controlled by cloth merchants

and well-to-do people against whose domination the societies seek to protect the poor weavers; (2) as many of the weavers have no security to offer they are no better off for being members of the society; (3) and again the borrowing capacities of members are fixed very low. Nor are the amounts of loans large enough to help them to any great extent. The 95 societies have a working capital of Rs. 6.2 lakhs i.e., Rs. 6,500 per society on an average, which is inadequate.

The credit societies are chiefly in the districts of Chingleput, Trichinopoly, Coimbatore and North Arcot. Of the 95 societies in the Presidency, 50 societies are in these four districts with a working capital of over 4½ lakhs and reserve fund of Rs. 57,000.[1]

The objects of these societies are not merely to pool the resources of the members to be utilised for loans to be disbursed among themselves for useful purposes but in some cases to act as the agent for the purchase of raw materials required for the members and for the sale of their finished products. Such transactions however are very few and no joint purchase or sale was made in 1926-27. In 1925 the societies in Coimbatore district effected joint purchase of raw materials to the extent of Rs. 43,735 and sold the finished products of members to the value of Rs. 1,711. But nothing is reported in the next year. The societies in Chingleput District sold the finished products of members to the extent of Rs. 2,871. But this purchase and sale activity of credit societies is very insignificant.

[1]CREDIT SOCIETIES. (WEAVERS) IN 1930-31

District	No. of Societies	Paid up Capital Rs.	Working Capital Rs.	Loans Rs.
North Arcot ...	11	20,049	1,05,726	Not available
Chingleput ...	14	22,620	1,41,752	
Trichinopoly ...	12	7,319	77,166	
Coimbatore ...	13	10,628	1,42,576	
Presidency Total ...	95	95,639	6,19,585	

II. Non-credit Society for purchase, sale and production

There are two classes of societies which are properly called weavers' societies: (1) Purchase, Purchase and Sale Societies and (2) Production, and Production and Sale Societies. Before 1925 they were classed together and in that year a distinction was made between societies primarily industrial and primarily trading.

There were 52 societies as reported in 1926-27 of which only 27 societies were of more than five years' standing. Others are of recent growth. It must be remembered that in the case of these societies, it is not their number that is important; but it is the period of the working and the extent of transactions of each society that can truly indicate the progress in co-operative enterprise.

There were 42 purchase and purchase and sale societies in the Presidency during 1927-28. Their working is far from satisfactory. 26 of them had transactions for less than Rs. 500 each. In 1930-31 there were only 28 societies; thus the number of societies of this class is falling. It is the societies in Madura district and in North Arcot district that work well. The Madura Sourashtra Society is easily the best, for it accounts for nearly 90 per cent of the total transactions in respect of raw materials purchased by this class of societies in the Presidency. The Sourashtra Society mainly purchases raw materials to be sold to members; while the North Arcot Society purchases raw materials to be sold to members and also sells the finished products of members to the public.

Value of Finished Products Purchased from Members and Sold to the Public

Year	Purchase and Sale of Raw products by N.A. Societies		Purchase and Sale of finished products by N.A. Societies		Purchase and Sale of all societies in the Presidency	
	Purchase	Sale	Purchase	Sale	Purchase	Sale
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1924-25	...	...	34,626	33.445	38,49S	41,494
1925-26	...	...	20,223	20,342	25,434	28,161
1926-27	7,240	9,160	15,088	12,365	18,304	15,461
1927-28	8,729	8,335	13,516	15,885	26,373	25,905
1928-29	7,080	9,634	14,907	16,139	105,667	116,752
1929-30	3,174	3,174	12,971	...	22,072	23,529
1930-31	not reported		3,384	2,723	45,208	37,324

The Madura Sourashtra Society.—This society was registered in Novermber, 1918 and the area of its operation was primarily confined to the Madura municipal limits. However, it has six member-societies which are situated in the Madura and Ramnad Districts. This is mainly a Purchase and Sale Society and it has been working with some measure of success for over ten years.

The object of the society is to improve the economic condition of weavers and dyers of Madura town. Its authorised capital is Rs. 1,00,000 while its paid-up share capital is Rs. 20,130. Ths borrowing power of the society is limited to five times the paid-up share capital plus the reserve fund. Each share is of the value of Rs. 10 and the individual maximum borrowing power is Rs. 1,000 while the maximum amount of loan per share is Rs. 25.

The main activity of the society is to purchase raw materials required and sell them to members. Other activities, of course, are secondary. The sale of raw materials to members is generally for cash but the society often sells them on credit, treating such sales as advances of loan. It functions as a credit society as well. But such transactions are small. The Society has a reserve fund of over Rs, 7,500 i.e. more than a third of its paid-up capital; and a common good fund of Rs. 983. There are four paid clerks in its establishment, two of them are paid Rs. 30 each and two others Rs. 15 each. The following statement shows the progress of the society during the last ten years (mainly purchase and sale of raw materials).

Year	No. of Members	Paid up share capital	Stock bought	Sale of Goods	Net Profit	Reserve Fund
		Rs.	Rs.	Rs.	Rs.	Rs.
1918-19	587	17,892	191,219	193,369	5,132	...
1919-20	659	19,252	70,673	74,887	972	4,454
1920-21	755	23,245	296,263	284,608	3,419	4,454
1921-22	779	23,824	265,769	278,354	4,533	5,038
1922-23	786	23,915	48,157	50,940	267	6,622
1923-24	781	23,917	118,699	127,813	358	7,062
1924-25	779	22,840	194,792	198,238	793	7,152
1925-26	716	21,884	193,005	186,653	301	7,152
1926-27	700	21,002	126,976	137,030	1,011	7,250
1927-28	684	20,322	99,121	97,520	not available.	

This society is not typical, but it is easily the best Purchase and Sale society in the Presidency. However, it is not such a great success as it should have been. In a town where there are more than 4,000 weaving families the number of members in the society is only a negligible fraction. Even this success of the society is firstly due to its enthusiastic panchayatdars who are intelligent and conscious of their part in the communal uplift. Secondly, the feeling of communal solidarity is also responsible for the success of the society. Thirdly, the presence of a large number of members congregated in a convenient area renders it possible to purchase and distribute yarn, dyes etc., required for the members without much extra cost. Fourthly, there is little opposition from vested interests. Fifthly, its large amount of transactions enables the society to employ paid clerks, etc.; and the introduction of payment for services, instead of honorary work (which is the cause of the want of enthusiasm in most co-operative societies) accounts for the success of this society.

The working of other societies in other districts is not satisfactory. In the first one or two years these societies seemed to work well but they soon fell on evil days. A study of the history of the societies for example in Coimbatore District will justify this remark. There are five Purchase and Sale Societies in the district. The number of members in each society is small and forms less than 10 per cent of the weaving population in the area of its operations. The following statement of the sale of goods to members and the value of stock bought by each of the societies for a period of four years shows the insignificance of their transactions and the decline in their working.

(a) VALUE OF THE SALE OF GOODS TO MEMBERS BY SOCIETIES IN COIMBATORE DISTRICT

	1923–24	1924–25	1925–26	1926–27
	Rs.	Rs.	Rs.	Rs.
Kollapalur	4,409	8,258	244	...
Kannanpalayam ...	3,603	...	...	2–10–0
Marianallur	4,049	...	4,371	...
Bavani	...	1,505	...	36

(*b*) VALUE OF STOCK BOUGHT BY THE SAME SOCIETIES

	1923-24	1924-25	1925-26	1926-27
	Rs.	Rs.	Rs.	Rs.
Kollapalur	5,552	7,298	...	...
Kannanpalayam ...	3,543	...	...	...
Marianallur	4,380	...	4,314	...
Bavani	...	1,565	35-8-0	no transactions reported.

Some of these societies combine credit transactions also. They advance short term loans to members for the purchase of yarn etc. The Bavani Carpet Weavers' Society advanced in 1924-25 loans to 38 members to the extent of Rs. 1,230 for a period not exceeding three months. The main cause of the decline in the business of the society was the fluctuations in the yarn market and the financial weakness of the society to face them. Besides they did not enable their members to be entirely independent of the money-lender, the cloth merchant or the middleman.

III. PRODUCTION AND SALE SOCIETIES

In 1924-25, there were only three weavers' societies of this class in the Presidency. Now there are reported to be 10 societies. The oldest society in this group was the Big Conjeevaram Weavers' Co-operative Union in Chingleput District which is now liquidated.

The distinguishing feature of the production and sale society is mainly in the method of the distribution of profits. Yarn is purchased by the society, the finance is provided by weaver and non-weaver members, yarn is converted into cloth by weaver-members for certain fixed wages, cloth is marketed by the society, and the net profit after allowing interest on capital, depreciation charges etc., and deducting the amount for reserve fund is *distributed to member-workers as a bonus on work done for the society*. In Conjeevaram there are many small weaver societies which were affiliated to the Big Conjeevaram Union. But such organised Weavers' Unions have not yet come into existence in other districts.

The following statement of the progress of Co-operative Production and Sale Societies in the Presidency exclusively for weavers speaks for itself :

PRODUCTION AND SALE SOCIETIES EXCLUSIVELY FOR WEAVERS

Year	No. of Societies	Value of raw materials purchased	Value of goods sold as owners	Value of goods of members sold for commission	Working Capital	Net Profit	Net Loss
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1924-25	3	581	425	1,056	7,786	...	771
1925-26	9	26,420	32,131	10,570	43,561	369	3,801
1926-27	10	22,581	26,456	2,471	47,580	556	4,205
1927-28	10	20,918	20,615	3,117	49,996	169	6,459
1928-29	10	21,020	22,543	nil	47,037	269	7,078
1929-30	5	nil	18	nil	15,416	1,019	2,776
1930-31	9	22,355	22,355	nil	34,143	126	4,265

N.B.—Of these ten societies 5 are in West Godaveri Dt., 3 in Anantapur, 1 in Chingleput and 1 in Kistna.

The increase in the number of societies in 1925-26 is due to the inclusion of societies which were formerly classed as Purchase and sale Societies. That explains also the increase in the volume of transactions in that year. It must be noted that the net loss of societies is greater than the net profits. This means that this class of societies is not working satisfactorily.

A study of the progress of the Big Conjeevaram Weavers' Union will also bear out this observation.

BIG CONJEEVARAM WEAVERS' SOCIETIES

Year	Working Capital	Value of goods		Cost of Management	Profit	Loss
		Bought	Sold			
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1910–11 ...	4,991	8,058	...	...	48	...
1911–12 ...	...	...	...	...	...	...
1920–21 ...	9,107	15,608	17,855	759	386	...
1921–22 ...	...	...	...	...	...	...
1922–23 ...	10,266	8,400	8,991	663	...	292
1923–24 ...	9,345	4,144	5,600	481	...	387
1924–25 ...	7,776	581	1,481	...	...	771
1925–26 ...	7,271	916	1,109	112	...	1,238
1926–27 ...	8,308	...	905	186	...	1,635
1927–28 ...	7,849	749	1,465	227	...	2,175

In 1910 there were 87 members and in 1921 there were 531. Of this, less than 25 per cent were bonafide weaver-members. In spite of the increase in the number of members the Union shows signs of languishing. During the last 6 years it was working at a loss, and the transaction per member was less than Rs. 5 per year though it combined credit with all kinds of non-credit transactions.

Thus, it is seen that the co-operative movement in the non-credit section has not made any headway. There are only 120 societies, including credit societies, connected with the hand-loom industry. Their working capital is less than Rs. 5 lakhs and the sum of loans advanced to weavers, the value of goods sold and the raw materials purchased all amount to Rs. 5 lakhs. This is insignificant when compared to the value of output in the hand-loom industry every year. The annual value of cotton hand-loom production in the presidency alone is estimated to be over Rs. 5 crores and the working capital of the co-operative societies represents hardly one per cent (even when the working capital of all societies of cotton, cumbli, silk and coir weavers is included).

Economic Benefit.—Inadequate as these forms of assistance are, the economic benefit derived by society-weavers is not

insignificant. There are cases where yarn is supplied at a price 15 per cent less than the market rate; where money is advanced ordinarily at 5 per cent less than the Sowcar's rate and better prices for manufactured goods are obtained by sale through co-operative societies. But the extent of this economic benefit derived by each society is not stated anywhere either in the Registrar's report or in the auditor's report or in the annual reports of the societies.[1]

Why the Progress of Societies is Unsatisfactory

Generally speaking it is the illiteracy and ignorance of members, the incompetence of panchayats, the insufficiency of finance and, in some cases, the active hostility of vested interests that are mainly responsible for the unsatisfactory progress of weavers' societies. There are certain special reasons for the failure of each class of societies which we shall now examine.

Credit Societies.—They are mainly on the limited liability basis. Though the amount of share capital which would entitle one to become a member is fixed low and is collected in easy instalments, the weavers generally have a hand-to-mouth existence and they can hardly save anything out of their earnings to enrol themselves as members. They are proverbially poor and the majority of them have no valuable security to offer and thus derive the benefit of co-operative credit. The co-operative ideal of helping the poor and the honest seldom obtains in practice. Also it is usual that these societies are controlled by local money-lenders and merchants and the bulk of the loans are monopolised by them. Besides, the procedure of the financing banks entails undue delay in making the loans available for primary societies for distribution and the weavers are driven in the meantime to money-lenders for immediate help.

[1] The economic benefit is ascertained in the case of credit societies, by the difference between the rates of interest charged by the co-operative society and the other agencies; in the case of purchase and sale societies, by the difference between the price at which raw materials are obtained from the co-operative society and the price at which the merchants generally sell them to weavers and the difference between the price at which the weavers themselves could sell their manufactures and the price which the co-operative societies could get; and in the case of producers' societies the difference between the aggregate earnings of the weaver-members including the wages and bonuses and the wages they would otherwise get by working for sowcars independently.

The main object of a credit society is to provide members with *easy and cheap credit* on *reasonable terms*, and give them *considerate treatment*. Money is required by a member for the purchase of yarn and other raw materials, to maintain himself and his family while cloths are being manufactured for the market, especially during the dull season, and to repay old debts. Credit is cheaper in the society. But it is not available in time nor to an adequate extent. The borrowing capacity of the society is fixed in proportion to the paid-up share capital and the reserve fund, and this limit is low and does not usually permit accommodation to all members without raising the share capital and the reserve of the society. The borrowing capacity of the society is not as high as to permit it to borrow enough money to meet all the requirements of members. The maximum limit must, of course, be fixed with reference to the security that the society can offer to the central bank; but it should not be too low. The Central European practice of not withdrawing the dividends payable to members from the society but adding them on to the share-capital of members and to the reserve fund is followed by some societies but the practice is not universal. This practice might be useful if followed by all societies and will ultimately increase their borrowing power.

The loans are generally distributed by the Panchayats at their own discretion. It is often made a question of patronage and it raises undesirable questions of caste and political prejudices which generally lead to the liquidation of societies.

The credit society is not popular with members for the reason that the society is unwilling to give more than one loan to one member. This naturally drives members to other agencies which often make exacting terms with members of co-operative societies.

It is unfortunate that there are many cases of overdue payments and default by members. This necessarily demands caution in giving loans. Loans to individuals are not generally granted in the light of their repaying capacity. In many cases the purposes for which the loans are taken are not really productive and it is but natural that there is default. The responsibility of the society should not cease with the sanction of the loans but it should see that such

loans are applied for the purpose for which they are intended and such purposes must usually be productive in character. Co-operation cannot work successfully unless it improves the moral stature and the social consciousness of members. The repaying capacity of the member must be determined by his earning and saving capacities.[1]

The Co-operative Purchase Society enables members by the elimination of profiteering middlemen to buy their requirements at reasonable prices. For the success of the

[1] In his Memorandum to the Textile Committee of the Madras Legislature in 1928, the Textile Expert examined the reasons for the failure of Weavers' Societies.

Most of the societies are organised on the limited liability principle which accounts for their financial weakness. The reasons for their failure are (1) the inability of the weavers to purchase even one share of the value of Rs. 10; (2) the unwillingness on the part of rich weavers to take a large number of shares, as dividends cannot be assured; (3) the borrowing capacity of a society is greatly restricted owing to the low security it can offer; (4) the necessity for borrowing elsewhere at high rate of interest; (5) malpractices of rich members, in many cases, well-to-do weaver merchants who happen to be members of the society take undue advantage of their status and appropriate the major portion of the raw materials procured by the societies, for their employees, leaving the poor weaver-members to shift for themselves as best as they can; (6) the comparatively higher wages paid to weaver-members than those given by sowcars to non-members and the consequent high price of cloth produced by members; (7) the lack of organisation for a regular disposal of the finished products.

And he suggested the following measures for their development:

1. Granting through Co-operative societies, advances to the poor weavers in the initial stages to the extent of the value of a share and recovering the amounts from the earnings of the weavers in small instalments.
2. Allowing credit for the society at low rates of interest;
3. Inducing rich weavers to take shares by guaranteeing payment of a reasonable dividend so that they may release the poor weavers employed by them to work in the society;
4. Instituting enquiries with a view to ascertain the real debt of the weaver-member and to arrange for the gradual repayment to the Sowcar of the Weaver's debt from the latter's earnings;
5. Arranging to grant small cash loans to weavers in case of necessity;
6. Advancing money at low rate of interest on the mortgage of stocks of cloth properly secured and insured;
7. Guranteeing against loss up to $\frac{1}{8}$ of the paid-up share capital of the society.

Other directions in which Weavers' Co-operative Societies can be assisted are also mentioned:

(*a*) Granting a sum of Rs. 5,000 a year to a private organisation which will have for its object the creation of a demand for the products of hand-loom weavers;
(*b*) Starting of yarn Banks;
(*c*) Removal of duty on imported yarn;
(*d*) Opening of spinning mills worked by Jail labour.
(*e*) Linking power preparatory processes with hand looms;
(*f*) Appointing a departmental officer to exercise close supervision of the working of all weavers' societies started in a particular district and to take interest in the sale of cloth.

Purchase Society it is necessary to have a large number of members, thereby enabling the purchase of articles at wholesale prices. Co-operative purchase is more successful than co-operative sale. However, the main difficulty in the Purchase Society is that it does not get the same trade commissions and facilities from wholesale dealers as private merchants do.

There are certain factors which militate against the successful working of the Purchase Society. First, the Co-operative Purchase Society does not usually sell to non-members. This naturally reduces the dealings of the society to small dimensions. But there are also difficulties in selling to non-members. Selling to non-members is not only contrary to true co-operative principles but there is difficulty also in anticipating the demand. Some Purchase Societies sell also to non-members and this is an innovation. Secondly, the co-operative society refuses to sell on credit to members. The local yarn dealers still command a large custom because they sell for credit and give timely accommodation to their customers. The rules of the societies are very inelastic in this respect. Any method of marketing to be successful must take into account the buying habit of the customers. The buying-for-credit habit of the weavers, (no matter what the disparity is between the cash and credit prices), and the strict adherence of societies to the principle of cash sales seem to be incompatible, and that accounts for the very small transactions of purchase societies. Thirdly, co-operative societies have but a very few brands of yarns, dyestuffs, etc., while the private merchant stocks a large variety allowing a wider range for choice.

However the conditions in weaving centres are favourable for the progress of Purchase Societies and their working on these lines. The requisites of success are that (1) there must be a large number of weavers in one centre which secures efficient, easy, and cheap distribution, (2) they must produce one or two varieties of cloth requiring a few varieties of yarn and other raw materials; for this will facilitate wholesale purchase and sale by societies, and (3) the weavers must belong to one caste or community which will strengthen the feeling of solidarity. These factors are present in many weaving centres in India. In most of the weaving centres the

weavers mostly belong to one community and they produce limited patterns of cloth which do not require a variety of raw materials. Also in many centres there are enough number of looms and weavers to work a Purchase Society successfully. What is wanted is human material with steady enthusiasm and loyalty of members.

The Co-operative Sales Societies are for securing the best markets for the finished products of their members. By co-operative sale members can get better prices for their manufactures again by the elimination of middlemen or by sale in the best market. Co-operative sales have not been so successful as co-operative purchase. Most of the Purchase and Sale Societies do mainly buying and only to a very small extent selling. The societies leave the selling or the marketing of members' goods to themselves and the main problem of the weaver being marketing and that being not properly tackled by the co-operative societies, they have not progressed very far. The weavers have still to depend on the local merchants and sowcars for the financing of the trade in their manufactures and the export of their cloth to distant markets. In 1929 a Marketing Officer of the grade of Sub-Deputy Registrar of Co-operative societies was appointed to organise production and sale on behalf of the Salem Weavers' Co-operative Society. The experiment has proved a success. He has standardised production, found market for manufactures in Madras and other places eliminating the costly and expensive services of the Salem Commission Chettis. This was highly commended by the Registrar of Co-operative Societies and the Economic Depression Enquiry Committee. But the Government put an end to this experiment as a measure of retrenchment. Generally the societies have not developed the marketing side of their activities. There are of course great difficulties in the way of the societies undertaking the marketing, e.g., absence of standardisation of cloths produced, lack of that personal interest of private merchants (the requisite for success in business), insufficient finance for developing the trade, and small production which does not attract the large capitalists and wholesale cloth dealers to the business.

The requisites of success for a sale society are: (1) The

finished products must be standardised in quality and the goods supplied must answer to the sample, (2) the society must be able to sell in large quantities, undertake forward contracts and perform timely deliveries, if it should attempt to push its articles through the ordinary trade channels, and (3) the society must have enough fund to finance the weavers when the market conditions demand the holding out of their manufactures. It would be a great step forward if the society develops a loan and sale function as well. It must also advance money to weavers against the security of their manufactures, say 50 per cent of their value for 6 months.

Co-operative ownership of expensive appliances: By this, expensive appliances which are not available to the individual workers are made accessible to them at a low cost. Nothing is done in this direction save that one of the societies in Conjeevaram has achieved a moderate success.

Co-operative production and sale society: Production societies are very few in number. And they have not worked satisfactorily either. The difficulty in organising successful weavers' society for production, purchase or sale is in part due to the inability of the society with little capital or credit to provide for the services of a man of sufficient business knowledge and experience of the market in yarns, dyes and cloth. A society for production and sale requires more capital than one for purchase and sale alone. The required capital cannot come from the weaver-members. Non-weavers do not invest much capital. Nor do rich weaver-members invest the necessary capital. The share capital is usually Rs 10 and in some cases Rs. 25. For a society of 100 members, to wit, producing ordinary grey cloth of 20s the minimum working capital required is Rs. 30,000 (when its annual turnover does not exceed Rs, 75,000) on the assumption that each member works for only 20 days in a month and earns 8 as. a day and that there is a stock of yarn required for three months' production and stock of cloth representing three months' output. The society can at best get Rs. 2,500 as the share capital if all shares are fully paid-up and a loan of five times the amount of share capital from the financing bank; thus its total working capital will amount to Rs. 15,000. This is absolutely inadequate and a crisis is often precipitated,

when there is a small glut in the cloth market or fluctuation in the prices of cloth and yarn. The weavers could not be given work and the weaver-members who depend on the society for work then naturally turn to private merchants for employment. It is in such cases that a Central Yarn and Cloth Bank will be useful. It can receive yarn and cloth from weavers' securities and advance loans to the weavers' society.

The trouble we meet in Production and Sale Society is the want of satisfactory arrangement for the disposal of its output. If we can secure the consumption market on a tangible basis, the organisation of producers' societies becomes a simple affair. Financing banks may be expected to give credit upto 70 per cent of the value of goods produced provided they are satisfied about the worth of the goods in the consumption market. The few Producers' Societies now in existence feel the inadequacy of the arrangement to secure the consumers' market. This is the cardinal point in the development of such societies. The Marketing Officer, appointed by the Government of Madras in Salem, had no special training in commercial organisation; yet he had secured the market in Madras and other places for the manufactures of Salem Weavers' Co-operative Society during the period of experiment. It is unfortunate that the Government should have decided to put an end to the post.

To sum up, the first requisite for the success of a Production and Sale Society is finance. Secondly, a man of good business experience and knowledge of the yarn and cloth and dye market must be secured. Thirdly, the necessary conditions for the successful marketing of cloth must be created, e.g., the cloth must be standardised, prices should be stabilised and standardised and proper marketing methods must be chosen. Fourthly, on the production side the regularity of employment of workers and standardisation of wages are necessary to ensure the loyalty of workers to the society and the utility of the society to weavers.

It is possible that better results might be obtained by the formation of strong central societies in important weaving centres, comprising individual share-holders who would put in substantial share capital (and some of whom should be men who have had experience in yarn and cloth trade) as

well as local primary societies for weavers. The bye-laws should permit the sale of raw materials to non-members. Such a scheme would probably go far to disarm the hostility of the local yarn dealers and might possibly solve the difficulty which certain weavers' societies find in marketing their cloth. The individual share-holders would supply not only the bulk of the capital as in the early stages of our district central banks, but also the initiative and business capacity required for the successful organisation and working of such a society.[1]

Yarn Depot at Itchapur, Ganjam District

A careful study of the working of the Itchapur yarn depot and weavers' co-operative society in Ganjam District organised mainly for the purpose of production and sale is very instructive. The society was started in November 1918. The Government opened a yarn depot which purchased the yarn and distributed it to weavers through the co-operative society. The society was managed by a Panchayat of weavers while the yarn depot was under the Director of Industries. The society was paid commission for the production of cloth and the weavers were given a fixed wage of Rs. 5 per bundle plus a bonus of one rupee per bundle when a weaver had woven three bundles for the society in one calendar month. Besides, they were entitled to the dividend if the society worked at a profit. The depot undertook the sale of the cloth in Madras and later in the local shandies. This experiment continued for a period of about 14 months; the price of yarn was fluctuating and fell from Rs. 16 to Rs. 7; cheaper cloths flooded the market and the society had an accumulation of stock manufactured when yarn prices were high. The object of the Government to help the weavers at the time when high prices ruled and to cheapen the price of cloth was achieved with the fall of the price of yarn to Rs. 7 per bundle. They then decided to close the depot. But, it must be noted, this is not because that the co-operative experiment was a failure. During the 14 months the society manufactured and sold cloth

[1] Report of the Registrar of Co-operative Societies, Madras, 1921-22, page 17.

to the value of Rs. 22,700 and distributed wages to weavers to the extent of Rs. 5,150 and earned a net profit of Rs. 1,660 after all establishment and contingency charges were paid.[1]

The Itchapur Experiment and its Lessons

The success of the Itchapur experiment, especially at a time of falling prices, was due to the co-ordination of the yarn depot and the weavers' co-operative society. The former purchased yarn, standardised the quality of the cloth and marketed it; while the latter distributed yarn to weaver-members and organised production. However there were certain defects in the organisation which rendered the working of the society difficult, if not impossible.

First, it was not possible to secure a decent initial capital and the society was started without any paid-up capital and hence the enterprise was financially very weak. This weakness naturally hastened the crisis when the market was unsteady and the demand for the cloth was very dull. The remedy seems to lie in the establishment of a bank which will advance money to the society on the security of cloths produced by the society. A loan and sale society would have obviated this difficulty.

Secondly, the panchayats took merely a nominal interest in the management of the society. The weavers themselves who had not the faintest idea of what co-operation meant practically regarded the depot which ran the whole show in the same way as sowcars employing them. It cannot be expected at their present stage of education that weavers will understand the full meaning and usefulness of co-operation and it would be impatience to expect a sudden and radical change in their outlook. 'Each for all and all for each' is yet the unrealised ideal, and social measures of this kind take firm hold only when they are tried patiently for years and, even then, the result will be imperceptibly slow. Experience alone will enable weavers to understand the value of co-operation and devices must be found to make the intelligent, the well-to-do and the educated members of the community take an extra interest in the management of the

[1] From the Correspondence of the Department of Industries, Madras.

society. Also co-operation is not mere charity but business, and the management, to be always efficient, must be rewarded for its labour.

Thirdly, the panchayat took no interest in the sale of cloth nor did the yarn depot concert any measure in order to instruct the society in the methods of pushing up the sale and of popularising its cloths. This is where the whole organisation was really weak. Neither the weavers nor the Government departmental officers were in any way acquainted with the cloth market. Formerly, the marketing function was performed by sowcars. When they discovered that the sales of society would prejudice their interest they stayed out. Moreover the depot in Itchapur produced a kind of cloth for consumption in Madras city which, because of its width, could not find a market there. The depot also ignored the market requirements and the buying habits of the people. It failed to adopt proper marketing methods. As the production was not on a large scale and as the cloth market was uncertain neither the consignment system nor the agency system of sale could be adopted with advantage. A business man was also found necessary to organise the sale.

Fourthly, there was no check on the vagaries of the weaver-members of the society and the society did not take any action against a weaver who absented himself for months during the busy season in order to work for the sowcar. Nor did it prohibit its members from accepting work from a private merchant which was detrimental to the interests of the society. The weavers preferred to work for the sowcar because he paid high wages during the busy season and accommodated them with advances etc., during times of need. On the other hand, the society adopted a fixed wage policy with deferred bonus for extra work done and this hardly appealed to those who believed that a bird in the hand was worth two in the bush. This is not all. The society in its anxiety to cheapen the price of cloth was giving lower wages to workers. It was noted by the then Director of Industries that the society-weaver was paid less than the weaver working for the sowcar, and it is no surprise that he deserted the society. The society was more anxious to cheapen the price of cloth than to pay competitive wages or to better the conditions of the weavers.

If only the society had sold the cloth for the best price, it could have earned greater profits and could have afforded to pay better wages to workers. A wooden policy aiming at lower wages and prices, irrespective of other circumstances, drove the workers from the society to the sowcar.

Further the society ignored the habits and needs of the weavers and failed to accommodate them. The weavers are usually under the obligation of the sowcars for having received the timely advances from them and they find the regulation application to get loans from co-operative societies not always possible to comply with. This leads to the secession of weavers from the society. No doubt rules and regulations cannot be dispensed with but there must be greater flexibility and less rigidity in the actual administration. What was wanting in the administration of the society was the human element.

Sixthly, the society was faced with the competition of the sowcars which, apart from the payment of temporary higher wages, took another form. The sowcars tampered with the quality of cloth. They asked the weavers to put in fewer ends and picks per inch than before and sold the cloth for a price very much less than that of the society's cloth. However, it was not a serious matter as the buyers differentiated the qualities and willingly paid a higher price for the cloth made by the society.

The chief cause, however, for the failure of the societies at Itchapur and Berhampore was that at the time when they were started the prices of yarn and cloth were abnormally high and this affected the elasticity of its demand. The large stock of yarn purchased at higher prices with which both the depot and the society were saddled rendered it impossible for them to compete with the merchant. The rapid fall in the prices of yarn led to the glutting of the local market with cheaper and inferior cloths and enabled the weaver to purchase his own yarn and to find a market for his own finished products as an independent worker.

Thus it is not so much the inherent weakness of co-operative organisation as the combination of some external circumstances and bad business that accounts for the failure of the Itchapur society. The Government hastily decided to close

down the yarn depot and allowed the society with little experience and with no intelligent guidance to drift for itself. An experiment in the right direction i.e. a co-operative society aided by the yarn and cloth depot (resembling almost the yarn bank) was well begun, but before it was tried for a sufficiently long time as to yield useful lessons, it was given up. The closing of the experiment, as it was expected, led to the collapse of the society. 'The closing down of the society will deprive the weavers of the means of bettering their conditions and profession'. 'If we close the society the weavers will in time to come, by a combination of circumstances, become chained to art which is daily sinking them in depths of destitution and from which they have no power to escape unaided'. In spite of these representations by successive Directors of Industries, the Government decided to close down the depot in 1920.

Co-operation :

The Basis of the Future Industrial Organization[1]

The object in reorganising the hand-loom industry is to benefit the cottage workers. And there is no better method of achieving that end than by organising them on a co-operative basis. For the industry is best fitted for co-operative effort. Where the products of an industry have a ready sale at a more or less fixed price, co-operative societies are difficult to work; and the advantages of co-operative sale in such cases are as a rule not very great. But where the market depends on a casual purchase, or is a fluctuating or seasonal one, most

[1] On the future of co-operation the *Encyclopædia Britannica* may well be quoted :—

'The underlying issues of the individual and the mass, the section and the whole, the class and the community form the real problem of co-operations' future. Avowedly neutral in religion and politics, the international movement does not regard itself as excluded from pursuing—although on a vaster scale—the original aim of co-operative community proposed by the co-operative fathers. How far is that aim practicable? It does not stand as a design of a theorist. To any friendly constant observer it must appear as arising from the social instincts of the masses. But amongst the masses themselves, there are multitudes bound to the co-operative movement only by self-interest, and monetary ties. To make economic democracy effective, the co-operators evidently need to find profounder means than those yet employed for arousing disinterested human enthusiasm. Furthermore, to have great effect in life's varied field, a movement must be complex as well as extensive. Conscious mass power is a new thing, tremendous and far-extending, but it is not everything. Individual and personal integrity and skill will not be submerged; the

of the workers are so largely in the hands of money-lenders, who take these risks and charge very high rates for doing so, that it is not easy to help them, unless an organisation can be set on foot large enough from the very beginning to finance stocks and arrange sales.[1] All this is true so far as the hand-loom industry is concerned. The main difficulty in the organisation of industrial societies which involved dealing on a large scale lies in buying and selling and in the absence of persons of intelligence and standing acquainted with the business whose interests are yet not necessarily opposed to the success of the scheme. The cloth merchants are directly interested in maintaining the weaver in his present state of bondage, while few persons have sufficient knowledge of the business and sufficient public spirit to be able to organise it with success. The service of experts in textile technology, in business and co-operation may be secured only when the whole hand-loom industry is organised on a really comprehensive and large scale. A single weaver or society of a small number of weavers cannot employ them. And what Mr. Hemingway said some few years ago is still true. 'There must be room for a very great improvement in the economic conditions of the weavers if co-operative organisation can be formed. Careful and calculated study of these trades will be necessary but the thing can be done and there is no extravagant fancy in a mental picture of a network of weaving societies throughout the Presidency organised into central and wholesale societies which are closely in touch with yarn and cloth trade, can get the weaver his yarn cheap, can advise him as to what to weave and can sell his cloth for him'.[2] Registrars of

side which enlists also this latter power will also be hard to defeat. As a free movement neither class-bound nor state-bound, co-operation appears to have before it a magnificent opportunity. Both producers' and consumers' co-operation present, it is urged by co-operators, a solution of the industrial problem by showing capital as a hired yet contented servant. Consumers' *co-operation further offers the outline of a new economic society in which the workshop is related to the home and economic surplus to human needs, and where industry begins to look to its human ends instead of simply to profits and money wages.* Whether the movement can lead a stubborn world decisively along this co-operative road, probably will depend more and more not only on its members but also on its power to enlist intelligence and develop in all ranks a leadership capable both of creating enthusiasm and producing every day conviction among the masses of mankind.

[1] Indian Industrial Commission Report.

[2] *The Co-operative Manual*, Madras.

Co-operative Societies and industrial leaders have often expressed their faith and hope in co-operation for the regeneration of the hand-loom and other small industries.[1]

The Producers' Co-operative Society in conjunction with a Central Weavers' Society and Bank will be the solution for the industrial problem by showing capital as hired yet contented servant. The co-operative producers' societies on a comprehensive scale as contemplated above will remedy the present exploitation of workers financially weak by a few persons ignorant of the work but expert in banking and will restore to the workers similar opportunities and incentive to do honest and decent work. Their ideal is that in one area the workers in one trade or craft should combine and, pledging the services or their credit in common, obtain the necessary premises, machinery, etc., that they should work in common and share profits in common and that they should control themselves through their own elected representatives. Whenever this has been tried the workers have improved enormously not only in health and prosperity but also in morals and self-respect.

The Registrar of Co-operative Societies of Bombay emphasises the importance of Production Societies :—'It is hoped and believed that there is no greater instrument for national regeneration, both in craftsmanship and morality, than the successful and the steady growth of the producers' societies. They bring hope and ideals to every worker and every worker's family, but they need carefully prepared ground and laborious education in co-operative principles and practice. The ultimate condition of success is therefore

[1]At a conference of the Assistant Registrars of Co-operative Societies held in October 1922, a resolution was passed urging the necessity for a strong central society for weavers. The resolution runs as follows :—

'The reasons for the comparatively slow progress of weavers' societies apparently are that the societies are too weak, both financially and otherwise, to meet the competition, sometimes unfair, of private individuals and firms, that the price of yarn fluctuates within such wide limits that it is difficult to secure the steady loyalty of members to the society in regard to the joint purchase of yarn they require and that there is difficulty in certain districts at least in regard to the marketing of the cloth produced. It is suggested that better results might perhaps be secured by the formation of strong central societies in important weaving centres, the members to comprise capitalists and merchants (some of whom should be yarn and cloth dealers) and also local primary societies for weavers. Sale of raw materials to non-members should also be permitted by the bye-laws.'

education—not necessarily education in the conventional three R's, but education in self-respect, self-control and higher ideals of co-operation'. Experience in other countries shows that co-operation of producers succeeds either where there is great intelligence and moral temperance among workers or where there still survives a strong communal feeling. There is a strong sense of communal unity among our weavers of various castes. There is ample evidence to show that our weavers are intelligent enough to understand the significance of changing conditions and value of new methods but intemperance is their sore point; it exists in varying degrees among different castes. The Kaikolars are noted for sobriety and producers, societies of Kaikolars may therefore succeed.

The knid of co-operative organisation suited to the hand-loom industry in India is thus sketched out by E. B. Havell :—[1]

'The principle of the Danish Co-operative system as applied to dairy farming is the combination of a number of small proprietors for sending their products to a central factory in which each of them has a share proportionate to the quantity of his contribution. In the management of the factory, each member has an absolutely equal voice, irrespective of his holdings. Adapting such a system to the Indian weaving industry each weaving community would have a central establishment and its own control which would arrange the purchase of materials at wholesale rates, prepare warps for the weavers' looms and organise the sale of the finished products. The actual weaving would be carried on as at present in weavers' houses by the master weavers and their apprentices. If a system of this kind would retain the economic advantages of the factory system and eliminate its many evils, it is obvious that *the factory owned and controlled by the weavers themselves and worked only for their advantage* is a very different thing to a factory controlled by capitalists only for the purpose of exploiting the labour of their employees'.

It is also necessary to secure the loyalty of weavers to co-operative societies. It would be desirable therefore to

East and West'.

obtain greater elasticity and variation in bye-laws in weavers' societies as in the matter of advance, management and repayment of loans. The introduction of provident fund rules will be a great step forward in this direction. The Registrar of Co-operative Societies, Bombay, has suggested that 1/50th of the wages of the first 20 years of employment and 1/100th of the wages for the next 10 years of employment should be given away to weaver-members of the production societies. This is highly commendable. It is conducive to continuity and regularity of employment and it also makes some provision for old age and this solves the difficult problem of social insurance of home workers.

Now it is true that the improvement of the status and condition of a million people who are apparently indifferent to their own improvement is not an easy task and the problem is one that must be solved by the Government in conjunction with the non-official Provincial Co-operative Federation, the primary society, and the financing central bank. At present these different agencies for the development of co-operation imagine to have conflicting duties and rights with the result a good thing fails. The Registrars of Co-operative Societies who are often recruited from the Indian Civil Service have shown ability and capacity for stern discipline which would be a virtue where administration is in confusion, but they lack initiative, imagination, human understanding and a living faith in the cause which are essentials of success of co-operation in its initial stage and of its expansion later. Civilians with judicial and revenue administrative experience but very little training in co-operative work are often shunted on to this department for a change or to suit some administrative convenience and are placed at the head of the department and no wonder they cannot and do not inspire the subordinate staff with the co-operative ideals. The non-official agency, while having a liberal creed, is often dominated by party politics which is ruinous to discipline and administrative efficiency. The individual society is lacking in practical understanding. Thus, as observed before, the wholesale importation of the principles of co-operative administration obtaining in countries, where conditions are very different, to India where the vast majority of the people are steeped in

ignorance and poverty is largely responsible for the slow progress of the co-operative movement. Especially the insistence on the principle of management of the society by members themselves must be modified. The function of the States does not stop with audit and financial control, but it must offer intelligent leadership and active financial support at the first instance. There is no need for conflict of rights among the State, the Co-operative Federation and the individiual society if they remember what is best administered is best and if they work on definite lines believing that there is no more powerful lever than co-operation to aid a people sunk in utter despair and poverty.[1]

[1] REPORT OF THE REGISTRAR OF CO-OPERATIVE SOCIETIES, MADRAS, 1929-30.

Nearly half the number of societies for hand-loom weavers were dormant. In dealing with the subject of forming co-operative societies for hand-loom weavers, as recommended by the Special Officer for the Survey of Cottage Industries, it was found *that attempts already made have proved a failure* as the societies always came into conflict with master weavers. The Textile Advisory Committee discussed these difficulties and considered the desirability of forming a *Central Weavers' Co-operative Society*. It was at first anticipated that through a central organisation weavers would get yarn cheap and reduce the number of middlemen between the handloom weaver and the ultimate purchaser to a minimum and that the weavers would then be enabled to get a larger share of the profits. The Government were informed of the financial assistance required from them and also of the extent of such assistance given by the *Governments of Bengal and the Punjab* to similar organisations working in these provinces. The Textile Advisory Committee after considering the scheme recommended that primary societies for weavers should be started and a *Central Society and Bank* organised for financing the primary societies and conducting the sale of their finished products. The Central organisation was also intended to arrange for the demonstration of the use of machine sized ready made warps and to popularise other improved preparatory processes and method of weaving. There was to be a business manager to study and collect information in regard to marketing of handloom products and make this information available to the weavers.

CHAPTER XI

THE PREPARATORY PROCESSES

'Preparation of warps for the handloom is the crux of the whole problem and unless material improvements are effected in the quality, regularity, and strength, combined with a reduction in the cost of producing them, the advantages gained by the general adoption of flyshuttle sley will be but slight, and progress in consequence but slow'—Sir Alfred Chatterton.

BEFORE weaving is begun the warp yarn is subjected to sepecial treatment called preparation of the warp, so that it can bear the strain involved in weaving. The term *preparatory processes* embraces winding, warping, sizing, beaming and drawing-in and piecing the threads together. In some cases, the warp yarn has to be doubled and twisted. The methods adopted by the hand-loom weaver in respect of each process will be described in this chapter.

Winding.—Yarn for the warp and the weft is usually wound by women and children of the weaver castes. Winding is done with the help of the charka and the cone (*Thiruvattam*). Weft yarn is chiefly wound on the shuttle pins; while warp yarn is wound on cones if peg-warping is employed, and on tin cylinders if the warping mill is adopted. The preparation of the warp yarn depends on the warping method followed. In the Madras Textile Institute and in some factories improved hand-driven bobbin winding machines are introduced. It may be noted in passing that the introduction of bobbin winding machines depends on the system of sizing and the length of the warp generally in vogue. With the present method of street sizing by women and short warps in use the necessity for any radical change in the present winding and reeling processes is not keenly felt. In the beginning of this century, some improved bobbin winding machines were placed in the market by Messrs. Butterworth & Dickinson but the results were unsatisfactory.[1] A careful comparison of the results of the working of the multiple pin and bobbin winders showed that the primitive method was faster

[1] Quoted by N. Subramania Iyer, *S. I. A. Journal*, p. 179.

and cheaper—the fact being that the imported machines were too heavy for manual labour. Even today in many hand-loom factories hand-driven bobbin machine is not employed.

Warping.—Warping is merely the laying of a number of threads in parallel order and equal in length and in number sufficient to make the required width of the cloth. It is the function of the warper therefore to provide a sufficient number of parallel threads for a web, all of equal length and to retain their parallelism. The efficiency of weaving depends on this and the uniform tension of all the warp threads. It is in the warping process that some improvement has been made by the Department of Industries. The early method of warping was to fix a number of sticks on the ground—the distance between the sticks on either extreme depending on the length of the warp—and to fasten the yarn to the first stick and then go on unreeling the yarn in the cone round the sticks until the last one is reached when the course is repeated backward. The warp is laid on an arrangement of sticks—the distance between each successive set of sticks is 3 to 4 ft. The whole idea of the arrangement is to produce a cross, called *lease,* between every pair of sticks whereby each successive thread is kept separate from its neighbours throughout its length and to prevent the threads from getting entangled. Warping is generally done by women and children. The defect of this system of warping is that only one thread is reeled at a time and before the required number of warp threads are laid the warper has to walk several miles. This is a very tedious process and can still be witnessed in a number of villages.

The first improvement made in the warping process is the elimination of this method of warping. In peg-warping, the same process is gone through—only instead of pegs fixed to the ground, there are pegs fixed to a wooden frame or to a wall. The advantage is that the work is done in-doors and the workers need not walk several miles.

The next improvement is the adoption of the warping mill where more than one thread can be reeled at a time. The warping mill consists of a horizontal or vertical reel made of bamboos or other wood on which the warp is wound round and a reel for the bobbins from which the yarn is reeled off.

The lease in these warps is formed by a separate device attached to it.

The Department of Industries, Madras, further improved the warping process by improving this mill. Here the lease is formed at only one end and this would do for warps of twisted yarns requiring no sizing and for warps already sized in hanks. But this will not suffice where sizing is done according to old methods. There must be leases at intervals, for which the present horizontal warping mill with pegs fixed on the circumference of the reel at intervals of a yard is best suited. This mill is now increasingly employed by weavers.

The advantages claimed for a warping mill are:

(i) it can produce warps, grey or coloured, in any length, with any number of ends;
(ii) the warp can be made up in convenient bundles with full particulars of yarn used;
(iii) the warp is placed within easy reach of the weaver at less cost than he can produce it himself and
(iv) it saves him much labour.

Wherever the warping mill has been introduced, warping is carried on as a specialised function by a separate group of artisans. The yarn is given to the warper by the weaver, and sometimes by the cloth merchant, either wound on bobbins or in hanks. The warper is paid piece-rates. Likewise in sizing. This division of labour is a step in the right direction.

Sizing is a more important process than warping. The cotton yarn has a rough surface and the fibres do not unite. If the yarn is used as it is, it cannot stand the strain and friction caused in weaving. Sizing fastens the fibres together. It is the application to the yarn of a starchy or glutinous composition which, passing between the loosely compacted filaments, causes them to adhere firmly together and thus the better to resist the strain and friction involved in the weaving operations.

The primary object of treating the warps with size is to make the yarn smoother and stronger by laying down the loose ends of the fibres that project from the main body of the threads, thereby enabling them to more effectually withstand the tensile strain and friction to which they are subjected

chiefly by the pulling action of the healds and the fingering action of the reed, shuttle and sley during weaving, together with as much retention of the natural elasticity combined in the yarn.[1]

There are two methods by which warps are sized by the hand-loom weaver. One is to size the yarn in hanks before warping and the other is to size the warp itself. The former practice is said to be in vogue in Bengal. But in Madras, warping precedes sizing; and when the elasticity of the yarn is to be preserved, the yarn is lightly sized before it is sent to the winder.

The Madras method of sizing.

In Madras the yarn is sized after the warp is stretched; for, it is claimed, that if sized yarn is sent to the winder, the size is pulled off in winding and warping and the warp loses much of its strength.

The warp wound on the sticks is stretched on two pegs in the street. The size applied is of a very simple composition. Broken rice or ragi with gingelly or some other oil is boiled and it is applied to the warp and carefully brushed over and over again in such a manner that the size permeates to the interior of the yarn and the warp threads are dried uniformly and prevented from sticking to one another by constantly manipulating the lease-rods.

The bulk of sizing is now done by women and that explains why short warps are prepared. In some places where longer warps are employed, sizing is done by a number of men on a co-operative basis. The characteristic of the Madras system of sizing is its elaborate brushing process. The finer the yarn, the greater the number of times the warp is brushed. The greater the number of times the warp is brushed, the better is the warp. The difference in the quality in the sized warps of different places in the Presidency is due mainly to the varying degree of attention paid to the several details connected with the processes such as wetting, boiling, oiling and so forth. The present method of sizing is accepted to be quite satisfactory in quality but the process is tedious and

[1] D. M. Amalsad : *Hand-loom weaving in the Madras Presidency.*

costly and wasteful. And it has been often pointed out that it is here the hand-loom is chiefly beaten by the power-loom.

Drawing-in and Twisting.—'Drawing-in' is the operation of passing warp threads through the eyes of the healds in a sequence determined by the nature of the pattern to be produced and the order of lifting the several parts. This is necessary only when the healds are brought to use on the looms for the first time. After the first warp is woven the warp ends are not taken out of the healds completely but cut, so that when a fresh warp is required to be woven, the ends of it are twisted to the cut ends of the old warp remaining in the set of healds and reeds and the new warp is drawn through the eyes of the healds and the reeds. This is a laborious process and it may continue to be so. The automatic device for drawing-in can be used with advantage; it can save two hours for each warp.

Beaming.—The process of beaming is little known to the country weaver. It has become important since the advent of the slasher sizer. The country sizer delivers the warp in the ball form. If any attempts were to be made in distributing power sized warps to the weaver and in introducing the weaver's beam which will give the warp the uniform tension, beaming will become more important.

The drawbacks of the present method of hand-sizing are: (1) it is extremely tedious; (2) it involves much time and labour; (3) only short warps can be sized and dried in the sun in the manner in which it is done; (4) excessive heat during the day or wet weather renders this process impossible; and (5) it is expensive in many localities where labour has to be paid for.

Mr. J. B. Clark compares the amount of human labour employed in the various processes of weaving in hand-loom and power-loom and shows that one person in the mill does what 195 persons are required to do in the preparation of the warp in the indigenous way while one power-loom weaver does the work of 16 weavers in the hand-loom.

The following table states the amount of human labour involved under respective systems of production; (1) power-loom, (2) hand-loom with fly shuttle sley and the country methods of winding, stick warping and street hand-sizing, and

(3) hand-loom with fly shuttle and weaver's beam and with hand-driven bobbin winding machine and hand sizing machine.

SPECIFICATION OF CLOTH 16s × 16s, 38″ 1440 ENDS, 36 PICKS 10500 YARDS

——	Power-loom.	Old hand-loom method (each Warp 25 yds.)	New hand-loom method (each Warp 100 yds.)
Winding	9 women	3,150 boys	250 (15 yds. per minute, 8 hrs. a day).
Warping, sizing and beaming ...	1 man 2 men	215 women	70
Drawing-in and twisting ...	2 men	210 men	52
Weft winding	20 women	2,992 men	230
Weaving	71 persons (1 weaver for two looms)	1,135 weavers	875 weavers
	105	7,744	1,477

Thus it is evident that the hand-loom is weak first in respect of winding for warp and weft, secondly in respect of warping and sizing. But it must be borne in mind that the application of cheap and labour-saving appliances and methods to hand weaving should in no way interfere with the quality of the warp; for, if they should, the reputation for durability which hand-woven cloths have long been enjoying would be lost altogether.

With this object in view, certain improvements were made in the method of sizing and many kinds of sizing plant were patented. Sir Alfred Chatterton thought that sizing in hand-loom weaving should be done on a scale as it was done in power-looms, and he thought the improved Yorkshire Dresser sizer was the nearest approach to the slasher sizer used in mills; for it could retain the merits of the hand sizing and secure the economies of the slasher sizer and offer the basis for the hand-loom de-organisation. The advantages claimed for the dresser sized warp, are stated and examined below[1] :—

[1] D. M. Amalsad in his Memorandum to the Textile Committee of the Madras Legislative Council has stated the case for the Dresser Sizer.

(*a*) 'The dresser sized warp enables a loom to be kept employed for 45 days at a stretch as against only four days in the case of a street sized warp of 40 or 50 yards'. This is a material advantage. It saves 3 to 4 hours per warp which means an increase of about 10 per cent in the efficiency of the weaver.

(*b*) 'While the street sized warps are sold in the rope form, the power dresser sized warps are supplied in uniform sheets which unwind automatically as weaving proceeds, thereby saving the weaver the laborious task of spreading the warp every two hours as is necessary in the case of street sized warps'. The extent to which power sized warps can be adopted is limited by the financial ability of the weaver. In the absence of co-operative effort or other means of financial assistance, the poor weaver cannot adopt the power sized warp, however advantageous it may be. The rope warp is at present suited to his work. He can change easily the pattern of the cloth, its width, its texture etc., as is desirable. Such things are not quite easy in long warps. They can be used only where mass production obtains.

(*c*) 'The use of the power sized warps increases the daily outturn of the weaver by 10 to 14 yards'. Each weaver can increase his outturn by about 20 to 25 per cent and this, along with the introduction of a second loom in his family, would enable him to earn more.

(*d*) 'The price at which power sized warps are sold (in the Institute) at present compares favourably with the price paid by individual weavers for street sized warps'. This advantage is perceptibly great in respect of very fine yarn, as may be seen from the statements of cost of preparation under different methods. (Vide Tables pp. 136-139). But the reputation of the hand sized warp is a factor to be encountered in any attempt at popularising machine sized warps. The experiment of the power dresser sizer carried out by the Department of Industries and by a private merchant in Godavari District has not proved successful. This does not however mean that a proper trial has been made and it would be unfair to condemn the dresser sizer as an economic failure.

(*e*) 'If a power dresser sizing machine is set up the weaver will be able to obtain a continuous supply of warps

throughout the year, whereas street sized warps are not available during the monsoon and during the occurrence of excessive heat or wet or windy weather when street sizing has to be suspended'. This advantage of the power sized warp can now be secured by the cottage sizing plants invented by Amalsad and by Bhavaram which require less initial outlay. The latter has been more successful.

(*f*) 'Street sized warps when spread out on the loom take up a larger space than the power sized warp beam which requires very little space and thus enables the weaver to have two looms in the space occupied'. This is no great advantage. Even now the weaver makes most economical use of space. What he loses in space he gains in capital investment. But he would certainly stand to gain by adopting the two-loom-system.

(*g*) 'The power dresser sizer enables the weaver to abandon the wasteful preparatory processes and to introduce a second loom in his family. As a result of increased production obtained by increasing the number of looms operated by a weaver's family, the cloths turned out can be sold at a somewhat cheaper price, the merchant being thus enabled to find a ready market for his products particularly in localities where cheap mill made goods enter into competition'. This is the chief argument for the introduction of the dresser sizer. The adoption of the two loom system is rendered possible by it. It can increase the earnings of the weaver's family and reduce the price of hand woven cloth thus enabling it to compete with the power-loom. The power sizer and the two-loom system are so closely connected that the successful revival of the hand-loom industry depends on the success of the sizing plant which avoids waste of time and energy and reduces the cost of production. The dresser sizer has been tried at the Madras Government Textile Institute and also in Godavari District by a private merchant, but its commercial possibilities have not as yet been proved beyond doubt. There are certain difficulties in its introduction. It is rather difficult to find 200 weavers manufacturing the same kind of cloth. If different kinds of warps are used, changes in the reeds etc., will involve a great loss of time and an increase in the cost

of preparation.[1] Also the reduction in the cost of preparation in the dresser sizer is not enough to drive the cottage sizers from the field of competition. The street sizing—especially where small warps are in use—is distinctly cheaper than the dresser sizing. But it must also be admitted that no honest experiment has been made in regard to the commercial possibility of the dresser sizer and the establishment of warp distributing centre.

Certain improvements in the sizing plant have been made during the last 20 years. Mr. Amalsad invented one which enables the sizer to make long warps in a limited space even during rainy reasons. It is driven by hand. It can turn out 4 warps of 240 yards × 500 ends of 20s every day, thus giving work enough for 24 weavers. The sizing plant is priced Rs. 1,500 and the working expense per pound is about 3 annas. However this sizing plant has not been a success. Except in the Textile Institute and large handloom factories nowhere is it in use. The causes of failure are firstly, it is believed that the hand-sized warp is superior to power-sized warp. Secondly, the initial cost is beyond the means of the weaver and the sizer. Thirdly, the use of the plant does not reduce the cost of sizing. Fourthly, facilities for extension of weaving by abandoning sizing where it is done by the weaver and his family are not present. Lastly, the weaver is poor and he cannot afford to invest so much capital in the purchase of long warps. There is no organisation to finance him. The cloth merchants are unwilling to finance him as the recovery of the loan would be difficult.

Another sizing plant was invented and worked by a Sourashtra, named Bavaram, in Madura. But it costs only Rs. 350. The machine requires the attention of 2 boys. About 800 yards of 240 threads are wound, warped and sized each day. It is sad to note that Mr. Bavaram had to close down his establishment as he could not have the required financial assistance from the Government for the preparation and sale of sized warps.

These hand-power sizing machines have not, however, become popular with the weavers. To be effective they must

[1] For every change in the warp, it takes nearly a day and a half to readjust the reeds etc.

be so constructed that they may be capable of carrying out all the under-mentioned operations continuously and at a uniform tension without throwing even the least strain on the yarn :[1]

(*a*) withdrawing the yarn from the warp beam,
(*b*) applying the size to the yarn uniformly,
(*c*) brushing the size,
(*d*) uniformly drying the yarn by blowing hot air on it,
(*e*) dividing and opening the yarn,
(*f*) applying oil to the yarn and
(*g*) providing leases.

All the cottage sizing appliances so far placed in the market do not carry out all the operations to the satisfaction of the weaver. Besides they are highly specialised, making the treatment of different kinds of yarn difficult and costly. Their initial cost is another factor which accounts for their unpopularity with the weaver.

The advantages of the improved sizing plant like the dresser sizer, Amalsad's sizing machine and Bavaram's warping and sizing mill, over the indigenous method of warping and sizing may be stated thus :

Indigenous Method	*Improved sizing plant*
1. The warp threads have no uniformity of tension.	1. The warp is uniformly sized and has regularity of tension.
2. Usually small warps not exceeding 30 yds. are prepared. So time is lost for every stoppage and joining of threads.	2. The time saved for each stoppage for piecing the warp threads is about 3 hours. In Bavaram's and Amalsad's usually the warp is 100 yards long ; and in the Dresser sizer it is 500 yards. The time saved for each warp is proportionate to the length of the warp.
3. In the indigenous method, the warp is sized in the ball form which has certain advantages and disadvantages as well. For every yard or two of the warp woven, the unwinding of the warp and the shifting of the lease rod are necessary in which some time is lost.	3. The warp is beamed and drawn through the healds and reeds and by a simple device the cloth can be wound on the beam and the warp can be unwound without much loss of time.
4. The cost of production is less than in the improved sizing plant where small warps are prepared. Small warps being quite common, street sizing is difficult to be replaced.	4. The cost of production is practically the same as in the indigenous process, perhaps a little less where long warps are prepared. But they are no practical proposition commercially where only short warps are required by the weaver.

[1] Correspondence of the Department of Industries, Madras.

The scope for the introduction of these improved sizing machines is at present very limited by the nature of the present hand-loom manufacture and the economic condition of the weaver and the weakness of the industrial organisation. So long as fashions favoured garment units the hand-loom prospered. But modern sartorial fashions depend on the tailor who requires piecegoods. Garment units may, therefore, be rapidly replaced by piecegoods in the production of which power-looms may easily claim an advantage over the hand-loom. Until the hand-loom captures the field of the power-loom and begins to manufacture piecegoods and not merely garment units, the adoption of the dresser sizer and other sizing plant cannot be an economic proposition. Even then the slasher sizer has an advantage over all the sizing plants including the power dresser sizer in respect of the cost of preparation. The object of further researches in cottage sizing should not be merely mechanical perfection but an appreciable reduction in the cost of preparation.

TABLE A.

Statement of the Cost of Preparatory Processes in Certain Weaving centres in the Presidency.

I. IN SALEM TOWN.

Rates for 20 hanks of grey or white.

———	20s	40s	60s	80s	100s
	Pies	Pies	Pies	Pies	Pies
Winding	4	4	4	4	6
Warping	4	4	4	4	6
Sizing including ingredients	28	24	20	28	42
	RS A P	RS A P	RS A P	RS A P	RS A P
Total cost per pound of yarn	0 3 0	0 5 4	0 7 0	0 12 0	1 6 6

II. IN RASIPURAM.

Rates for 20 hanks of colour yarn.

———	30s	40s	60s
	Pies	Pies	Pies
Windig ... ...*	6	6	6
Warping	8	9	12
Sizing	14	15	15
	RS A P	RS A P	RS A P
Cost per pound	0 3 6	0 5 0	0 8 3

III. IN MADURA AND NORTHERN CIRCARS.*

Place.	Count of yarn.	Winding.	Warping.	Sizing labour.	Sizing ingredients.	Total for 20 hanks.	Cost per lb.
		Pies	Pies	Pies	Pies	Pies	RS A P
Madura ...	20s	6	10	42	6	64	0 5 4
N. Circars...	,,	6	6	18	12	42	0 3 6
Madura ...	30s	6	10	42	6	64	0 8 0
N. Circars...	,,	6	6	18	12	42	0 5 3
Madura ...	60s	6	10	42	6	64	1 0 0
N. Circars...	,,	6	6	18	12	42	0 10 6
Madura ...	120s	12	10	48	6	76	2 7 0
N. Circars...	,,	6	6	21	6	39	1 3 6

*(Extracted from *Hand-loom Weaving in the Madras Presidency* by D. M. Amalsad.)

IV. IN MALLASAMUDRAM (Salem District).

Rates per 20 hanks.

	20s	40s
	Pies	Pies
Winding	3	3
Warping	3	3
Sizing	24	24
	RS A P	RS A P
Total per pound ...	0 2 6	0 5 0

TABLE B.

STATEMENT SHOWING THE ECONOMICS OF THE POWER DRESSER SIZER

Machinery : non-recurring cost.

	Rs.	A.
Winding machine, 200 spindles, warping machine, Dresser Sizer, Mixing beck, gearing, boiler, stores, erection including.	20,000	0

Recurring expenses monthly.

	Rs.	A.
1 Engine Driver	50	0
1 Fireman	25	0
1 Foreman for Sizing	60	0
1 Assistant sizer	40	0
1 Warp tender	25	0
Watchman and labour	20	0
Starch, oil and tallow	50	0
Fuel	200	0
10 Winders	100	0
Repairs and renewals	25	0
Rent of buildings	60	0
Depreciation on machinery at 5 per cent per annum ...	85	0
Interest at 4 per cent	65	0
Total per month ...	885	0

Production per month of 25 days : One hundred beams of 2,000 threads 20s 500 yards long each.

Net cost of production per lb of 20s : Re. 0 2 5 ps.

The reasonable price at which the warp can be sold is annas 3 per pound. The margin will be sufficient to cover charges of supervision, interest on working capital (which may be required to the extent of Rs. 10,000) and other contingent charges.

(*N.B.*—The estimated costs of preparation per pound of 30s, 40s, and 60s, and 80s are 4 annas, 6 annas, 10 annas and 16 annas respectively.)

TABLE C.

A Comparative Statement of the Economics of Amalsad's Hand Sizing Machine and the Street Sizing Method.

AMALSAD'S SIZING MACHINE

Price Rs. 1,500.

Production per day of 8 hours ... 4 warps each 240 yards long, 500 threads, 20s, can be made.

Cost of running for a month of 25 days as estimated by Amalsad.

	RS	A	P
House Rent	20	0	0
One turner	15	0	0
Two attenders at Rs. 20 each	40	0	0
Fuel	18	0	0
Size	9	0	0
Oil	3	0	0
Interest and depreciation at 12 per cent. ...	15	0	0
Repairs	5	0	0
Total ...	125	0	0

	RS	A	P		RS	A	A
Cost per day	5	0	0	Cost including winding charges	5	14	3
Cost per pound of 20s warp (warping and sizing only)	0	2	8	Cost per pound of 20s including winding, warpping and sizing ...	0	3	2

STREET SIZING METHOD.

	RS	A	P
Winding 570 hanks at 3 pies per 10 hanks	0	14	3
Warping 570 hanks at 5 pies per 10 hanks	1	7	9
Oil, fuel and starch at 3 pies for 10 hanks	0	14	3
Wages for 8 men for sizing	4	7	3
Total Cost of Winding, Warping and Sizing 28½ lbs of 20s. ...	7	11	6

	RS	A	P
Cost per pound of warp	0	4	4

The cost of street sizing is a little exaggerated. Reduction in cost is possible in respect of warping and sizing ingredients. Still the cost of preparation in Amalsad's sizing machine is much less than in the street sizing method even if we include 14½ annas as winding charges. The sizing plant can be worked more economically in villages where house rent will be almost nominal. The saving in labour is also considerable. Still, the Amalsad Hand Sizing plant has not replaced the street sizing method for reasons stated in the text.

CHAPTER XII

THE TECHNIQUE OF WEAVING

WEAVING embraces only one section of the textile industry; for, felted, plaited, netted, hoisery and lace fabrics lie outside this definition. The process of weaving consists in interlacing two or more series of flexible materials. Notwithstanding this limitation, woven fabrics are varied in texture and have an enormous range of applications in the modern civilised society.

Weaving Mechanism.[1]—The longitudinal threads of a fabric are called 'warp' and the transverse threads are called 'weft' or 'woof'. A loom for intersecting these several threads must provide for

(1) shedding i.e., raising and lowering the warp threads in a predetermined sequence so as to form two lines between which the weft may be passed;
(2) Picking or placing lines of weft between the divided warp;
(3) beating-up or striking each weft thread into its appointed position in the fabric;
(4) letting-off or holding the warp tense and delivering it as weaving proceeds;
(5) taking-up or drawing the cloths as manufactured;
(6) and for stretching the fabric widthwise in order to prevent the edge thread of the warp from injuring the reed and from breaking.

Besides these, the powerloom and all automatic looms must have mechanical contrivances to stop the loom when the weft breaks or is exhausted, or the warp is broken, or when the shuttle fails.

Shedding.—A hand-loom as used by the ordinary country weaver has all these simple devices. It has the warp coiled evenly on a beam (when the warp beam is used) or has the warp stretched on the lease rods and a part of it bundled

[1] Encyclopædia Britannica.

which is unwound whenever necessary. The warp thread passes, as weaving proceeds, alternately over and under two lease rods, then separately through the eyes of the shedding harness, in pairs between the dents of a reed and finally they are attached to a cloth roller. For small patterns healds are used to form sheds but for large ones a Jacquard or dobby or chain device is required. Healds are usually made of twine or of twine loops attaching to bamboo shafts. Usually from 2 to 12 healds are employed in South India and the threads will be drawn through the eyes in a predetermined order. The upper shafts are suspended from pulleys and the lower ones are attached to treadles placed near the floor. The weaver depresses the treadles with his feet in a sequence suited to the pattern and thus the shedding is formed for the shuttle to pass through.

Picking and Beating.—The reed is the instrument by which weft is beaten into position in the cloth and the shuttle places the weft in the warp. The reed also determines the closeness of the warp threads and guides a moving shuttle from side to side. The reed is usually made up of cane or strips of flattened wire. It is placed in the lower portion of a batten, which is suspended from the upper frame work of the loom. In front of the reed and immediately below the warp, the projecting batten forms a race for the shuttle to travel upon from side to side. When the fly shuttle is used, a small contrivance is in use which throws it between the divided warp and catches it at the opposite selvage.

Thus now a treadle is pressed down by one foot to form a shed, the batten is pushed back till a sufficient portion of the shed is brought in front of the reed and the depressed threads lie upon the shuttle; a clear way is thus provided for the shuttle. A quick movement of the fly shuttle device projects the shuttle from one box to the other. (This is Kay's invention). The batten is now drawn forward and the reed beats up the weft left by the shuttle. As the next thread is depressed to form another division of the warp for the return movement of the shuttle the last length of the weft is enwarped between intersecting warp threads and the remaining movements follow in regular succession.

The devices in the Indian hand-loom for holding the warp

tense and delivering it as weaving proceeds, and for drawing up the cloth as it is manufactured, are very simple. They are not automatic in most looms. The cloth is wound on a beam. The warp is bundled up. There is no uniform tension. Much time is usually lost in unwinding the warp and winding the cloth as weaving proceeds. A bamboo or a wooden stick with pointers at the end is all the device for keeping the width of the cloth fully stretched. As weaving is done, the weaver winds the cloth on the beam, unwinds the warp and stretches it and shifts the tension rod.

This is the ordinary mechanism for weaving; but large figured effects are usually produced in *draw-boy looms* where the warp threads are so controlled by separate strings that any assortment can be lifted when required. Therefore in weaving this kind of fabrics there is always a boy aiding the weaver in drawing the strings in the required sequence. But now the dobby and the Jacquard devices are taking the places of the loops,the pulleys and the draw-boy of the older shedding motions.

Between the primitive loom and the modern imported domestic hand-loom, there are many kinds of looms each differing in its construction and efficiency. Many improvements in weaving devices have been made during the last half a century to suit certain special needs. A brief study of them will be interesting.

The *pit-loom* is the most common in use in India. Formerly it was fitted with a throw shuttle irrespective of the kind of cloth it was intended to weave. But recently almost every pit-loom has been fitted with a flyshuttle. The pit-loom as found in the weaver's home is rather clumsy and primitive, but simple in its construction. The attempt to replace it by the frame-loom has not been quite successful, for it is claimed for the pit-loom, especially by weavers using very fine yarn, that (apart from the economy of space) it preserves favourable atmospheric conditions. The warp, being almost in level with the ground, enjoys the benefit of a greater humidity. Also the cost of the pit-loom is only half of the frame-loom and is decidedly cheaper and therefore is within the reach of all weavers. Its construction is simple. The village carpenter can make all repairs. In spite of the effort

to introduce frame-looms, improved and automatic looms, the pit-loom still persists, for the weaver is a hard-headed practical man. Sir P. T. Chetty, a weaver by caste and by profession, at the All-India Weaving Competition held in Madras in 1908 said: 'I am satisfied that the pit-loom with the flyshuttle arrangement attached will become the ideal loom and is bound to replace the ordinary country loom except of course in regard to the manufacture of solid bordered cloth. I have tried the Japanese, Churchill's, Raphael Bros.', Hattersley and Sayaji looms but the results have not been satisfactory'.

The Frame-loom.—One of the earliest improvements made by the Department of Industries for the mechanical perfection of the pit-loom (which was defective in certain respects) was the introduction of the frame-loom. It was then very little realised that all the improvement that is now made on the frame-loom can also be made on the pit-loom. The only advantage that the frame loom now enjoys is the facility it affords for shifting from place to place. Probably the seating position of the weaver in the frame-loom is a little more comfortable than it is in the pit-loom. All this is no material consideration. And it is not a matter to be regretted if the weavers are unwilling to replace their pit-loom by frame-loom provided they adopt the flyshuttle sley which can be fitted easily to a pit-loom at a small cost of Rs. 10. It must also be noted that the wooden frame-loom is not sufficiently strong to bear the heavy treadling operations of jacquard weaving; nor can mechanical power be used in driving frame-loom without disturbing the tension and the stability of the loom.

During the last fifty years, there has been continuous experiment carried on in regard to the improvement of the hand-loom. The superiority of the power-loom lies chiefly in the automatic synchronisation and proper sequence of the different weaving operations—shedding, picking, beating, taking-up—and this tends to the rapidity of production. Compared to the hand-loom, the power-loom regulates the force and maintains the proper tension of the warp. Improvement in this respect has been the object of the non-automatic improved looms. Under this category come the Nagpur loom, Churchill's loom, Serampur loom, Lord Ampthill loom. Other improved looms are partially or wholly automatic

and some of them can hardly deserve the name of hand-loom at all. The domestic looms of Raphael Brothers and Hattersley, the automatic looms patented by Capt. Maxwell, Mr. Tikkekar and Mr. Shukla are imitations of the power-loom. A brief statement of their merits and demerits will be instructive.

The Nagpur loom is a type of the ordinary frame-loom used in the Government Hand-loom Weaving Institute in Poona. There is no automatic action; it is not cheaper than the ordinary frame loom; its speciality is that the picking operation produces less noise. But this is no great advantage in increasing the efficiency of the loom. Perhaps the mental strain on the weaver may be less. The weaver may not be fatigued by the monotonous noise.

Churchill's loom.—Mr. Churchill who took out a patent in his name was a very enthusiastic worker of the American Mission at Ahmednagar. The chief advantage claimed for his loom by the inventor is that it combines some of the automatic actions of the power-loom without depending on mechanical power. Automatic looms intended to be driven by mechanical power are unsuited to the weedy Indian hand-loom weaver. A loom which can be operated by man-power and at the same time possesses certain merits of the power-loom was considered by him to be suitable to the conditions of the Indian weaver. In his loom picking, beating and taking-up are combined. Shedding is done by the weaver by pressing the treadle with his feet, and picking is effected by his hand. The rate of picking in this loom is a little more than in the ordinary flyshuttle loom, but the mechanism for timing the throw of the shuttle is defective. The warp thread often breaks because the sley has to be worked with a jerk. So the effective rate of picking is not appreciably greater. It is also found that it is not quite suited to the weaving of very fine cloths. It is now in use in certain weaving schools in Ahmednagar and Poona districts for weaving sheets and durries. Beyond that it is not in use.

There are three other looms which deserve a brief mention. Mr. E. B. Havell speaks very highly of the loom in the Weaving Institute of Serampur. The *Serampur loom,* as it is called, is an ordinary frame-loom with slight modifications.

A Sourashtra of Madura patented an improved loom, called *Ampthill loom*, but the commercial possibilities were never explored; nor could new improved devices be patented by him as the banks refused to finance him. But neither of these looms is much in use. In the Punjab certain looms, called the *Japanese looms*, were imported and worked for some time. But textile experts have unanimously condemned them as being absolutely unsuited for India. They were found working in Ludhiana by Sir A. Chatterton in the manufacture of very coarse cloth. It is said it is not very much in use even in Japan.

Automatic looms.—Among the automatic looms the *Domestic Loom of Hattersley* comes first. Messrs. Hattersley are manufacturers of textile machinery of long reputation in Lancashire. They have patented a loom almost on the model of the power-loom which is automatic in respect of picking, beating, taking-up and shedding etc., which is fitted with weft-stop motion and which can be manipulated both by mechanical and man power. It has about 350 parts. The Departments of Industries of some of the Provincial Governments in India and some industrial enthusiasts thinking that rapid mechanisation of handicrafts alone could bring about industrial revival, imported a number of Hattersley Domestic Looms for the rejuvenation of the hand-loom industry. Their attempt to introduce the heavy looms with iron frame work and complicated mechanism into India where conditions are different from Europe, where these looms are said to be successful, proved a failure. In the beginning of this century a number of looms were imported but almost everywhere except in Western India (Poona, Surat and Sangli) the loom was not popular. Even in the weaving institutes it is relegated to the museum. Its failure is due to (1) its high price, (2) its unsuitability to manufacture the kind of cloth that is usually woven on hand-looms in India out of the yarn generally available, (3) its great demand on human power and its unsuitability to the temperament of the hand-loom weaver, (4) its complicated mechanism, (5) the difficulty in replacing worn-out parts, (6) the absence of cheap power which alone can make the establishment of commercial units possible as it is found in Japan, Scandinavia and Wales and (7) the

unsuitability of the country warping and sizing methods. Though the rate of picking is great, the efficiency of this loom is greatly reduced by the too frequent snapping of warp threads.

In the Salem Hand-loom Factory it was tried but was found unsatisfactory. The loom was far too heavy for the native weaver. It is satisfactory if driven by mechanical power but when the source of power is the weaver, the supply is irregular even if two weavers work; and the results are unsatisfactory.[1]

In regard to the suitability of the Hattersley Domestic Loom to Indian conditions, the controversy between Sir A. Chatterton and E. B. Havell is interesting. The latter makes a very spirited defence of this loom which was severely criticised as the 'dilettantism of the artists' by Chatterton:

'Though Mr. Chatterton has condemned off-hand Messrs. Hattersley's looms as being too heavy and complicated for the weaver, the fact remains that they have been already successfully used in a hand-loom factory in Ganjam and many other places. They have been fitted up and repaired by an ordinary village blacksmith and worked by an ordinary weaver . . . . . Messrs. Hattersley have made a number of hand-looms for Roumania and have revived the hand-loom weaving in the Balkan States. They have studied all the technique and local conditions under which the hand weaving in India is now carried on and have placed their manufacture on the market. A number of looms have also been imported every year for hand-loom factories. They have now overcome the difficulty of beaming and sizing warps by hand with their latest hand power beaming and slasher sizing machines designed for an output of about 50 hand-looms. These are two of the most difficult technical problems connected with Indian hand weaving. The beaming machine is for putting yarn on to the warper's beam direct from the warping bobbins by hand and the sizing machine is for sizing yarn as it passes from the warper's beam on to the loom

[1] Sir A. Chatterton.

beam. Messrs. Hattersley have produced a simple and excellent warping mill and reel, weft winder, warping bobbin, pirn winder and also special looms for weaving heavy fabrics, silk, woollen, linen etc'.[1]

In spite of this application of great scientific and mechanical knowledge to the hand-loom weaving by Messrs. Hattersley, it is significant to note that very few looms have been imported and many of them remain idle.[2] They are not at present employed on any large scale even where hand-loom factories are established. Evidently they can become commercial units not as hand-looms but as power looms driven by mechanical power such as electricity or oil engines. In Roumania, Scandinavia, and Japan they are extensively in use because power is cheap. Till electrical and mechanical power becomes very cheap the hope of introducing these looms cannot be realised. There are other questions as facilities of finance and marketing before the weaver can be expected to adopt this loom which requires more capital. It must also be remembered that even when they are introduced it can hardly be claimed that they would revive the hand-loom industry and solve the unemployment problem but it would tend towards the dispersion of the factories and the establishment of smaller weaving units which would avoid the conflict between capital and labour and all the evils of the factory system and urban overcrowding.[3]

[1] E. B. Havell: *Artistic and Industrial Revival in India*, pp. 186–188.

[2] The writer is told that there are about 2000 Hattersley looms working in Surat where they are driven by hand. But in Poona Sangli and also in Bangalore, where they are in use, they are driven by mechanical power. But in such cases, they can hardly be called hand-looms. The writer understands that if electric power is employed even one loom can constitute a commercial unit; but when power is generated by an oil engine 3 to 4 looms will be necessary to make an efficient unit.

[3] Sir A. Chatterton was not alone in condemning the Hattersley loom: W. A. Beardsell of Messrs. Beardsell & Co., Madras, in his evidence to the Indian Industrial Commission says: 'We imported a loom called the Hattersley, about six of them. The loom was operated by the feet. . . . . We are told that it had worked very successfully in several countries in the Continent. The speed was from 200 to 250 picks per minute. Our experiment with the loom was not successful. The difficulty we experienced was that the loom was very much heavier to work than the country loom and there is a greater strain on the yarn used. We experienced constant breakages and eventually gave up any idea of making use of the looms which were finally handed over to the Industries Department.'

I. STATEMENT SHOWING THE COMPARATIVE COST, RECURRING EXPENSES AND EFFICIENCY OF DIFFERENT HAND-LOOMS IN USE.

Name of the loom	Cost	Annual recurring cost	Average daily outturn for 8 hrs[1].	Average effective picking per minute.	Average rate of picking per minute.	Ideal Rate of picking at competitions	Maximum count of yarn that can be used.
	Rs	Rs	Yds.				
(1) Pitloom with throw shuttle.	20	...	3 to 4	15	30	50-60	any counts
(2) Pitloom with fly shuttle.	25	...	5 to 6	25	60	80-100	80s single
(3) Frame loom with fly shuttte.	30-45	...	5 to 6	25	60	80-100	80s single
(4) Nagpur loom ...	45	5	5 to 6	25	45	80-100	80s single
(5) Salvation army .	100	10	5 to 6	25	45	50-60	only double yarns
(6) Churchill's loom	80	8	7	30	45	60-70	Do.
(7) Koshti kalyan loom.	80	8	7	30	45	60-70	Do.
(8) Gomati loom ...	150	15	8	35	75	80-100	Do.
(9) Hattersley 50" width.	375	...	16	60	60-80	90-100	any yarn
(10) —Do.— driven by mechanical power.	...	...	27	100	140-160	180-200	any yarn

II. STATEMENT SHOWING THE COST AND EFFICIENCY OF CERTAIN APPLIANCES USED IN PREPARATORY PROCESSES.

Name of the plant	Price	Number of workers required.	Outturn per day of 8 hours.
(1) Country warping mill ...			
(2) Vertical warp mill with slide lease mechanism.	Rs. 75	one	100 yds. of 2000 ends of 20s.
(3) Winding for warp and weft ...			
(*a*) on charka ...	Rs. 2	one	5 to 6 lbs. of 20s.
(*b*) on hand-driven winding machine with six bobbins.	Rs. 250	one	30 to 60 lbs. of 20s.
(4) Doubling machine ...	Rs. 150	one	24 lbs.
(5) Weaver's beam with one drum.	Rs. 75	one	250 yds.
(6) Weaver's beam with three drums.	Rs. 150	one	Used for different counts and coloured warps 150—200 yds.

The *Automatic Domestic loom of Messrs. Raphael Bros.*, like Hattersley's, is for all intents and purposes a powerloom and so its defects become pronounced when worked as a hand-

[1] The daily outturn is based on the assumption that 40s grey yarns are used for warp and weft and that the width of the cloth is 50" and that the number of picks per inch is from 52 to 56.

loom. Sir P. T. Chetty got one which was tried by Sir Alfred Chatterton in Tondiarpet factory. It was found much too hard to work for the undeveloped feet of the weaver. It was made of cast iron and so its parts were often easily broken. It was also found that it could be a commercial proposition only, if it were worked in a small factory with a number of other looms driven by mechanical power. It is now realised that a power-loom converted into a hand-loom is an unsatisfactory machine owing to the irregularities in the driving force.

Both Hattersley and Raphael looms being found unsuited to Indian conditions, certain new inventions, embodying the virtues of the automatic loom but at the same time not depending on mechanical power were made. These improved looms are the Salvation Army loom, Koshti Kalyan loom and Gomati loom. All of them are partly or wholly automatic. Capt. Maxwell was the inventor of the *Salvation Army loom*. Its peculiarity is that picking is automatic depending on the movement of the sley; so the rate of picking is great; but the sley works with a jerk as the power applied to it is irregular and the efficiency, therefore, suffers. The loom works satisfactorily on coarse yarn but is found unsuitable for fine counts. The *Gomati Patent loom* can weave up to 20os. It is mainly made of wood on the same principle as the Hattersley loom without so much of complicated mechanism. It was invented by one Mr. Shukla who was an ordinary labourer in an Ahmedabad mill. He has received no special education. It is automatic in respect of picking, beating, letting-off, taking-up and shedding, but it has no device for stopping the loom when the weft or the warp thread is broken. It differs from Hattersley's in that it has the underpicking mechanism. The patent was taken out last year. Mr. Shukla himself is employing about six looms which are worked by ordinary labourers. The *Koshti Kalyan* loom patented by Mr. Tikkekar is different from Shukla's loom chiefly in respect of driving power. It has not, however been adopted elsewhere. There are certain defects in the loom which must be removed. As the driving power is applied from one of the sides of the loom, it is not possible for the weaver to supervise the whole warp when weaving proceeds. Being made of wood it is

shaky; and there is no mechanism for keeping the warp in tension. There are no proper *temples*.

A new loom was recently invented by Mr. N. Banerji of the Government Central Weaving Institute, Amritsar. It is called the *Double Production loom* where two warps are woven at the same time. The object of it is to increase the outturn of the weaver and consequently his purchasing power. Two cloths are simultaneously made one over the other. The mechanism of the loom is also said to be simple. It consists of a double production loom and a sley frame having combined sley-races with boxes on each side one above the other. The botton sley race is fixed to the sley frame and the top sley race is moveable when required. Shuttle boxes are fixed on each side of the sley races and the upper box has a spindle; a common picker works for both boxes sliding on the spindle. The picking is done with one hand and the sley moved by the other, so that weaving is continuous. The warps are drawn through rows of eyes in a common heald-shaft and are connected and operated by treadles which also rotate separate cloth beams. The loom can easily be manipulated by hands and feet. Also it can be fitted with a dobby or Jacquard machine. Winding of cloth on beams is automatically done and consequently the number of picks is uniformly inserted into the cloths throughout. The number of picks per inch can be increased or decreased as required by adjusting the connecting rod. A mirror is placed on the left side of the loom which helps the bottom cloth as well as the bottom warp threads to be seen clearly as the warp images on the mirror and the worker can easily detect if any thread is broken. The price of the loom varies from Rs. 60 to Rs. 100.[1]

Attempts to popularise the automatic looms have not succeeded. About 2000 narrow Hattersley domestic looms are said to be working in Gujarat. Domestic looms have also been recently installed in Bangalore and Poona driven by electricity, and in Sangli by oil engines. Other types of looms are also found working in certain centres; but their number

[1] Taken from the pamphlet issued by the inventor.

is negligible. The most common loom is the country loom fitted with flyshuttle sley and dobby. Their popularity is due to their cost being low and so within the reach of the weaver, and to their serviceableness in weaving cotton cloths of counts upto 150s and in weaving silk goods even at 50 picks per minute. Besides, they are light and easy to handle yet sufficiently strong for making cloths of medium weight; they can be fixed to the existing frames in the weaver's home and they enable the weaving of wider cloths which is difficult in the throw shuttle loom.

Besides these looms certain improvements in the weaving appliances have also been made mainly by the efforts of the Provincial Department of Industries. First comes the flyshuttle sley which has doubled the production in coarse counts and has increased it by 50 per cent and 25 per cent in the case of medium and fine counts respectively. Hand-power machinery for winding, warping, doubling, sizing and beaming have been evolved. Excepting the sizing machinery others are now slowly adopted by weavers. Multiple-box sleys for weaving cloths requiring different coloured wefts, tape sleys for weaving a number of tapes at a time, swivel sleys for producing figured-spot effect in fabrics, and jacquard machines for speeding-up production of richly embroidered cloths have also been introduced. But due to their cost the jacquard machines are not commonly employed by hand-loom weavers; but small ones made in the country for weaving figured *dhoties* and *angavastrams* are now becoming popular with them.

The economies effected by several improvements made in the weaving appliances that are now generally adopted by weavers may be stated thus: (1) the flyshuttle sley has increased production by 25 to 100 per cent; (2) the dobby has dispensed with the draw-boy and avoids the employment of children; (3) the jacquard harness saves a great deal of labour. For example, it takes twelve days for a man to lace up the threads, while in the country chain harness the same work requires 24 days for a man and a boy. For weaving a particular design it takes for a man $5\frac{1}{2}$ days in a loom fitted with a jacquard harness while in a loom with the country harness it can be done by one man and one boy in ten days.

Still there is ample scope for the improvement of the weaving appliances. The direction in which further development of the hand-loom may profitably take place lies in increasing the outturn per loom. At present the effective number of picking is only a third of the ideal number of picks. This can, of course, be improved if better qualities of yarn are obtained for hand-looms than what are at present available. Still the time now lost in mending warps and filling and changing shuttles is considerable and if these are done while the loom is working without an appreciable increase in the price of the loom, its efficiency can greatly be increased. Further lines of development of the mechanism of the loom which can be pursued with advantage are: (1) its speed must be increased approximately to that of the power-loom; (evidently this depends on the weaver himself when mechanical power is not employed) (2) the loom must be adaptable to all ordinary widths and fineness of cloth; and (3) a solid-bordered sley must be evolved; for, this would help the weaver most.

In improving the mechanism of the hand-loom or in introducing labour-aiding appliances certain conditions must be satisfied, the failure of which accounts for their not being adopted by weavers. They must be cheap so as to be acceptable to weavers. They must be capable of being manipulated by man-power, which, fortunately or unfortunately, will remain in India for a long time to come cheaper than mechanical power. They must be capable of being manufactured in the country itself so that the labour displaced by their introduction may be absorbed to some extent in their manufacture. They must have some economic advantage over the country plant if their introduction is to be successful. In short, these appliances and improvements in the mechanism of the loom to be serviceable must be simple in construction, cheap i.e. within the reach of the poor weavers, durable in proportion to cost, reliable under prolonged trial, easy to repair and capable of satisfactory erection in the homes of weavers.

CHAPTER XIII

The State and the Hand-loom Industry

Early attempts made to improve the cotton hand-loom weaving in the Madras Presidency

The rapidly declining economic condition of the weaver during the nineteenth century as a result of mill competition attracted the attention of the Madras Government. But till 1900 all that Government had done for the hand-loom industry —nay, for all cottage industries,—was to revive the artistic aspect of the industry rather than to improve its mechanical equipment or organisation. It hardly realised, in its blind faith in the mechanisation of industry, that the rejuvenation of artistic industries and luxury arts could touch only the fringes of the problem of industrial development, and that the proper method would lie in the revival and development of indigenous useful arts.

In 1900 Mr. Alfred Chatterton was placed on special duty to study the condition of the weaving industry and to suggest remedial measures for the amelioration of the condition of weavers who were hard hit by power-loom competition. As a result of his report, the hand-loom weaving section was opened in 1901 and experiments were conducted in the School of Arts and Crafts, Madras, with flyshuttle looms capable of producing a greater output of cloth than the country hand-thrown-shuttle loom. After a few years of experiment, the department made certain unsuccessful attempts to induce the weavers to leave their homes in order to receive free training in the working of improved looms including the imported automatic domestic looms. Weaving competitions and practical examinations in flyshuttle weaving were then held among the weavers and prizes were awarded with a view to stimulate their interest. As even these steps did not induce them to come forward to learn the improved methods of weaving and as the belief that the factory organisation of the hand-loom weaving could alone bring about its ultimate prosperity was gaining ground, the department started in 1906 a weaving factory in Salem and endeavoured to get local weavers to work therein. The factory worked for five years but it failed in its main objects of introducing the

imported domestic looms among the weavers and of attracting hereditary weavers to the factory. As it was then recognised that the preparation of yarn was the crux of the problem of hand-loom weaving, the department turned its attention to the improvement of the several processes preliminary to weaving. Some efforts were made in Salem factory to improve upon the crude and costly traditional methods of sizing cotton yarns. Also an attempt was made to obtain the economies of the slasher sizer by introducing power sizing of warps required for hand-looms. Power driven machinery was ordered for sizing yarns in skeins. Now the imported looms proved to be unsatisfactory and they had to be scrapped. The department now realized that the future of the industry lay not so much in the wholesale importation of Western methods and ideas but in the improvement of the indigenous processes. As mechanical sizing could not be replaced by any ingenious device which could be operated by hand, it had to be given up altogether and attention was then turned to the introduction of hand-driven warping mills of the types used in European countries to replace the second of the preparatory processes viz. the peg or stick warping which was in vogue. Further work on these lines was however cut short owing to the change in the Government's industrial policy. As a result of it the Salem factory was closed. Mr. Chatterton was then made the Superintendent of Industrial Education working under the Director of Public Instruction and he was not to 'demonstrate commercially by the establishment of factories the merits of new industries and new processes'.[1]

[1] These are the words used in Government Dispatches. The Secretary of State for India by his Dispatch of 29th July 1910 made short work of the resolutions of the Industrial Conference requesting the Government to actively assist in the industrial development of the country and to have a comprehensive programme of economic development, to control education, to pioneer new industries, to improve industrial processes, to establish a bureau of industrial information and an industrial museum, to render financial assistance to industries directly and indirectly, to provide expert advice by appointing textile, dyeing, tanning and other experts and to organise a Department of Industries under a Director of Industries. The Dispatch of the Secretary of State observed, ' the utility of State effort in these directions, unless it is strictly limited to industrial instruction and avoids the semblance of a commercial venture is doubtful ' . . . . . ' The policy which I am prepared to sanction is that State funds may be expended upon familiarising the people with such improvements in the methods of production as the modern science and the practice of European countries can suggest ; further than this the State should not go and it must be left to private enterprise to demonstrate that the improvements can be adopted with commercial advantage.'

Thus tragically and prematurely terminated a beginning well made of good intention and sound policy.

However, when in 1913 Government revised its policy and transferred the control of the weaving section from the Revenue Department to the Director of Public Instruction, it was decided that the best way to convince the weaver of the efficiency of the fly-shuttle sley was by demonstrating it at his very door and accordingly the Educational Department organised a peripatetic party for work in the southern districts of the Presidency. As this proved a success a second party was started in the following year for work in the Northern Circars. Meanwhile the control of this branch was transferred from the Department of Public Instruction to the then newly formed Department of Industries. Later on a Textile Institute was established in Madura and a building was constructed at a cost of nearly a lakh of rupees in the hope of affording instruction to weavers and dyers from all parts of the Presidency in improved methods of weaving and dyeing; but as the building subsequently proved to be ill-designed and unsuitable for the purpose of the Institute, it was finally given up. By the outbreak of the War further work was hampered. Thus during this period all that was done by the the Madras Government towards the technical improvement of this industry was the introduction among weavers of flyshuttle sleys which increased their production. But owing to the absence of facilities for marketing their goods, the weavers usually worked for shorter hours and failed to have the full advantage of increased production. Thus their economic condition after twenty years remained practically the same. In the direction of education and propaganda Government conducted certain weaving schools, organised peripatetic parties and in the field of co-operation started co-operative societies for weavers, both credit and non-credit. Beyond that very little was done by the State and this was due to the lack of a definite industrial policy.

But with the War and the Reforms came a change in the attitude of the Government of India towards industries and economic development of the country. It was thereafter to play a positive rôle in the industrial development. The Department of Industries was strengthened. The Director of

Industries now recognised the magnitude of the hand-loom problem and on his recommendation the Madras Government appointed a Dyeing Expert and later on a Textile Expert in 1919. A separate textile section was instituted in the Department of Industries. This marks the beginning of the earnest effort of Government to aid the hand-loom industry. Realising that the prosperity of the hand-loom weaver depends as much on silk weaving as on cotton weaving, the Madras Government later appointed a Sericultural Expert to develop sericulture. The Textile Expert as the head of the Textile section of the Department of Industries was charged with the duties of laying down lines on which instruction should be given in the Textile Institute. At present with an annual grant of about Rs. 1,00,000 the textile section has grown. All branches of textile industries, cotton, silk, woollen and coir have received the attention of the section and it has also dealt with dyeing, sericulture, technical education, research in textiles and propaganda. Much has been done during the last fifteen years, though much more still remains to be done.[1]

What the Government does for the Hand-loom Industry

The assistance that Government at present renders to the hand-loom industry in the Madras Presidency through its various departments can be dealt with under the heads: (1) education, (2) research, (3) propaganda, (4) finance and (5) co-operation and business organisation.

Education.—It was recognised long ago that the work of bringing the younger generation of the weaver class under the influence of modern methods and of initiating them early into the use of improved appliances is of vital importance; but the earlier measures to impart instruction in practical weaving in the School of Arts and Crafts were both inadequate and unsatisfactory. Hence it was suggested that primary schools in weaving centres should include in their curriculum some form of manual training in weaving. Vocational schools were

[1] D. M. Amalsad, Memorandum to the Textile Committee of the Madras Legislative Council, 1928.

started by Local Bodies, the Labour Department and Missionary organisations; but the instruction given in these schools, as it was pointed out by the then Director of Industries, was not of the nature which would ultimately help the children of the weavers to take their place in the organisation of the industry as desired by the Department. This is equally true of the instruction given in the denominational industrial schools aided by government grants. The mere grant of financial assistance to schools running weaving sections was more in the nature of indiscriminate doles than of assistance to hand-weaving. The majority of them are no more than ill-equipped hand-loom factories and the training given does not help the pupils to earn an independent livelihood. Further they have failed to attract weavers' children and to turn out competent craftsmen and captains of industry. Besides, these schools were ill-equipped for teaching and were understaffed and it would be too much to expect them to carry on researches or effect improvements in the practice of weaving.[1]

A central textile institute imparting a theoretical knowledge and giving a thorough practical training to students in modern methods of work and combining the power-loom and hand-loom processes was a desideratum of the industrial educational policy. It was only recently that the want was met by the establishment of the Textile Institute at Madras. It began work in 1922, and was placed under the control of the Department of Industries. The Textile Expert was to be the Principal of the Institute. Its object was to impart to the students theoretical knowledge and to give them a thorough practical training in modern methods of work, to evolve labour-saving appliances to suit the requirements of the weavers in the Presidency and to set up and work such types of power plant as could be suitably linked with the various textile cottage industries with a view to organise and place

[1] There is a considerable measure of agreement on all sides that the weaving schools and parties fail to reach, as satisfactorily as might be desired, the right classes of people and do not go far to solve the problem of rural poverty. —*Report of the Department of Industries*, Assam, 1931–32.

Industrial schools are understaffed and ill-equipped arts and crafts depots. —*Report of the Department of Industries, Punjab*, 1930–31.

them on a commercial basis.[1] There are two courses of instruction, (1) the supervisors' course training captains of industry who would assist in the organisation of the industries and (2) the artisans' course turning out efficient artisans. The Institute is well equipped for research work and for practical training in different branches of textile manufactures.

Education and training in this Institute has so far fitted men to be teachers in weaving schools or demonstrators in Government peripatetic parties. It has not yet succeeded in training men to set up businesses of their own on up-to-date lines. Nor has it attracted many students from hereditary weavers from moffusil parts. They will not naturally be attraced to a place so far removed from their homes in distant districts. The Special Officer for Cottage Industries recommended the establishment of a peripatetic weaving school. The suggestion, though excellent as providing education to the weavers at their very door, is not feasible. For the school to yield permanent results must be continuous and not itinerant. Unlike travelling exhibitions and weaving peripatetic parties, the work of the school is not propaganda but the rearing up of successive generations of artisans skilled in their work and conversant with modern practices. For that purpose industrial schools as well equipped as the Textile Institute must be established in suitable weaving centres. To attract weavers' children to such schools the system of paying them for work done in schools along with the practice of giving stipends must be introduced. It must be well understood that the object of the industrial school is to afford training and education in improved methods of manufacture and business organisation preferably to weavers' children with inherited skill and dexterity.

[1] The objects of the Textile Institute as stated in G.O. No. 668 are:
1. to manufacture various types of hand-looms and hand-driven warp and weft preparation machinery for the requirement of the several classes of weavers and to serve as a central distributing factory for the supply of improved weaving appliances and accessories connected with the hand-loom industry including special warp and weft preparation machinery,
2. to produce and supply machine-warps and to demonstrate to hand-oom weavers the economy of such warps,
3. to afford practical training to weavers and *maistris* engaged in hand-loom weaving in schools,
4. to serve as a permanent museum of all types of hand-woven products, improved looms and accessories, and

Research.—The Textile Institute at Madras is equipped with the necessary appliances and machinery for the improvement in the methods of manufacture and for evolving new appliances suitable to the cottage worker. A power dresser sizer, a woollen power-spinning cottage plant, instruments for the testing of cotton yarn, appliances for silk reeling and twisting and aerograph printing, a well equipped laboratory, different kinds of looms, automatic and otherwise, hand-driven machines for sizing, warping, bobbin winding, pirn winding, doubling etc. and plant for generating power are all now housed in a suitable building in Washermanpet, the weaving centre of the city of Madras.

Mainly due to the efforts of the Textile section of the Department of Industries improvement of different appliances has been made. Fly-shuttle sleys, suitable hand-power machinery for the different preparatory processes as hand-power warp and weft winding machines, hand-power beam warping mills, machines capable of sizing yarns in hank and sheet form, beaming machines for winding coloured and grey warps on weaver's beam, hand-power doubling machines for twisting twelve or more threads at a time, multiple box sleys for weaving cloths with wefts of different colours, tape sleys for weaving a number of tapes at a time, swivel sleys with rack and pinion for weaving figured spots, various types of dobbies for weaving damask etc., jacquard for weaving figured garments, cottage plant for dyeing, printing, silk reeling, have been improved to suit cottage workers. Attempts are now made to evolve a plant for sizing coloured yarns which are used extensively by hand-loom weavers in the Presidency. It is true that evolution of new cottage plant is not merely the work of the textile expert but it is the work of both the textile expert and the engineer. Further progress in research regarding textile cottage plant cannot be made unless the required technical assistance of a highly trained mechanical engineer also conversant with the practices in textile industries is forthcoming. At present the Industrial Engineer, it is stated, cannot give enough co-operation to the textile

5. to serve as a research institute in which experiments can be carried out in various problems in connection with the textile industries which will await solution.

section.[1] Considering the magnitude of the hand-loom industry it would not be a waste to appoint a textile engineer, if necessary, on the staff of the Government of India whose services will be available for the textile experts of the provinces. The research staff of the textile section must be further strengthened by the appointment of a Dyeing Expert assisted by expert dyeing demonstrators. Introduction of new designs and patterns must be the special function of the Textile Department.

Researches in the processes of manufacture as would eliminate waste of time, energy and material are equally important. Evolution of better tools and plant depends on the processes of manufacture and on the conditions under which the industry is to be carried on. The substitution of mill warping and sizing for the indigenous street warping and sizing was mainly the work of the Textile Department. The department now endeavours to eliminate the waste of labour and time involved in the indigenous preparatory processes and to reduce the cost of production by applying the principle of the power dresser sizer to the cottage sizing plant. Though the former object has been realised to some extent, the newly evolved Amalsad Sizing Machine and the cottage sizing plant have yet to achieve the latter object in view. The department attempted to distribute power dresser sized warps to weavers with a view to educate the weavers in the economies of central warp distributing factories, but the attempt has not been so far successful.

Propaganda.—The Textile section of the Department of Industries was charged with the duty of disseminating the knowledge acquired in the research section of the Textile Institute respecting improved methods and appliances and of popularising by demonstration such of those methods and appliances as are found suitable to the conditions of the weavers and promise a better future to the industry and its workers. Peripatetic weaving parties were started in 1913 but in their earlier years their work suffered very much as there was no Textile Institute and, therefore, no training could be given to the members of the weaving parties. The work

[1] Memorandum of D. M. Amalsad to the Textile Committee of the Madras Legislative Council, 1928.

of the parties was, therefore, restricted to the demonstration of flyshuttle sleys and dobbies. In recent years, however, the activities of the parties have been directed to the demonstration of the hot-air sizing machine with a view to pave the way for the ultimate establishment of warp distributing centres with power dresser sizer. Side by side with this there was the attempt to demonstrate the advantages to be derived by the use of warps made in the power dresser sizer established at the Textile Institute. But the experiment, for want of financial assistance to weavers and lack of marketing facilities, was not a success. There were twelve weaving parties at one time working in different parts of the Presidency and they are now reduced to three, partly as a measure of retrenchment and partly, it is said, as the adoption of simple appliances has sufficiently advanced there is very little work for so many parties in the districts. In a province with 225,000 looms and 400,000 weavers twelve weaving parties cannot be too many.

The peripatetic parties have carried to the very homes of the weavers the successful experiments carried out in the Textile Institute; but the one weakness of the system is that the parties do not stay long enough in any one place to get their methods firmly established. Nor do they revisit the places to help the weavers over any difficulties that may have cropped up since they adopted their methods or their appliances. The weavers must be taught the adaptability of these methods and appliances to the different kinds and qualities of cloths. Otherwise they would discard them. An organisation is necessary for helping the weavers when difficulties present themselves and for reaping permanent advantages from the peripatetic system. Permanent weaving schools in important weaving districts with proper technical equipment and trained staff may perhaps answer this purpose.

Other forms of propaganda and education that the department has adopted may be mentioned. Weaving competition was held in the earlier years. Now the publication of the departmental bulletins is the only method of propaganda other than the peripatetic weaving parties. The department must organise textile exhibitions of appliances and improved methods of designs and patterns and hold weaving competitions, award prizes for improvements effected in the appliances

used or in the methods of manufacture. This would not only be educative but will also stimulate the inventive faculties of the weavers.

Financial assistance.—Apart from the organisation of the Salem weaving factory, the experiment carried at Itchapur for a short time to run a yarn depot on co-operative basis, the grant of financial aid to weaving schools and the establishment of the Textile Institute and weaving parties, the direct financial assistance given by Government to the hand-loom weaver was nothing prior to the passing of the State Aid to Industries Act in 1923. Even now the extent of State financial aid to the weaver is restricted. The directions in which the Government can assist the weaver are many. The weaver wants financial help for different purposes, e.g., for setting up a new loom, for purchasing cottage plant for warping and sizing and jacquard weaving, for the purchase of yarns and for tiding over temporary difficulties, especially when he withholds his manufactures from the market in anticipation of a rise in their prices. The co-operative societies provide these facilities to some extent but the State must supplement their work and finance pioneer efforts.

The State Aid to Industries Act empowers Government to assist industries with finance directly and lays down the conditions to be fulfilled by industries demanding State assistance.[1] The conditions of the 1923 Act made financial aid practically unavilable for the poor weavers. An amendment to the Act was made permitting Government to sanction loans to weavers on special terms. Amounts not exceeding fifty rupees may be granted on personal securities to weavers, repayable by instalments on the recommendation of the Department of Industries. But the Act, like the Land Improvement Act and Agricultural Loans Act, has not been much availed of by weavers. The extent of help given to

[1] The Government assistance is regulated by the provisions of the Act which empowers the Government to aid new and nascent industries provided they are registered in India as rupee companies and comply with the rules framed under the Act. The assistance may be (1), by granting a loan, (2), by guaranteeing a cash credit with the bank, (3), by subsidising research on the purchase of machinery, (4), by taking up shares or debentures, (5), by guaranteeing a return on part of the capital and (6), by granting land and raw materials on favourable terms.

weavers so far under this act is very little.[1] There is ample room for the State to render direct financial assistance to hand-loom weaving by securing for the weaver cottage plant on the hire-purchase system, by starting yarn banks and taking shares in such banks and guaranteeing interest on debentures issued by them. It can establish warehouses and organise co-operative sales societies and depots and provide marketing facilities. In this connection the hire-purchase machinery clause of the Bihar and Orissa State Aid to Industries Act deserves special mention. It furnishes appreciable stimulus to the gradual improvement of the cottage industries without which they are in danger of being wiped out. The inadequacy of the finance required by weavers' co-operative societies may be overcome to some extent by the State providing capital at a low rate of interest or taking shares in the societies.

Co-operation and business organisation :—It is now well recognised that all efforts of the Government would be fruitless if the business organisation in the trade of hand-loom products is not built up. The weaver cannot do it himself. The merchant is equally ignorant, if not indifferent. Co-operation is the only method by which the business organisation can be built which would be to the advantage of the weaver. The attempts to organise co-operative societies for purchase of raw materials, sale of finished products and for production have not been quite successful. But the recent co-operative experiment at Salem with a marketing officer at its head and the co-operative endeavour at Itchapur, assisted in marketing its products by the yarn depot run by the Department of Industries, have proved a signal success. The promotion of such societies with the active co-operation of the Government is what is now needed. In the field of non-credit co-operative organisation much remains to be done and that can be done only through governmental agency. Much reliance on weavers' initiative or the enthusiasm of individuals alone cannot be placed. Co-operative hand-loom factories assisted by technical experts and marketing officers would provide the industry with the much-needed business organisation and place the industry on a firmer footing.

[1] It is said that many applications of weavers for loans have been turned down. No effort is made by the Government to supply yarn to weavers on favourable terms.

The survey of the cottage industries undertaken in 1927-28, the information and technical advice given by the Textile Expert are some other directions in which the State has been taking interest in the indusry. Indirect assistance is also given by the State. But there is still ample room for Government to assist this industry. The grant of protection against mill competition, the abolition of import duties on yarn, lace and dyes—at least the rebate of such duties on goods imported by weavers' co-operative societies,—a reduction in railway rates on yarns and cloth are some ways by which the State can assist the industry. Further, direct assistance can be rendered by the State, for example by providing capital for the establishment of hand-loom factories, warp distributing centres with power dresser sizer, and bleaching, printing and finishing factories, by providing technical and business advice, by exploring the market within and outside the country for the hand-loom manufactures by the appointment of marketing officers and trade commissioners in the Federated Malay States, Africa and other places where Indian hand-woven goods are in demand, and by advising the weavers on the production of such cloths as have a demand and so on. While caution is necessary against the frittering away of tax-payers' money, it is difficult to exaggerate the necessity of the direct and keen interest that Government ought to take in the development of this important industry.

NOTE

Since this was written, the Government of India has decided to make an annual grant of Rs. 5 lakhs for five years to the Provincial Governments for the development of the hand-loom industry. At the Industries Conference held in July, 1934, it was resolved that the grant should be distributed on the basis of the hand-loom consumption of yarn and the expenditure on the development of the industry in each province. According to this scheme, Madras is expected to get Rs. 3½ lakhs spread over five years. The Madras Government prepared a scheme for improving the marketing of handwoven goods on a Co-operative basis, with a provincial Weavers' Co-operative Marketing Society having a share capital of Rs. 100,000 of 20,000 shares, and Co-operative Societies with 400 members in ten important Weaving centres. Efforts will also be made to bring about the 'linked' organisation, to open an emporium, to arrange for wholesale and retail sale, to depute marketing officers to the Federated Malay States, Burma and Ceylon.

CHAPTER XIV

THE STATE AND THE HAND-LOOM INDUSTRY

Tariff Regulations with Special Reference to the Hand-loom Industry

In this chapter we shall review the history of the tariff regulations in relation to the various branches of the cotton textile industries in India and their immediate and ultimate effect on the hand-loom industry and, in the light of the investigation, state what should be the fiscal policy in regard to the industrial and economic development of this country.

The report of the Indian Textile Tariff Board, 1927, offers a suitable starting point for the present discussion. The conclusions of the Board are well known. The President recommended an increase of duties on yarn and piecegoods imported from Japan while the other members objected to the enhancement of the duty on yarn as it would place the hand-loom industry at a disadvantage, but they recommended an increase in the import duty on all cotton piecegoods and the grant of bounty for finer spinning. In 1927 the Government of India rejected both the recommendations; but the continued depression in the Bombay Cotton Textile industry, due to the increasing competition from the Far East, especially from Japan, compelled the Government to take some protective measures. In August, 1927, the Government sought to protect the spinning industry (postponing the consideration of the grant of further protection to the weaving industry to a later date) by a revision of the tariffs on the imported cotton twist and yarn. They substituted 'a five per cent *ad valorem* or 1½ annas per pound whichever is higher' for the then existing 'five per cent *ad valorem* duty on yarn'. In May 1929 Mr. G. S. Hardy, I.C.S., Collector of Customs, Calcutta, was appointed, on the representation of the Indian millowners, to investigate and to report on the extent and severity of external competition with the products of Indian mills since the Tariff Board had reported, and to examine the possibility of

substituting a system of specific duties for the then existing system of *ad valorem* assessment on cotton piecegoods. Here we find a new view on the effects of specific duties which has almost become an article of faith with the Government of India. By converting the *ad valorem* into a specific duty, it is claimed that a greater measure of protection can be afforded to the industry. The Government adopted this measure on the assumption (*a*) that the import of finer count yarn did not compete with the Indian mill product, and, even if it did, it should not be heavily taxed as it would affect the hand-loom industry, the bulk of its consumption being finer counts; (*b*) that the Japanese competition was most severe in respect of medium counts of 30s and 40s and (*c*) that the new basis of increased specific duty on coarse and medium counts would equalise the advantage of 10 per cent that Japan had by reason of its labour conditions and thus protect the Indian spinning industry, while the retention of the 5 per cent *ad valorem* in the case of costly fine yarns, which were considered to be staple products of consumption by hand-looms, would mean no disadvantage to the hand-loom industry. The assumption and the contention are untenable, if we carefully examine the facts of the case.

The increase in the import duty on yarn by imposing a higher specific duty without a corresponding increase on the imported piecegoods had the expected result; Japan ceased to export yarn to India but increased its exports of piecegoods and intensified its competition in piecegoods as the following table will clearly indicate:—

Period	Country of export	Import of yarn			Total import of twist and yarn.	Imported piecegoods
		Below 40s.	Above 40s.	Others		
		(In million lbs.)			(In million lbs.)	(In million yards)
Postwar average...	United Kingdom ...	7·7	6·61	2·43	16·71	1199
	Japan ...	16·32	0·86	11·6	28·77	113
	China ...	0·92	...	...	0·93	2·3
	Total ...	31·1	...	...	49·4	1351

Period	Country of export	Import of yarn			Total import of twist and yarn.	Imported piece-goods
		Below 40s.	Above 40s.	Others		
		(In million lbs.)			(In million lbs.)	(In million yards.)
1927-28 ...	United Kingdom ...	9·04	7·74	3·7	20·47	1543
	Japan ...	7·86	0·14	8·96	16·96	323
	China ...	12·03	...	0·81	12·84	7·4
	Total ...	28·9	8·04	13·63	52·3	1973
1928-29 ...	United Kingdom ...	7·89	9·23	6·27	23·2	1456
	Japan ...	2·24	0·04	5·23	7·51	357
	China ...	10·1	0·01	0·81	10·88	13·5
	Total ...	20·2	9·33	12·60	43·7	1937
1929-30 ...	United Kingdom ...	6·86	8·81	3·73	20·1	1247
	Japan ...	2·85	0·11	7·89	10·9	562
	China ...	9·84	0·10	0·72	10·6	9·7
	Total ...	21·84	9·01	13·05	43·9	1919
1930-31* ...	United Kingdom ...	2·78	4·09	2·96	9·81	523
	Japan ...	2·85	0·08	4·65	6·88	320
	China ...	10·13	0·74	1·53	14·87	3
	Total ...	21·84	4·27	9·17	29·14	890
1931-32* ...	United Kingdom ...	2·95	5·20	3·15	10·29	383
	Japan ...	0·39	*nil*	5·62	6·02	339
	China ...	11·20	*nil*	2·01	13·19	4
	Total ...	15·31	5·25	10·73	31·57	775

(*Form the Review of the Trade of India.*)

India imports all yarns of 40s and above from the United Kingdom while 40s and below come from Japan and China. The burden of the new basis of taxation being heavier on coarse and medium yarns than on finer ones, there is a fall in the import of 40s and below. But this fall is more than made good by a rapid increase in the import of cotton

* The years 1930-32 were years of vigorous campaign for Swadeshi and boycott of foreign cloth ; also it was then that the duties on piecegoods were increased first in 1930, again twice in 1931 and again in 1932. Hence the fall in the imports of cloth. But even here Japan was less affected than the United Kingdom and other countries.

piecegoods from those countries whose yarn trade with India had declined. The import of yarn from Japan was reduced from 17 million lbs. in 1927-28 to 7½ million lbs. in 1928-29 and 11 million lbs. in 1929-30 while the import of cloth increased from 323 million yards to 357 million yards and to 564 millions in the corresponding period. The same tendency can also be traced in the Chinese trade. This means that Japan attempted to avoid the burden of the increased duties on yarn by reducing its exports of yarn and increasing its exports of cloth to India. It is advantageous to Japan, to cite an instance, to export to this country cloth made of 60s and below rather than to export yarns of similar counts. For while the import duty on cotton piecegoods in India remained 11 per cent *ad valorem,* the specific duty of 1½ annas per pound worked out at the rate of 12 per cent in the case of 20s yarn, 8⅓ per cent in the case of 40s, and 6¼ per cent in the case of 60s, taking the average price for the last three years at 12, 18, and 24 annas per pound of 20s, 40s and 60s respectively. Thus the margin of difference between the customs duties on cloth and yarn diminishing and other conditions remaining the same, an increased duty on yarn will naturally encourage the import of cloth and discourage the import of yarn.

The new basis of the duty on yarn had thus a very far-reaching and disastrous effect on the indigenous textile industries. The protection to the Indian spinning industry has increased Japanese competition in piecegoods and the power weaving industry is now faced with a more severe competition. The lesson we learn from this episode is that *it is absurd to believe that protection to any industry can be given by simply revising the method of assessment.* Prohibitive tariff must be imposed to make protection effective and real.[1] Half-hearted measures and ill-conceived experiments are not only ineffective but at times are positively harmful as they have proved to be in this case. *The new specific duty has protected the Indian spinning industry; but it has increased foreign competition in piecegoods; further it has affected*

[1] Total prohibition is not unknown to history. The effectiveness of tariffs depends not on the manner of imposition of duties but on their achieving their desired ends.

the hand-loom industry by increasing the price of yarn and curtailing the profits of the hand-loom weaver.

Conflict of Interests

The history of the textile tariff regulations in India illustrates the conflict of interests that the Government of India was often called upon to reconcile in framing its tariff policy. First, there is the interest of the consumer with which Manchester often finds it convenient to identify its interests. Secondly, there is the Indian mill industry which is organised in its demand for preferential treatment. And thirdly there is the hand-loom weaver, helpless and unorganised, whose cause is at times conveniently espoused by Government against the demands for protection by the power-loom in India and for avoiding the odium of safeguarding Lancashire interests. In this conflict, however, there is a peculiar irony in the consistency of the policy of the Government of India, viz., that the interests of Lancashire had been so paramount throughout that nothing was done to develop either the power spinning or weaving or hand-loom industry in India till the last decade. Any measure of protection to the spinning branch of the textile industry was opposed on the ground that it would be detrimental to the hand-loom industry and protection to the power weaving industry was objected to on the ground that it would increase the burden on the consumer. The policy of the Indian Government was throughout announced to be to protect the interest of the consumer. Perhaps, this championing of the consumers' interest was intended to cloak the desire of Government to advance Lancashire's interests.

However it might be argued that the present policy is the result of the conflict of local interests. It is true that a policy of protection raises this issue. But this conflict is neither unavoidable nor peculiar to this industry or to this country. More about it later. But it must be noted here that all revisions of the basis and the rate of tariffs with a view to protect the mill industry affected the hand-loom industry adversely, as a careful study of the tariff regulations well illustrates. Before the War the imports of yarn was

allowed free of duty ostensibly in the interest of the hand-loom but mainly in the interest of Lancashire which was exporting to India 40 million lbs. of yarn every year. The cloth manufactured in Indian mills was subject to $3\frac{1}{2}$ per cent excise duty and the import of piece goods was subject to $3\frac{1}{2}$ per cent *ad valorem*—both being revenue duties. But this had incidentally certain protective effect on the hand-loom industry which prospered during 1896-1916 when those duties were in force. After the War with the increasing financial difficulties of the Government of India a duty at 5 per cent *ad valorem* on yarn and 11 per cent *ad valorem* on cloth was imposed on imports while the excise duty on the cloth manufactured in Indian mills remained $3\frac{1}{2}$ per cent. Till the abolition of cotton excise in 1925 and more precisely till the revision of the tariff on yarn in 1922, there was a steady expansion of hand-loom weaving; it was during this period that the hand-loom industry was at its best; for there was a measure of protection both against foreign imports and Indian mill manufactures while both the power-spinning and weaving industries in India also progressed satisfactorily as is evident from the table below:—

Year	Production of cloth in Indian Mills	Production of cloth on hand-looms	Import of cotton piece-goods
Average for	(In million pounds of yarn)		(In million yds.)
1901–05 ...	125	231	1,988
1905–10 ...	182	259	2,175
1911–15 ...	261	262	2,528
1920–21 ...	328	287	1,405
1921–22 ...	360	297	980
1922–23 ...	362	335	1,467
1923–24 ...	359	251	1,374
1924–25 ...	410	313	1,710
1925–26 ...	409	289	1,502
1926–27 ...	472	334	1,728
1927–28 ...	510	327	1,973
1928–29 ...	400	269	1,937
1929–30 ...	506	346	1,919

The present decline in the hand-loom industry, which is not in quantitative outturn but in the human element began

with the abolition of the cotton excise duty in 1925; but the Indian mills could not take advantage of this measure owing to frequent labour troubles. The decline in the hand-loom production was significant and this was aggravated by the introduction of the alternative specific duty on yarn imposed in 1927. While the labour troubles in Bombay explain to some extent the shortage in the supply of yarn to the hand-loom in 1928-29 the decrease in the Japanese supply of medium count due to the specific duty could not be ignored. Formerly, the average import from Japan of 40s and below was 16 million lbs. (excluding twofolds); but it was reduced to 2.2 million lbs. as soon as the new specific duty on yarn was imposed. This rapid elimination of Japanese yarn from the Indian market means absence of competition in the Indian mill supply of coarse and medium yarns to hand-looms and comparatively higher prices for the same. First of all the abolition of the excise duty on cloth removed the protection to the hand-loom; and the retention of the duty on yarn placed the hand-loom at a further disadvantage. The introduction of the higher specific duty at $1\frac{1}{2}$ annas per pound of yarn increased still further the burden on the hand-loom industry, for it had the immediate result of increasing the price of yarn. The movement of wholesale prices of yarn and cloth in Bombay indicates that compared to the prices of cloth the price of yarn had risen by eleven points, as soon as the new tariff was brought into force; also that the price of yarn

Index number of prices of yarns and cloth

Year.	Price of 20s Indian Mill	Price of shirting (Indian)	Liverpool Price of American yarn	Liverpool Price of Egyptian yarn
Average for 1927 ...	100	100	100	100
January 1928 ...	109·2	98·7	105	101
April 1928 ...	109·2	98·7	103	104
July 1928 ...	113	102	102	108
October 1928 ...	113	102	102	108

manufactured in Indian mills (which supply over 250 million lbs. of coarse and medium yarns to hand-looms) rose by 4 to 8 points more than the Liverpool prices of American and Egyptian yarns.

It must be noted that over 85 per cent of the hand-loom

consumption of yarn is 40s and below, even assuming that all kinds of yarn of 40s and above imported and manufactured in Indian mills are consumed by the hand-loom only. To assume therefore, as it is done by the Government of India, that the retention of the 5 per cent *ad valorem* duty on yarn of finer varieties and the increased specific duty on the coarse and medium counts would not harm the hand-loom weaver to any appreciable degree is to betray one's ignorance regarding the kind of yarn used by him.

Future Policy

Tinkering with tariffs just to surmount some temporary difficulties or to hush the loud complaints of certain powerful interests or to placate them for political reasons will not and cannot carry us far. That would at best be a mere patchwork but it can never be an act of wise statesmanship. A more comprehensive and well designed policy regarding industrial development of well organised industries and small cottage industries with a careful estimate of the proper place of each in the national economy can alone lay the true foundtions of industrially prosperous India. But it must be as clear as daylight that as between Indian manufactures and imported ones the former should have the preference and have all possible and reasonable protection against the latter. But as between the power-loom and the hand-loom the one should not be sacrificed for the other except for very valid reasons. *It is not pleaded here that the hand-loom should be protected at any cost against the power-loom, but that, at least, the dice should not be loaded against the hand-loom as it obtains under the existing tariffs.* Now the imposition of an import duty on yarn and the abolition of the cotton excise imposed a disability on the hand-loom; for the price of yarn to the hand-loom weaver includes the 5 per cent duty while the power-loom in most cases manufactures its yarn requirements free of duty. By the substitution of the specific duty on yarn the disadvantage to the hand-loom has increased, for in effect it protects the Indian power-loom against the hand-loom and the degree of protection varies from 5 to 20 per cent according to the market price of yarn. Again the enhancement of import duties on gold and silver thread to 50 per cent *ad valorem* and on silk and rayon to 25 per cent has placed

the handweavers at a further disadvantage by increasing the price of their manufactures and thus curtailing their market; for these imports are chiefly used by hand-looms.

We have already stated that the conflict of interests between spinning and power-weaving and hand-weaving is not unavoidable. Protection to the weaving industry raises no question of conflict of interests except that there is an initial burden on the consumer. But protection to the spinning industry involves the conflict between the hand-loom and the power-loom. But this is not an unavoidable consequence of any policy. If development of the spinning industry is desirable an increased import duty on yarn is not the only means; the same end can be achieved with better results by the grant of bounties as recommended by the majority of the Textile Tariff Board.

It is proposed here that the duty on cloth should be increased to 25 per cent *ad valorem* and the duty on yarn be abolished while the hand-loom must be protected against the power-loom by an imposition of excise duty of $2\frac{1}{2}$ per cent.

The Government of India did not favour the proposal of the Tariff Board for the following considerations:

1. That the abolition of the import duties on yarn will affect the revenues of the Government of India and rouse the opposition of the spinners in India, while the advantage that would accrue to the hand-loom weaver would be almost negligible.

2. That the enhancement of the duties on imported cotton piecegoods will increase the burden on the consumer while the revenues of the Government may also suffer as a result of decreased demand for imported cloth.

We shall now examine these arguments. At present (1929) the duty realized on yarn is less than Rs. 50 lakhs. This loss is insignificant and is not to be regretted as the duty is mainly a protective one. But even this loss can be made good by an enhanced duty of 25 per cent on piece-goods; for the new revenue realised will not be less than what it is now. Unless there is a remarkable fall in prices of cotton goods or a fall in the volume of their imports, there can be no fall in the revenue. The demand for imported cloths being inelastic to a degree, there is no fear of a great

fall in the volume of imports. If it does, sooner or later Indian mills will increase their production in order to make up the deficiency which means increasing the national productivity. This would open up new sources of taxation. What is now lost in customs revenue can be regained to some extent through income-tax ultimately.

As regards the increased burden on the consumer, he will have to pay nearly 16 pies more per rupee of his cloth purchase than what he does now. But consumers of imported cotton manufactures belong to a class who will never be deterred by this increase in price and who can bear this burden. But the interest of the consumer is not all. Even a consumer is a producer himself and it is his effective productive capacities that ultimately determine his effective consumption. Therefore the interest of the producer is all important. The consumer's interest cannot be paramount unless it be that the whole nation consists of persons living upon their savings or hoarded wealth and not depending on their present productive power.

Again the abolition of the duty on yarn accompanied by bounties of 5 per cent for fine home-spun will give the hand-loom and the power-loom equal advantage. From the view-point of the hand-loom weaver, the abolition of the duty on yarn will in turn reduce the cost of production of his cloth. This will enable him to get larger returns. The increase in his daily earnings may vary from 2 annas in the case of finer cloth to 4 annas in the case of cloth made of 20s. This increase is not negligible to one who rarely earns 10 annas a day.

Now it is time for the Government of India to realise that the past policy of makeshifts must be abandoned as it is positively harmful to industrial development; that real protection to the industry does not depend on the methods of assessing the customs duties but in making the tariffs effective. As Sir Alfred Chatterton said, imports should even be prohibited if need be. It must be well understood that while changes in the tariffs are necessary in the common interest of spinning, power- and hand-loom industries, changes in the methods of assessment alone cannot solve the problem. In the higher interests of the Indian textile industries comprising spinning and hand-loom and power-weaving

—the main industries of India—protection is necessary against foreign competition. If this means imposing higher tariffs, they are not necessarily harmful. In America there is a 40 per cent import duty on cotton manufactures.[1] Indeed even

[1] Tariffs in several countries on imports of cotton manufactures.

...	Cotton yarn singles						Cotton cloth					
	Grey		Bleached		Dyed		Grey		Bleached		Dyed	
	1914	1924	1914	1924	1914	1924	1914	1924	1914	1924	1914	1924
India ...	Free	5% Adv.	Free	5% Adv.	Free	5% Adv.	3½%	11%	3½% Advalorem	11%	3½%	11%
U.S.A. ...	15% Adv.	4·2d. per lb.	17½% Adv.	5·38d. per lb.	17½% Adv.	5·38d. per lb.	17½% Adv.	8·5d. per lb.	20% Adv.	9·5d. per lb.	20% Adv.	11·7d. per lb.
Japan ...	...	...	...	...	...	...	2·5d.	2·1d. per pound of cloth	3·1d.	2·6d.	3·8d.	3·2d.
China ...	0·3d. per pound	1·1d.	...	...	...	...	4d.	11·3d. per piece of cloth	4·8d.	13·4	5·3d.	14·2
Russia ...	7·7d. per pound	13·2d.	...	...	...	...	...	...	...	...	...	...
Switzerland...	...	...	...	...	...	...	0·4d. per pound	0·5d.	...	...	...	...
Italy ...	...	...	...	...	...	...	3·3d. per pound	5·3d.	...	...	4·4d.	7d.
Germany ...	...	...	...	...	...	...	2·7d.	3d.	3·7d. per pound	4·1d.	5·4d.	5·9d.

in India during the last five years the duties on cotton piece-goods have been considerably enhanced. They stand to-day at 25 per cent (British) and $31\frac{1}{4}$ per cent (non-British), with a specific duty of $4\frac{1}{8}$ annas per pound of grey. If the needs of our industries demand protection the Government of India should not hesitate to increase the duties on imported cloth. It should abolish duties on yarn and grant bounties to the spinning industry[1] and assist the hand-loom and thus foster all branches of the cotton textile industry which support eight million persons or 25 per cent of the industrial population in India.[2]

[1] 'For the reasons given elsewhere the majority are of opinion that any assistance given to the spinning industry is best given in the form of a bounty.' —P. 175, Tex. Tariff Board Report 1926.

[2] Recently many changes have taken place in cotton tariffs. At present as a result of Hardy's Report, the Ottawa Agreement and the financial crisis, the duties have been enhanced; there is discrimination between British and non-British goods, and discrimination between grey and other classes of cotton piecegoods in the rate and manner of taxation. But these conditions while being favourable indirectly to the development of the hand-loom, are unfortunately accompanied by an unprecedented depression which has affected the demand for the manufactures of the hand-loom. Also the disadvantage on account of the import duty on yarn, artificial silk and silk which are mainly used by hand weavers still persists handicapping the hand-loom against the power-loom in India.

CHAPTER XV

THE WEAVER

THE rapid break-down of caste monopoly of occupations has not affected very much the hand-loom industry; for still over 60 per cent of the hand-weavers are mainly weavers by caste. The *Kaikolars, Devangas, Salês* and *Sourashtras* are the important weaving castes found in the Madras Presidency and a brief survey of their social customs and characteristics is not out of place.

Each caste has dfferent surnames. The *Kaikolars, Sengundars, Sengunda Kshatriyas* are the names of a certain group of Tamil weavers. There are more than 400,000 Kaikolars in this Presidency found mainly in the districts of Coimbatore, North Arcot, Salem, South Arcot, Chingleput, Trichy, Tinnevelly, Tanjore and Madura, stated in the order of importance. 50 per cent of them follow their hereditary occupations. They claim to be the descendants of Virabahu. Their original home is Conjeeveram wherefrom they migrated to other places. The whole community is divided into 75 *nads* which are all administrative divisions, the most important divisions being Conjeeveram, Elur and Salem. The premier *nad* is that of Conjeeveram where the *Mahanattan* resides. The caste guild is an important institution which regulates their social relations. There are various officers and committees—all honorary—which decide caste disputes. Each *nad* has a committee consisting of (1) *Periathanakaran,* (2) *Nattamaikaran,* (3) 12 *Kariakarans* and (4) *Sangudi.* The first two officers are hereditary; and the rest, elected. The function of the guild is mainly social and it has nothing to do with the trade or industry. However, there is a strong caste-feeling among them which can be used to advantage in the reorganisation of the industry.

The *Sales* come next in importance. There are about 350,000 persons belonging to this caste and again 50 per cent of them follow their hereditary occupations. They are scattered all over the Presidency but they are mainly found in the Circars and Ceded Districts. They are Telugu speaking

people and their big colony in the south is found in Ramnad District. There are two important sub-divisions in this caste (a) the *Patu-Sale* and (b) *Padmasale*. In Tamil districts the *Patu-Sale* speak Kanarese and mainly manufacture silk fabrics and fine cloths while the *Padmasale* speak Telugu and weave coarse cloths—mainly cotton coloured fabrics. The *Saliyans* of Kornad and Ayyampet in the Tanjore District resemble them closely in customs and manners but belong to a different caste.

The *Devangas* are numerically as strong as the *Sales* and their customs also closely resemble theirs. Of the 290,000 *Devangas* in the Presidency the districts of Coimbatore and Salem account for nearly a third. They are also found in Ramnad, Chingleput, South Aroct and North Arcot districts. They call themselves by different names, *Chettis, Jedars, Naidus, Seran, Sendan, Chettukaran. Devalan* is their legendary ancestor and his killing the *asuras* in battle is associated with the nature of their work—for they invariably work on coloured fabrics. Their original home is Hampi, and to this day the headquarters of their headmen is in Amarakundi to whom appeals against decisions of local panchayats are said to be referred.

The *Devangas* are divided into two groups (1) Kanarese and (2) Telugu. They do not intermarry. Their caste panchayats have control over their social affairs. Disputes are decided by *Pangalans* presided over by a *Chetti* (or headman). The majority of the *Devangas* are Saivaites unlike *Sales* and wear lingams. The caste is socially self-contained; they have their own *dasis,* and other social institutions.

The *Sourashtras* or *Patnulkarans* are the most progressive of the weaver-castes. They belong to the caste of Surat silk weavers who were induced to settle in Madura by one of the early Naik kings and this patronage accounts for their higher prosperity in Madura. The other theory is that they have migrated to the south from Guzerat due to Musalman invasion and famines.

There are 90,000 *Sourashtras* in the Presidency; Madura accounts for 40,000 and Tanjore, Trichy and Ramnad districts are other important centres. However, they are mainly urban artisans and found practically in the cities of Madura,

Tanjore, Trichy, Salem, Kumbakonam, Arni, Rasipuram and Tirupathi producing silk and fine cloths.

Compared to other weaving communities, their social consciousness and solidarity is remarkable. As a caste they are self-sufficient; as workers, they manufacture mainly non-competitive goods—silk or laced cloths; as a mercantile community they have advanced far and the trade in cotton textiles, dyes, gold thread and silk in Madura and Kumbakonam is mainly in their hands. They are very skilful and industrious. Sir A. Chatterton writes about them: 'In various ways the *Sourashtras* of Madura have furnished evidence that they are a progressive community, particularly in the attention which they pay to education and the keenness with which they are on the look-out for improvements in the methods of their hereditary craft'.

A large number of the *Vellalas*, *Musalmans*, and *Panchamas* in Tamil districts and the *Balija* and *Mala* in Telugu countries are also engaged in weaving; and 30 per cent of the workers are drawn from them.

It is interesting to note that the workers in most of the cotton hand-loom factories are mainly of non-weaver castes, especially in the West Coast.

There is a persistent tendency for the weaver castes to give up their hereditary calling. With the technical progress of the industry, weaving fails to maintain the former number of workers and this means that the hereditary weavers are worse affected.[1] However the Sourashtras and the Devangas are still adhering to their traditional occupations. The work

[1] Percentage of persons of the weaving castes following their hereditary calling.

	1911		1921	
	Men	Women	Men	Women
Devangas	72	76	55	53
Kaikolar and Sengundas	62	43	48	43
Sales	63½	61½	51	46
Sourashtras	...	...	66	71

of the Sourashtra being of a better order, the decline in their numbers following their hereditary occupation is small. Dyeing, specially with turkey red, and weaving of fine fabrics or silk and cotton with lace, require great skill. The Devangas are mainly weavers of coloured goods and dyers of yarn, and dyeing requires more skill than weaving. The Kaikolars and the Sales are fast being driven out of their hereditary calling. The improvement in warping and sizing led specially to the decline in the number of women workers of the Devanga and Sale cammunities. Among Kaikolars, women seldom warp and size. The 'chungudi sari' industry of Madura accounts for the high percentage of Sourashtra women workers.

The most literate community among weavers is the Sourashtra. 35 per cent of Sourashtra men are literate i.e. can read and write vernacular while $4\frac{1}{2}$ per cent of them have received some English education. The Kaikolars come next in literacy with 26 per cent but the percentage of literates in English is low. The Devangas are slightly backward but the Sales are the least advanced. Only 15 per cent of them are literate.

The influence of education on the social and economic conditions of the community can hardly be exaggerated. The Sourashtras are educationally much advanced and therefore they have economically progressed very far, when compared to the other weaving communities. The Sourashtra Sabha of Madura maintains a High School and has enabled many members of the community to receive technical education in Bombay, and they have used their education to the advancement of their industry and trade. They have the practical monopoly of the dyeing industry and trade in dyestuffs and dyed yarns and fabrics. They have also the control of the silk industry and trade. They have the credit of inventing some weaving appliances.[1]

The Kaikolars come next. Though they weave cloths which directly compete with mill production they are able to resist

[1] In Madura Mr. Tulasiram, B.A., B.L., improved Turkey Red Dyeing.
Mr. Bavaram, improved sizing and warping.
Mr. Kuppusami Iyer has patented a device in the shedding apparatus.
In Kumbakonam Mr. Varada Ayyar has developed jacquard weaving.

its competition successfully by slight adjustments which their education to some extent suggests. Slowly they are now taking to weave non-competitive fabrics, and they are adopting such labour-saving appliances as would help them in their struggle for existence. The Sengundars' educational institutions deserve special mention. It is the education of Kaikolars and Sourashtras that has enabled them to work co-operative societies successfully and improve their status, the condition of their industry and trade. They are also inventive. A Mudaliar of Salem has invented a jacquard device and has made it very cheap. The other weaving communities of Devangas and Sales are less progressive. In most cases they are improvident, illiterate and rather addicted to drink. Co-operation and education have made very little progress among them. The material and moral progress of these two communities must be attended to first. Again it is the members of these communities that are in the grip of the money lender, the sowcar or the merchant and they are sweated by their employers.

The skill of the Indian weaver is unequalled and is a matter of universal admiration. His unrivalled skill and artistic temperament explain the supremacy of the Indian hand-loom weaving. James Mill, speaking of the Indian weaver, wrote: 'It (weaving) is a sedentary occupation and thus in harmony with his predominant inclinations. It requires patience, of which he has an inexhaustible fund. It requires little bodily exertion, of which he is always exceedingly sparing; and the finer the production, the more slender the force he is called upon to apply. But this is not all. The weak and delicate frame of the Hindu is accompanied with an acuteness of external sense, particularly of touch, which is altogether unrivalled; and the flexibility of his fingers is equally remarkable. The hand of the Hindu, therefore, constitutes an organ adapted to the finest operations of the loom, in a degree which is almost or altogether peculiar to himself'.[1]

No systematic study has been made regarding the health of the weaver, and the influence of occupation on the health

[1] *History of India* : Vol. II, page 8.

of the worker. But any casual observer can at once see the effects of the conditions of living and work of the weaver on his health. The position in which he works for long hours in ill-lighted and ill-ventilated rooms explains his apparent lack of industrial discipline and many of his sedentary habits. The weavers who are manufacturing coloured goods, especially the Sourashtra and the Devanga, have a peculiarly anaemic constitution. They are pale, weak, and underfed. Poverty and drunkenness[1] have undermined their health and efficiency.

Most of the weavers live in thatched hovels made of mud invariably with two rooms, unlit and unventilated. A large space is occupied by the loom. The lodgings and surroundings of the weaver are really abominable. His dwelling and the working place are the same. In each house live many families. There is very little privacy. Even a few hours of peaceful rest cannot be had; it is almost a luxury unknown to many of the weavers; for unceasingly the tick of the fly-shuttle goes on; the woman is at the buzzing wheel; the children are at the dobby or are winding for the bobbin. Under such strain, drink is the only pleasure and aid to forgetfulness. The weaver knows no other luxury. In his house there is no furniture. His workshop, if it can be so called, has no costly or elaborate equipment. One or two looms, a few hand-wheels, a number of *thiruvattams*, a few mud and brass vessels and trade-mark pictures are all his possessions. His women wear few jewels. His food is extremely frugal and simple. Rice or ragi is his staple food. Vegetables, ghee, mutton and fish are very rare delicacies.

The weavers are poor as a class except the Sourashtras of Madura and Kumbakonam. They have no money to purchase raw materials. Hence they take advances of either money or yarn from sowcars or chettis. They are worse off for doing so. Nearly 80 per cent of the weavers are in debt and the extent of their indebtedness varies from Rs. 50 to Rs. 500. The rate of interest in most cases is ruinous. Where the advance is taken from the cloth merchant for

[1] The investigation of the writer in Salem District shows that practically more than two-thirds of the Abkari revenue comes from the weaving centres.

whom the weaver works, the rate of interest is usually 12 per cent but his wages are also a little lower than the ordinary rate. But where the loan is taken from the local cloth merchant with whom he contracts to sell, his prices are very much less than the market price. But where the loan is taken from the money-lender, the interest varies from 3 ps. to 2 as. per rupee per month. The emancipation of the weavers from this position can be effected only by their education, their increased employment and income and by co-operation.

The present economic condition of the weaver is nothing too enviable. He earns miserable wages. The average wage of a skilled weaver does not exceed ten annas a day, while one weaving plain cloths of coarse and medium counts earns hardly six annas. Better wages are, however, earned in hand-loom factories and by the silk and laced cloth weavers. The weaver in the West Coast gets twelve annas and sometimes more. The silk weaver gets eight to twelve annas a day. But the ordinary weaver is not very much better off than the average agricultural worker. Besides, the period of un-employment of the weaver is considerably long and tends to extend.

The uncertainty and the seasonal character of the demand for his manufactures, the fluctuation in the prices of yarn and cloth, the insufficiency of his income, the interest on his loans and the fraud of the merchants make the position of the weaver still worse. His condition really invokes pity. The precarious nature of his business with a fluctuating market and a perpetual burden of debt requires a higher daily income than what he gets now to keep him above actual destitution.[1] Bad harvests, wars, epidemics, famines and changes in the currency and fiscal policy of the State and

[1] Hobson, speaking of the human claims of labour, in his book *Work and Welfare* writes thus about the effects of fluctuations in wages :

'Rapid and considerable fluctuations of wages, even with full employment are damaging to character and ability of standards; but irregularity of employments is the most destructive agency to the character, the standard of comfort, the health and the sanity of wage-earners. The knowledge that he is liable at any moment, from commercial or natural causes that lie entirely outside his control, to lose the opportunity to work and earn his livelihood, takes out of a man that confidence in the fundamental rationality of life which is essential to the soundness of character. Religion, Ethics, Education can have little hold upon workers exposed to powerful illustration of the unreason and injustice of industry and of society.'

many other factors beyond his control have equally affected his economic conditions.[1]

The conditions of the weavers in the Madras Presidency are very peculiar. Comparing the conditions of weavers in Madras and those in Bihar and Orissa, J. B. Clark, Textile Expert to the Government of Bihar and Orissa, writes: 'The weavers in Madras live together in large colonies. They are generally the most skilful and make fine cloth with intricate patterns, while the weavers in Bihar and Orissa—98 per cent of them—live in districts and are scattered amongst entirely agricultural population. They are partially dependent on agriculture. They make plain cloths mostly with 20s yarn. The Madras weavers cater for the urban middle classes, while the weavers of Bihar and Orissa meet the demand of the ryots. But both of them are competing with the mill products; the former depending for their supply of yarn on foreign imports compete with foreign goods, while the latter getting their supply of yarn from Indian mills compete with the

[1] The estimates of the earnings of the weavers at different periods indicate that their nominal wages have increased, but their real wages have remained the same; probably they have not declined:

Year of Estimate	Estimate made by	Earnings of Weavers
1912 ...	Sir A. Chatterton ...	Rs. 7-8-0 per mensem by the throw-shuttle weaver: Rs. 10 per mensem by the fly-shuttle weaver.
1912 ...	N. Subramania Ayyar.	Rs. 10 by the Kaili weaver on a country loom and Rs. 12-8-0 by him on a fly-shuttle loom; Rs. 2 per mensem by the Tape weaver (woman) at Peddapuram.
1918 ...	.....	Monthly earning of Rs. 24 in Srivilliputhur and Rs. 20 in Sholingar.
1923 ...	Pamphlet of the Department of Industries, Travancore.	As. 4 to 8 per day in Travancore.
1927-29 ...	Special Officer for Cottage Industries.	As. 12 to Re. 1 *per diem* by weavers of special cloths in Madura and Dindigal. As. 8 in Jayankondam and Thoraiyur. As. 6 to 8 in Tirunageswaram for ordinary cloth. As. 10 to 12 in Karur factory. As. 12 in Conjeevaram. As. 14 to 16 in Coimbatore (Turban cloth weavers).
1929 ...	By the Author ...	Wages in Kumaramangalam: In 1921—Re. 1 4 0 per day. ,, 1925— ,, 0 14 0 ,, ,, 1929— ,, 0 7 0 ,,

products of Indian mills. But the conditions of weavers in Madras, though they are more skilful and manufacture better kinds of cloth are definitely worse. They are largely in the hands of merchants and receive very poor pay for fine work; for most of them are debarred by caste from dealing directly with the consumer. But the weavers in Bihar and Orissa whenever possible sell their manufactures directly to consumers and receive a higher rate of pay for coarse work than Madras weaver does for fine'.

In sacred books weaving is spoken of very highly. The Tamil Literature is full of reference to its importance. Great emphasis was laid on the skill of the weaver, his business morality and his contribution to social welfare. Conditions have now so changed that hand-loom weaving is now regarded as a relic; the weaver is the object of pity; his work commands no dignity. The present enviornment and the conditions of work and life of the weaver can only lead to social evils of drunkenness, insanitation, improvidence, extravagance, dishonesty and growing poverty. These conditions, damaging to character and prosperity, which obtain in the case of over four million people who are on the path of preventible ruin, demand our immediate attention.

NOTE ON THE CHANGES OF THE ECONOMIC CONDITION OF THE WEAVER

A study of the changes in the economic condition of the weaver is important. But so far no proper and systematic enquiry was made. An attempt is made here to present the statistical material now available, insufficient as it is, in the form of a table of index numbers of the hand-loom production, the margin of profits and the level of prices which indicate the changes in the economic condition of the weaver since 1874.

Year.	Hand-loom outturn in Million yards.		Index Number of			Remarks.
	Yards	Index Nos.	Margin of Profits.	Retail price of Food-grains.	General level of Prices.	
1874-1875	...	...	33·3	61·7	80·6	5% on cloth and 3½% on yarn imported.
1875-1876	...	...	54·0	56·2	71·6	
1876-1877	...	...	8·4	60·0	74·6	
1877-1878	...	...	37·5	89·0	92·0	
1878-1879	...	...	46·0	107·5	103·0	All duties on cloth and yarn were abolished.
1879-1880	...	...	41·5	99·0	94·0	
1880-1881	...	...	33·3	73·0	81·3	
1881-1882	...	...	46·0	59·2	73·8	
1882-1883	...	...	50·0	58·6	73·0	
1883-1884	...	...	46·0	58·6	73·8	
1884-1885	...	...	37·5	61·0	79·9	
1885-1886	...	...	33·3	61·8	79·1	
1886-1887	...	...	37·5	65·0	76·9	
1887-1888	...	...	46·0	72·0	77·6	
1888-1889	...	...	16·6	76·0	82·9	
1889-1890	...	...	16·6	73·5	87·3	
1890-1891	...	...	41·5	74·7	87·3	
1891-1892	...	...	58·3	84·5	89·6	
1892-1893	...	...	58·3	91·0	98·4	
1893-1894	...	...	37·0	79·5	92·0	5% import and excise duty on cloth and yarn.
1894-1895	...	...	67	70·4	91·0	
1895-1896	...	...	67	74·0	89·5	
1896-1897	784	96	36	96·0	98·0	3½% import and 3½% excise duty on cloth—duty on yarn abolished.
1897-1898	924	113	42	113·0	114·0	
1898-1899	948	116	42	86·0	93·0	
1899-1900	880					
1900-1901	692	100	100	100	100	
1901-1902	880					
1902-1903	960	117·5	104	87	95	
1903-1904	872	106·8	87·5	78	91	
1904-1905	828	101·3	71·0	72	90	
1905-1906	1084	132·7	125·0	81	101	
1906-1907	1148	140·5	116	110	118	

Year.	Hand-loom outturn in Million yards.		Index Number of			Remarks.
	Yards	Index Nos.	Margin of Profits.	Retail price of Food-grains.	General level of Prices.	
1907-1908	1108	135·3	104	110	125	
1908-1909	1116	136·2	133	142·5	134	
1909-1910	896	109·4	98	120	120	
1910-1911	908	111·0	71	100	112	
1911-1912	1044	128·0	79	100	116	
1912-1913	1040	127	121	117	130	
1913-1914	1068	130·8	115	123	136·0	
1914-1915	1184	145	98	137	139·5	
1915-1916	1048	128·5	118	135	136	
1916-1917	816	100	125	124	138	Cotton import duty raised to 7½%; excise duty remained at 3½%.
1917-1918	812	99·5	125	125	132	
1918-1919	1048	128·5	250	167	160·5	
1919-1920	564	69·0	200	246	224·5	
1920-1921	1148	140·5	150	221	225	Cotton import duty raised to 11%; Import duty of 5% on yarn levied.
1921-1922	1190	145·8	429	231	204	
1922-1923	1341	164·1	308	195	198·5	
1923-1924	1005	123	225	160	193·5	
1924-1925	1256	154·8	162·5	162	192	
1925-1926	1160	142	206	183	198	Excise duty of 3½% abolished.
1926-1927	1336	163·5	175	187	194	
1927-1928	1312	160·5	138	185	...	Specific duty on yarn.
1928-1929	1060	130	125	181	...	
1929-1930	1384	169	163	192	...	Increase on the duty of cloth and specific duties on cloth.

The above table is based on certain assumptions: (1) that the weaver's earnings can be indicated by the difference of the prices between the mill cloth and the mill yarn; and that there is a correspondence, though somewhat remote, between the weaving margins of mills and the weaver's earnings, (2) that the extent of hand-loom production has got a direct influence on the earnings of the weaver and (3) that the cost of living of the weaver can be roughly measured by the general level of prices, more properly by the retail prices of

food-grains; for, food-stuffs account for more than 60 per cent of his expenditure. A study of these sets of figures along with the incidence of famine, currency and fiscal policy and the general economic condition of the country will indicate broadly the changes in the condition of the weaver. And it must be noted that these figures are not purposely correlated; nor are the *per capita* earnings or even the aggregate earnings of the weavers worked out. The table is given for what it is worth.

It indicates however (*a*) that the condition of the weaver is affected adversely by the rapid fluctuations in his aggregate outturn as well as in his earnings; (*b*) that his condition was at its worst during the last century, especially during the period of free trade in India; (*c*) that wars, famines and the currency and fiscal changes have affected his prosperity; and (*d*) that there is nothing to show that his economic condition has materially improved during the last sixty years.