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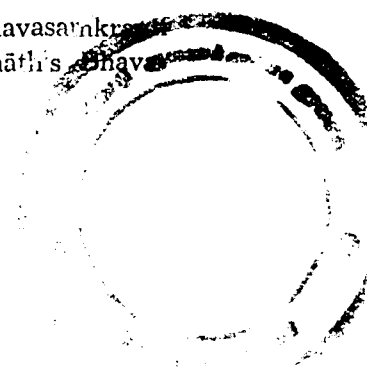
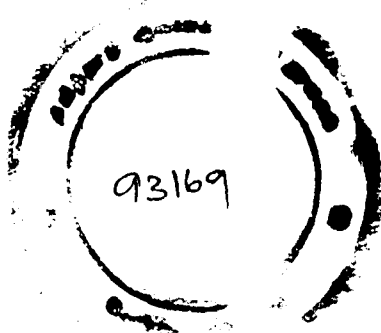
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STUDIES IN SORGHUM*

By

G. N. RANGASWAMI AYYANGAR, F.N.I., I.A.S.

Sorghum is the premier cereal for tracts with low rainfall. It is an important food crop, especially of the poor. As a member of the grass family, studies on it have a wider import and applicability to the whole group of cereals and to the wider range of grasses. Unlike maize there are not different inflorescences accentuating the differences in the sex of the floral parts. Unlike maize and the Paniceae, Sorghum is awned. With its heteromorphous florets and typical grass inflorescence, it could be claimed to be an ideal object of study. It is a giant grass and many characters difficult of pursuit in small and minute grasses, could be easily studied in this Great Millet. Moreover, its grains are big and develop in the open and provide a comprehensive colour response, denied to grains enclosed in their husk.

Sorghum is African and Asiatic in origin. The realisation of its value as a cereal and the consequent early introduction into America, the land of maize, has given its study an invaluable impetus. Among big grasses, the bamboo is a giant, but is not a cereal. Sugarcane is big, but is not a grain producer. Maize is a big cereal, but its exacting requirements have impeded wide distribution. Sorghum is thus unique in the field. Providing a valuable food for man, and an abundance of valuable fodder for cattle, sorghum, with its drought-resisting qualities holds a high place in the economy of man. To a botanist and geneticist, it is an ideal object for study.

Through the courtesy of the Director, Royal Botanic Gardens, Kew, I have been able to get and grow a world wide collection of sorghums gathered for study by Mr. Snowden, under the Bentham-

*The Maharaja of Travancore Curzon Lectures of the University of Madras, delivered at the Agricultural Research Institute, Coimbatore, on the 1st and 2nd of December 1938. (Summarised.)

Moxon Trust. In these lectures I will endeavour to present some of the salient points of the latest knowledge about the botany and genetics of sorghum.

Seedling Colours. The child is the father of the man. Seedling characters are an index to the characters of the adult. Seedlings have a shoot and a root. The shoot may be purple, deep purple, or green. The root may be reddish purple, blackish purple or brown. When the shoot (coleoptile) is coloured purple (gene PC) the axil of the leaf-sheath is also coloured purple. When the shoot is deep purple, the axils are coloured deep purple and in addition to this the auricular junction (gene PJ), the outer margins of leaf sheaths and the nodal bands are also coloured purple. When the coleoptile is green all the above parts are green. When the root is coloured purple (gene P) the leaf-sheath and glume are also coloured purple. There are also patches of colour on midrib, leaf-blade, pith, internode, panicle branches, pulvinar region, pedicelled spikelets and grain. When the root is brown the leaf-sheath and glume are brown. In the shoot the pigment is only epidermal and develops in light. In the root both external and internal tissues are pigmented and the pigment develops even in darkness and is retained even after death. The mesocotyl responds like the shoot when exposed and like the root when buried.

The wild sorghums have mostly a deep purple coleoptile (shoot colour). This gives them a deep purple leaf axil and a purple auricular and nodal band. Their roots are mostly blackish purple (gene q) in colour and consequently their leaf-sheaths and glumes are blackish purple.

The bulk of the Asiatic grain sorghums which belong to the *durra* sub-series have got the common purple coleoptile. In the adult plant the axil only is coloured purple. The deep purple coleoptile with the attendant deep purple axil, and purple sheath margin, junction and nodal band is comparatively rare and is met with only in *S. caudatum*, *S. caffrorum*, *S. dochna*, and *S. nervosum*. The green coleoptile is very much in evidence in the *caffra* and *guineensis* sub-series of cultivated sorghums which are predominantly African.

The roots of most sorghums are coloured purple. When so coloured, the leaf sheath and the glume are also coloured purple. The purple of the organs viz., root, leaf-sheath and glume, may be reddish purple or blackish purple. The former is very much in evidence in the Asiatic sorghums, and the latter in the African sor-

ghums. All the wild sorghums have their roots coloured blackish purple. In cultivated sorghums there are more blackish purple roots than reddish purple ones. When the roots are brown (without purple) the leaf-sheath and glumes are brown. *S. Roxburghii* the group to which the *Talaivirichan cholam* of Coimbatore and the *Konda Jonna* of the Northern Circars of the Madras Presidency belong, has the largest number of brown rooted types. A green coleoptile and a brown root, make the plant green throughout and this minority type has the largest representation in *S. Roxburghii*. It has been found that there is a linkage between juiciness of stalk and purple in the leaf-sheath, and it is no wonder that in many of the *Talaivirichan cholams* the stalks have poor fodder value, being used more for fuel and thatch. Feeding tests at the Millets Breeding Station show that animals prefer stalks with reddish purple leaf-sheaths to those with blackish purple ones, a further preference among coloured sheaths.

PC (purple coleoptile) is a monogenic dominant to pc (green coleoptile.) Factor PJ (deep purple coleoptile and purple junction) which could express itself only in the presence of PC, is a simple monogenic dominant to pj. The coleoptilar pigment gene PC is linked to the root pigment P with a crossover value of about 18 per cent. Thus the colours of the shoot and the root of the seedlings of sorghum afford a clue to the distribution of the purple pigment in the adult plants.

Chlorophyll Deficiencies. Another important character seen in the seedling stage is chlorophyll deficiency. These deficiencies are common and are of various kinds. They may be albinotic, entirely or partially. They may be pale green. The pale greens may die early or survive. A new instance of seedling death has been met with. In this the seedling leaves are normal green. Five to 6 leaves are formed. There is then a cessation of growth, a drying of the leaves and death within a month of sowing. This deficiency and consequent death has proved a simple recessive to the normal healthy seedlings. A variant of this experience has also been met with. In this a few of the weak seedlings have a poor and dwarfish growth and manage to reach the heading stage and subsequently die without producing an earhead.

The occurrence of lethal and surviving pale seedlings has already been reported on. There are indications of a linkage between the purple pigmentation of the coleoptile and a type of chlorophyll deficiency resulting in lethal pale green seedlings. A new type of patchy pale has been met with in a selection from

Rhodesia. Light green patches develop on the early seedling leaves, the patches being evident more in the lower surface. These patches are confined to the first few seedling leaves, the later leaves being normal. The seedling mass is light green in colour. The plants developing from these seedlings are weak and are easily susceptible to the attack of the shoot borer. This character has proved a monogenic recessive to the normal green.

Depth of Leaf Green. There are three grades, dark green (*S. caffrorum*) green (most of the sorghums) and light green (broom corn and Chinese sorghums.) These have a genic background. The darker green is dominant to the lighter.

Leaf-tip Hairiness. The groups of sorghum, *S. caudatum*, *S. cernuum*, *S. durra* and *S. caffrorum*, have minute spinescent hairs towards the tip of the leaf blades on their upper surface. These are best seen in young and fully developed leaves. In older leaves they tend to fall off. In segregations with glabrous leaves, the hairy condition has proved a monogenic dominant. *S. Roxburghii* has glabrous leaf-tips. Its stigmatic tips show a tendency to be featherless. There is a linkage between glabrous leaf-tips and featherless stigmatic tips with a crossover value of about 25 per cent. *S. Roxburghii* is conspicuous in having no awns. There is a linkage between glabrous leaf-tips and nil awns with a 43 per cent crossover. Between nil awns and featherless tips there is a linkage with a crossover value of 18 per cent. There is thus a close relationship between leaf-tips, awns and stigmatic feathers.

Leaf-tip Drying. The tip of the leaf (from the fourth leaf onwards) dries up in one pure line of Sudan grass from Russia. Concurrently with this dessication there is the drying up of the tips of the panicle. This concurrent manifestation of dessication is a simple recessive to the non-dessicated condition.

Yellow Midribs. Midribs are coloured white when pithy and dull green when juicy. Both types have no pigment other than green. A type which develops an yellow pigment in the midrib of leaves when fresh, which pigment disappears in older leaves, has been met with in a few varieties from Baluchistan. This type is a simple monogenic dominant to the normal midrib colour and is independent in inheritance of the D factor determining the juiciness of stalk.

Junctions—Broad and Narrow. The normal ligulate and auriculate condition has been noted to be a simple monogenic

dominant to the e-ligulate and non-auriculate condition. When non-auriculate, the spikelet-free area in the panicle branches is very much reduced and the cushiony pulvinus at the base of the panicle branch is absent. The auricular structure which for the sake of convenience is called the junction (it is at the junction of the leaf-blade and the leaf-sheath) is usually broad and occasionally narrow. A broad junction is a monogenic dominant to a narrow junction. In both cases the pulvinus is present. When the junction is narrow, the spikelet free area in the panicle is comparatively less than when the junction is broad and the leaves make a narrower angle with the stem.

Nodal Band. There is a band of soft tissue above the nodes, and at the very base of the leafsheath. The colour response on this band is related to that on the grain and dry anther and is of two kinds. The first type of colour is anthocynaic and belongs to the coleoptile-axil purple. When the coleoptile and axil are deep purple, the nodal band turns purple. Along with this nodal purple the junction is markedly coloured purple and the factor giving a deep purple coleoptile has therefore been designated PJ. This purple is a monogenic dominant to the green in the band.

The second type of purple is darkish and manifests on a reticulated background. This is associated with a sienna coloured dry anther. When there is a brown wash on the grain (factor B) it inhibits this reticulated purple and leaves the node green. A similar effect is produced in red grained plants. This type of colour could show only in the yellow grains which have the W (whole colour) and I (intensification) factors and have not red or brown. The association between the sienna anther and the reticulated purple nodal band is so great that it is automatically a dominant or recessive to a green nodal band according to the segregate in which this sienna anther finds itself. The reticulated purple nodal band is a monogenic recessive to the ordinary purple.

Usually, whenever the nodal band is hairy, the glume is also hairy. This concurrent manifestation is only an aspect of a close association between the manifestation of hairiness at these different places. Experiences of a pure hairy nodal band with simple monogenic segregations for hairiness on the glume have been recorded and *vice versa*.

Purple in Leaf-axil. The presence of this purple is brought about by two complimentary genes. Ratios 9:7 have been obtain-

ed between P in the axil and no colour there. It has already been stated that this axil colour goes with the colour of the coleoptile (PC.)

Brownish Yellow Mechanical Tissue. The mechanical tissue in sorghum is usually not prominently coloured. A type of brownish purple coloured mechanical tissue that occurred as a mutant is already on record. Another type that is brownish yellow (without purple and African in origin) has been met with. In crosses with varieties in which the mechanical tissue is not coloured, 9:7 ratios of colourless to brownish yellow mechanical tissue have been obtained, showing the bi-factorial complimentary nature of the inhibitory factors at work.

Juiciness of Stalk. In sorghums with pithy stalks the midrib of the leaf is white in colour. Where the stalk is juicy the colour of the midrib is a dull leaden green. In juice extraction the dull is about twice the white. The white midrib (pithy stalk-factor D) is a simple dominant to dull midrib—(juicy stalk—factor d.) These two types of midribs are the commonest. There are other variants of these two types, and these are dull white and streaky dull. The dull white is about two percent more in extraction than the white and is a simple recessive to it. The streaky dull is about two percent less in extraction than the dull and is a simple dominant to it. There is a linkage between the juiciness in the stalk and purple in the coleoptile and axil. One of the two factors responsible for this pigmentation is linked to the streaky dull midrib with about 17 per cent crossover value and to the dull midrib with about 28 per cent crossover value.

Peduncle. The peduncles in sorghum earheads are usually straight. Some are slightly wavy. This waviness predisposes to goose-necking. In Sudan grass in which there is good emergence of the earhead the wavy peduncle shows itself well and is a simple recessive to the straight one.

Peduncular Scar. Below the panicle there is usually a scar from which occasionally an odd floral spur arises. This scar is very possibly ligular and auricular in nature. Proliferated abnormalities indicate that this is the vestige of the final leaf sheath fused to the peduncle. In plants that are e-ligulate and non-auriculate this scar is absent. Panicle abnormalities suggest that the grooved central stalk of the panicle has arisen by the fusion of the spikelet-free areas of many panicle branches. The broom corns

afford an illustration of this. The goose-necking of individual panicle branches in this sorghum provides additional evidence.

Panicles. Some panicles have the peculiar shape of a spindle which is acicular. This shape of panicle has proved a simple dominant to the common oval type. A medium compact panicle is a simple dominant to a compact one.

The central axis in a sorghum panicle usually ends with a bunch of branches. Stray instances occur in which the potentialities of the axils to lengthen out are shown by the odd occurrence of a spur which is sparsely spikeleted. In one of the pure lines of Sudan grass, this abnormality has proved recurrent.

Glume Texture. The glumes (both outer and inner) in grain sorghums are mostly coriaceous. When the leaf sheath is coloured purple, both the coriaceous glumes are coloured purple. When the leaf sheath is brown, the glumes are brown but may have a coloured base or coloured specks on the glume. In the *nervosa* sub-series of sorghum, *S. nervosum* has a herbaceous outer glume which does not take colour and a coriaceous inner glume which takes colour. In the same sub-series *S. membranaceum* and *S. melaleucum* have both the inner and outer glumes papery and non-receptive to colour. In *S. splendidum* both the glumes are neither papery nor coriaceous but crustaceous and receptive to colour. The inner glumes remaining coriaceous, the outer glume may be coriaceous or papery. The former condition is a simple monogenic dominant to the latter. Both the glumes being coriaceous is a simple dominant to both being papery.

Grain sorghums have evolved in a direction in which the outer glumes have become more and more coriaceous. Some glumes are herbaceous. Most of the leathery glumes are herbaceous at their top ends. In *S. dimidiatum*, the glumes are coriaceous in the lower half and herbaceous in the upper half. The division is sharp. In this sorghum there occurred a mutation which was wholly coriaceous. In crosses between the two types, the fully coriaceous glumes was a simple monogenic dominant. This throws light on the genic origin and evolution of the coriaceous glumes of the grain sorghums.

When the glumes are papery their edges could curve in. The curving-in may in some cases result in an interlocking between the edges of Glume II and III. This condition results in cleistogamy. The curved glume edge leading to interlocking in the papery glumes of some *S. papyrascens* is a simple recessive to the

normal edge. There could thus be a simple Mendelian segregation for Chasmogamy and Cleistogamy.

Glume Nerves. In coriaceous glumes the top of the glume is nerved. In herbaceous ones the nerves extend almost to the base of the glume. The top nerved condition is a simple dominant to the fully nerved condition. In coriaceous glumes the length of nerving at the top is influenced by the shape of the glume. When the glume is obovate the very top is nerved. When ovate the nerves are longer. The evolution of the sorghum glume seems to have been from an elliptic to an obovate condition. Glume nerves, a character that figures prominently in taxonomy, is thus Mendelian in behaviour.

Glume Wrinkling. The glumes are usually smooth rounded and convex. In some races there is a transverse wrinkle about the middle of the glume and in some instances below the middle. This wrinkle may occur in both the glumes. Complementary factors are at work. When either or both the factors are absent, the glumes are not wrinkled.

Glume Hairs. Glumes are glabrous or hairy. Hairiness is a simple monogenic dominant to the glabrous condition. When the hairs are thick and long the glumes are felty. *S. stapfi* has typical felty glumes. Felty glumes are a simple dominant to hairy glumes. A 9:3:4 ratio of felty, hairy and glabrous glumes has been obtained. The 4 "glabrous" glumes could, with care, be separated into 3 with a fringe of long hairs at the edges and 1 with short hairs. There are no absolutely glabrous glumes. Whenever the glumes are hairy the nodal band is usually hairy. In felty glumes, the nodal band has only ordinary hairs.

The hairs on the glumes, pedicels, and the callus are usually hyaline. In some African races these hairs show purple at flowering time for a short period. Purple hairs at these places are a simple monogenic dominant to hyaline hairs.

Awns. The awn in sorghum varies from being very rudimentary, to being very long. The long awn is a recessive to the very rudimentary awn. Dominant inhibitory factors have been at work. The inhibition may be absolute or partial. When partial there is 1:2:1 ratio of rudimentary, short and long awns, the shorts proving always heterozygous. Even in simple nil to long segregations the nils could be separated into those with strong and those with weak lemma tips. The weak lemma tip is heterozygous. The

rudimentary awn is likely to be confused with an absolutely nil awn. The real nil awn is a recessive to the awned conditions. Awns, when present may be constant or inconstant in manifestation. The condition of constant manifestation is a simple monogenic dominant to inconstant manifestation. There are genes affecting the length of the awn. In the absence of inhibitory factors, a long awn is dominant to a short awn. When inhibitory factors are present, a short awn is dominant to a long awn. In a Rhodesian pure line of *S. coriaceum* it was observed that the glume length was going along with the awn length and falling roughly into the segregates for awn length. Concurrently with the shortening of glume and awn length, there was a shortening of the length of the anther and stigma and the floral parts in general.

Purple Stigmas. Almost all the sorghums have a hyaline non-purple pigmented stigma. A few races have purple stigmas. These purple stigmas are a simple monogenic dominant to the normal colourless ones.

Hairy Styles. The stylar arms of the stigma are usually smooth. In rare families as in *S. membranaceum* and *S. cernuum* they could be hairy. When so hairy the column of the awn which is usually smooth gets barbed. The hairy stylar condition (barbed column) is a monogenic dominant to the normal smooth styles and columns.

In mature grains the stylar bases usually fall off. In some families they persist and give a grain with a spiky tip. An instance in which the style with its hair persistent even after dessication, has been met with. -

Purple Blotched Anthers. Anthers with purple blotches on them somewhat similar to blotches on grains, have occurred in one rare instance. These coloured blotches are different from the colour that may appear on their whole surface or at the tip or the bottom of the anther sacs. In the case of blotched anthers the blotching is in spots that disintegrate the sac tissue and affect the pollen contents. The nett result of a number of blotches thus affecting the pollen is a degeneration of the pollen content, a shrivelled anther reduced in size and the consequent sterility. Blotched anthers have proved a simple recessive to normal anthers.

Non-elongation of Filaments. An interesting experience in anthesis (probably mutational in origin) has been noted in a variety of *S. halepense* from Palestine. Normally, at the time of

flowering the lodicules swell, the glumes open, the filaments elongate rapidly and the anthers come out and dangle. In this peculiar instance everything is normal except the fact that there is no elongation of the filaments. This results in the anthers being stuck up inside the flower. This unusual condition atrophies the development of the anthers, resulting in poor pollen content. There is dehiscence only in stray cases. The nett result of all this is sterility in the plants having this abnormality. Since, in the case of empty anther sacs there is normal elongation of filaments, it is deducible that non-elongation is conditioned by separate genic action. The stigmas being normal and receptive, there is much natural crossing. These reduced filaments are a simple monogenic recessive to the normal filaments. It is of fundamental interest to note the genic background to such a vital and well-known phenomenon as the elongation of the filament in gramineae, which is set down to a distension of the cell wall consequent on the rapid absorption of moisture from the anther. This rare phenomenon will be easily intelligible when we realise that it has been recorded that such a vital structure as the midrib in a grass leaf and so common and useful a phenomenon as tillering in grasses have been traced to the play of definite genes.

Pollen Sterility. Pollen mostly devoid of contents occurred in one of the South African selections. This proved a simple recessive to normal healthy pollen. In the hybrid condition the empty and normal pollen is about equal.

Brown Grain Linkages. There is a linkage between the Z factor (pearly-chalky grains) and one of the B factors for brown grains with a crossover value of about 30 per cent. One of the B factors is also absolutely linked to the factor that colours the tips of the basal lobes of the anthers, purple. Such a rare type was met with in *S. dochna*, var. *Irungu*. One of the B factors is also linked to one of the factors colouring the axil purple with a 5 per cent crossover.

Nucellar Brown Linkages. Many of the new African varieties with a brown coloured nucellus have acclimatized and are now growing well at Coimbatore, and in crosses with local varieties have given good populations. It has been found that a blackish purple leaf-sheath (q) is linked to the nucellar brown with a crossover value of about 21 per cent. The P factor is however independent in inheritance. Nucellar brown is linked with the factor arresting the development of starch grains resulting in dimpled

grains, with a crossover value of 32 per cent in the repulsion phase. The nucellar brown is also linked to the PJ factor that deepens the purple colour of the coleoptile and axil, and also colours the junction and other places. In this case the crossover value is about 22 per cent.

Multiple Seededness. This condition is the result of (1) extra fertility in the axil of one of the usually empty glumes, (2) the connateness of the grain, and (3) a combination of both of these. Connateness and extra fertility are governed by independent genes. The connate condition is a simple recessive to the normal single condition. In one of the connate races belonging to *S. caudatum* from Africa, the following repercussions to connateness were noticed—(1) stray twin midribs, (2) stray twin buds, (3) very rare twin panicles, and (4) twin flags.

Bulbils. In some double seeded varieties there is a tendency to the formation of bulbils. In one pure line the formation of stray bulbils is constant. The bulbillng tendency seems to be a concomitant of double seededness and a simple recessive to non-bulbillng.

Xenia. An experience of xenia giving one waxy grain to 15 starchy grains in a crossed earhead has been met with. In subsequent generations both 15:1 and 3:1 ratios have been obtained.

Scented Sorghum. A variety of sorghum from Tanganyika named "Kinungampombo" belonging to *S. conspicuum* var. *conspicuum*, Snowden, has scented grains. The scent is somewhat similar to scented rice. Seedlings emit the scent as also the adult leaves when crushed. In crosses with non-scented varieties the scented grain character has proved to be a monogenic recessive.

Mutations. Mutations occur occasionally in sorghum. Juicy stalked plants have appeared among pithy stalked ones; long awned plants among nil awned ones, and tall plants in a normal population. Compact earheads have occurred among the usual loose heads in both Sudan and Johnson grasses. The mutants may be homozygous or heterozygous.

Non-Mendelian Recurrent Abnormalities. (a) *Aestivation of the leaf-sheath.* The leaf-sheaths of sorghum like those of many grasses twist round the stalk alternately, clockwise and anti-clockwise. This constant alternation gives the plant a foliar balance. Instances have been met with in which a disturbance in this

orderliness has occurred. There may be two or more leaf-sheaths consecutively clockwise or anti-clockwise. As many as 13 could be so. When seeds from these aberrants are sown a few of the progeny reproduce the aberration. Sister heads that are normal also reproduce the same. The aberrating tendency lurks in the line.

(b) *Budless Stalks*. In all normal sorghum plants, every node except the topmost one has a leaf bud in the axil of the leaf-sheath. Even in the axil of the flag an axillary bud might occasionally develop and grow. A budless condition of the lower nodes is rare. There was one instance in which a pure line threw constantly a few budless plants. Heads from both the normal and the budless plants when sown, throw a few budless ones fairly constantly.

(c) *Headless Main Shoots*. Plants in which there is a suppression of the earhead in the main shoot are occasionally met with. In these the shoot develops normally and all vegetative parts including the flag are produced. The plant ends with the taper of the leaf-sheath of the flag. When the growing point is cut there are not even the rudiments of an earhead. The whole of the bud area is healthy. Though the main shoot does not thus elaborate the reproductive phase, the lower axillary buds could grow and produce an earhead. With the help of these heads this phenomenon could be perpetuated in a few of the progeny.

Striga-resistance. An African variety of sorghum, "Bongonhilo," is absolutely resistant to the attack of the flowering root parasite, striga. When crossed with a susceptible local variety, *Periamanjol cholam*, the F_1 plants were absolutely resistant. Back crossing with the local variety to tune up yield is in progress.

Genetics, Homology and Evolution. The study of genetics contributes its share in the investigation of problems determining the relationships of organs. If there is an essential structural identity or a concurrent response to the same stimulus, then a relationship can be adduced. For realising the importance of this aspect of genetics, the plant has to be looked at as a comprehensive whole, which is to-day the resultant of the dual actions of time and space. The evolution of the sexual parts from the vegetative ones is very ancient. The elaboration of the floral parts among themselves is relatively less ancient. Therefore, it is, that genes having their major effect upon the leaves have supplementary effects on the inflorescence but genes having their major effects on the inflorescence do not affect the leaves. With this limitation,

the helping hand that genetics gives in the understanding of the organic evolution of the plant and the broad trends of its racial history, is substantial.

The homology between the stigma and the awn in sorghum has been the subject of intensive study. In another instance, namely, the leaf and glume affinities, it is noted that there is plenty of evidence for their homology also. All previous observations in this direction have been confined to the lemma and that too in proliferated spikelets. The glumes were left severely alone. Awns occur very rarely on the palea also. The green nerves at the top of the glumes, the thicker lower portion and the thinner upper portion of the glume, the deeper green top and lighter bottom, the concurrent dessication of glume tip and leaf tip in certain families, the apical concentration of purple colour, the axillary purple pigment in both leaf and glume, the concurrent coloration or bleaching of sheath and glume are some of the points in support of this homology. In the series of leaves from the prophyll upwards to the inflorescence, the sheath at first constituting the whole leaf, becomes more and more subordinate to the blade. The blade increases in size and then decreases towards the flag. Odd plants are met with in which the flag is reduced even to rudiments. In x-rayed material blades are suppressed. When, occasionally, the sterile scar at the base of the inflorescence proliferates, it is found to tend towards a coriaceous sheath with little blade. "Callus" is the name given to the slightly elevated or projecting base of the first glume. When this is glabrous, the nodal band is glabrous. When this is slightly hairy, the nodal band (base of leaf-sheath) is hairy. When, as in *S. versicolor*, it has very long hairs, the nodal band has also long hairs. These points suggest the homology of the callus at the base of the glume and the nodal band at the base of the leaf-sheath. *S. dimidiatum* affords a direct proof in this homology. The lower coreaceous and the upper herbaceous zones of the glume and the fringe of hairs in the ligular and auricular area are very suggestive of a transformed leaf. When, in one instance the grain was hollow, the internode tended to be hollow also. The embryo and the leaf bud are both centres of reproduction. The intercalary and root zones are in proximity to the leaf bud. The nodal band protecting the bud is intimately connected to the pericarp of the grain and has affinities to it through related colour reactions. The sorghum plant could thus be visualised in terms of reproductive units. The genic analysis of the plant and the concept of homology give us a clue to the comprehensive grasp of this great cereal. The studies on it are thus likely to open our eyes to the wealth of data that awaits understanding in the wider world of cereals and grasses.

By

DR. P. J. THOMAS AND MR. N. SUNDARARAMA SASTRY

SECTION I—CEREALS.

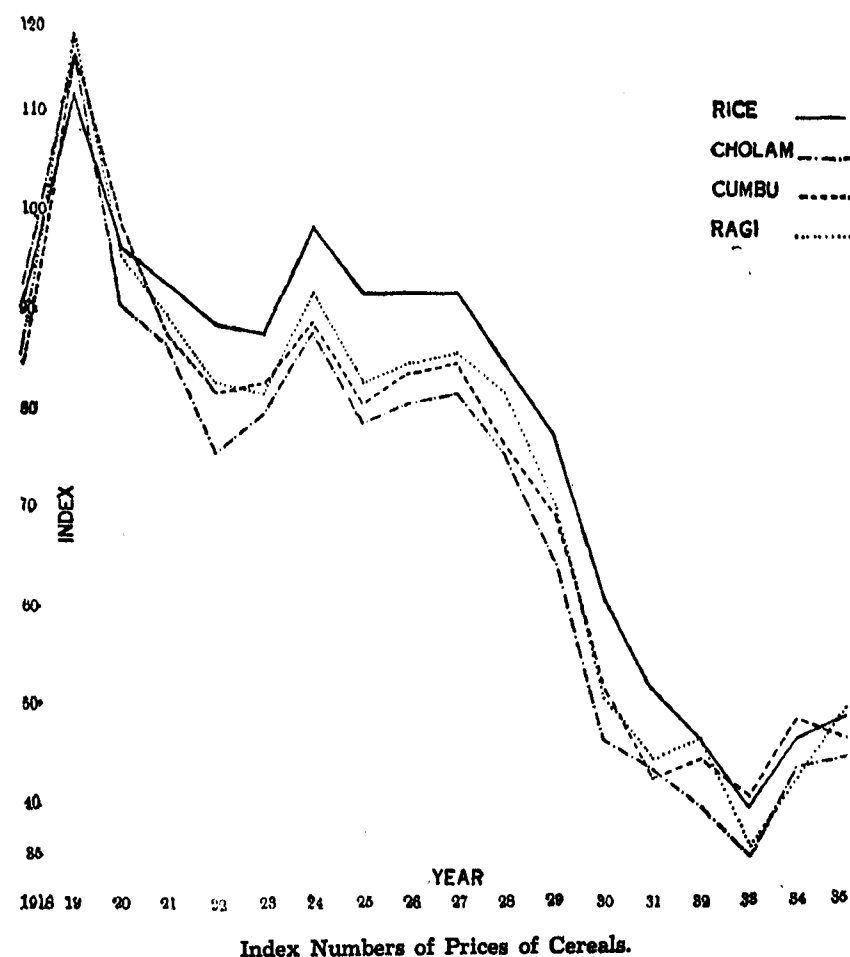
Rice and other cereals like cholam, cumbu and ragi are the most important of the crops raised in this Presidency occupying nearly two-thirds of the gross cultivated area. Rice is the largest single crop with an area of about ten million acres, and the other cereals occupy nearly 13 million acres. This clearly shows the very great dependence of the agricultural population on these commodities. Any changes in the prices of these commodities affect the great majority of the agriculturists who draw their incomes mostly from these crops.

Table I gives the average harvest prices of rice, cholam, cumbu and ragi for each year (fasli year) from 1918 to 1936. For convenience of study they are reduced to index relatives with the post-war quinquennium as base, and the following table gives the respective indices for each crop as also the 3 year moving averages. The graphs of all these series are given below.

TABLE I.

INDICES OF PRICES OF RICE, CHOLAM, CUMBU AND RAGI WITH THEIR 3 YEAR MOVING AVERAGES.

Year.	Rice.		Cholam.		Cumbu.		Ragi.	
	Index number.	Moving average.	Index number.	Moving average.	Index number.	Moving average.	Index number.	Moving average.
1918	91		93		85		86	
1919	112	100	116	100	116	100	118	100
1920	97	101	91	98	99	101	96	101
1921	93	93	87	85	88	90	90	90
1922	89	90	76	81	82	84	83	85
1923	88	92	80	81	83	85	82	86
1924	99	93	88	82	89	84	92	86
1925	92	94	79	83	81	85	83	87
1926	92	92	81	81	84	83	85	85
1927	92	90	82	80	85	82	86	84
1928	85	85	76	74	77	77	82	80
1929	78	75	65	63	70	66	71	68
1930	61	64	47	52	52	55	51	56
1931	52	53	44	44	43	47	45	48
1932	47	46	40	40	45	43	47	43
1933	40	45	35	40	41	45	36	42
1934	47	45	44	41	49	46	43	43
1935	49		45		47		50	



From a glance at the table we find the following features common to all the commodities :

1. The maximum price for each commodity during the period under consideration is reached in 1919.
2. The minimum price was touched in 1933.
3. There was a sudden spurt in the prices of all commodities in 1919 followed by a recession in the subsequent year.
4. Between 1920 and 1927, the prices of all commodities fluctuated within narrow limits, with a slight tendency for decline in prices.
5. Fall in prices commenced for all commodities in 1927, this was slow in the first 3 years and very rapid after 1930.

6. The trough of the depression was reached in 1933 and afterwards there was a revival though the level of prices remained very much below the pre-depression level.

All these points are clearly brought out by the graphs, which indicate a very high degree of correlation between the prices of these different commodities. In fact, adopting Karl Pearson's product movement formula for correlation, the following results are arrived at.

Commodity.	Coefficient of correlation
Rice and cholam ..	0.97
Rice and cumbu ..	0.95
Rice and ragi ..	0.98

These results are to be expected because when there is a fall in the price of rice, more people from the poorer classes take up to it, and thus reduce the demand for millets, bringing down their prices also. On the other hand, when price of rice goes up, millets will be substituted at the margin, the demand for the latter increases, and consequently their prices also go up.

The following table gives the arithmetic mean, standard deviation and coefficient of variation of each of these commodities during the period under consideration.

Commodity.	Arithmetic mean.	Standard deviation.	Co-efficient of variation.
Rice ..	72.7	19.0	26.1
Cholam ..	64.5	19.6	30.4
Cumbu ..	66.0	18.5	27.9
Ragi ..	67.1	20.0	29.8

We find that the average price of rice during the period was less than three-fourths of the base period and that of the millets about two-thirds. Rice occupies the first and cholam the last place in the series. From the column of standard deviations we find that the variations in prices are almost the same; but these variations are highest in ragi and lowest in cumbu. But as the mean values differ the coefficient of variation is a better measure of the variation. From that we find that the variation is highest in cholam and least in rice. This clearly shows that the price of rice was more stable with less fluctuation and higher average. On the other hand, the millets, out of which cholam is the worst, record greater fluctuations and a heavier fall compared with the post-war triennium.

Factors influencing the local price of rice

The normal price of a staple commodity like rice is settled by the cost of production at the margin, but when a country imports a necessary part of the commodity from another country, the marginal cost to be taken is that in the latter and not in the former. The following table gives the imports and exports of rice in Madras for the period under consideration.

TABLE II.
SEA BORNE TRADE IN RICE
(in thousands of tons)

Year*	Imports.		Exports.
	Burma.	Total.	
1918	219	219	121
1919	409	409	10
1920	244	244	38
1921	186	186	94
1922	234	234	86
1923	219	219	100
1924	257	257	91
1925	282	282	101
1926	176	176	153
1927	180	207	149
1928	276	417	147
1929		204	97
1930		241	104
1931		315	63
1932		298	66
1933		403	76
1934	742	1077	73
1935	897	1043	71

*Here the year is the official year from 1st April to 31st March.

From the above table we find that Madras Presidency is throughout a net importer of rice, and almost the whole of these imports are received from Burma. Of course for a couple of years between '33 and '34 there was the menace of large imports of cheap rice from Indo-China and Siam but this was soon curtailed by the imposition of import duty on rice. But during the last few years, specially after 1933, the volume of imports from Burma has increased tremendously. Just as cheap transport of the late 19th century shifted the margin of European wheat production to America, the influx of cheap rice from outside has reduced the price of rice in India to the level of Burmese prices. In Burma, the cost of production of rice is much lower than in India, because

it is cultivated in fertile rainfed lands paying less land revenue than similar land in India. It was estimated in 1934 that an acre under rice cost Rs. 24 in Tanjore and Rs. 17 in Burma. The cost of sea-transport between Burma and India is also lower than the rail transport between different stations in Madras. Therefore Burma has been able not only to beat out Madras rice from Ceylon but to sell rice in Madras itself.

That the Madras price of rice closely follows the price of rice in Burma may be seen from a comparison of the prices in Rangoon and some important centres in Madras during the last few years given in the following table.

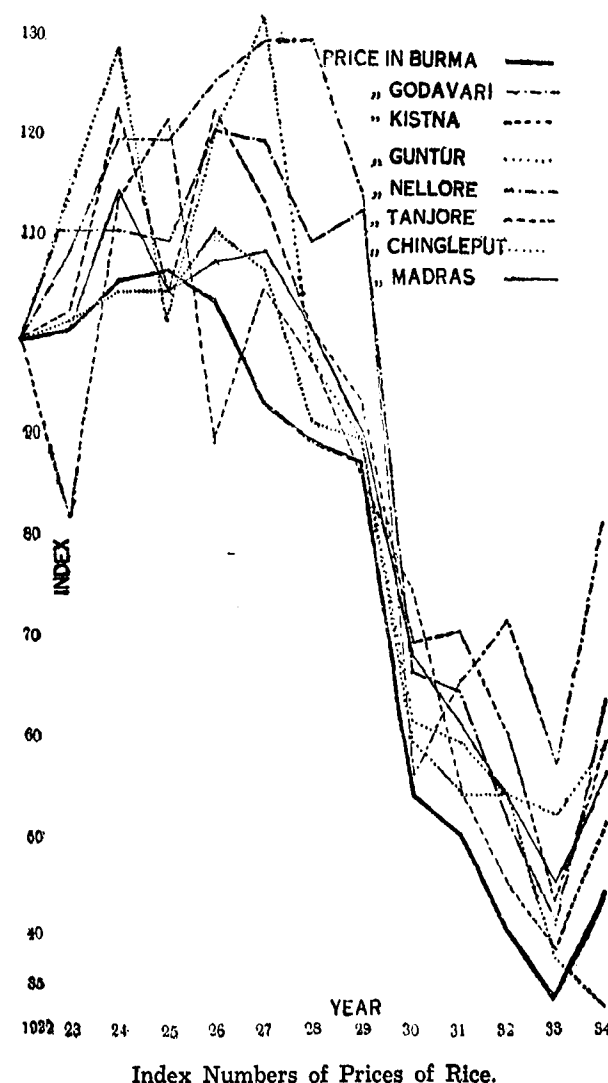
TABLE III.
INDEX NUMBERS OF PRICE OF RICE WITH 1922 AS BASE.

Year.	Burma.	Godavery.	Kistna.	Guntur.	Nellore.	Tanjore.	Chinglepet.	Madras.
1922	100	100	100	100	100	100	100	100
1923	101	111	104	102	109	82	115	101
1924	106	111	123	105	120	114	128	115
1925	107	110	105	105	120	122	102	105
1926	104	121	123	111	126	90	121	108
1927	94	120	114	107	130	105	132	109
1928	90	110	101	92	130	98	98	101
1929	88	113	94	90	115	87	90	91
1930	55	67	70	60	57	75	62	69
1931	51	65	71	55	66	55	60	62
1932	41	52	61	55	72	46	55	55
1933	34	42	44	38	58	39	53	46
1934	45	64	60	33	82	52	60	57

Using Karl Pearson's product movement formula the following coefficients of correlation are arrived at.

Rangoon and Godavary	..	0.92
" Kistna	..	0.97
" Guntur	..	0.98
" Nellore	..	0.91
" Tanjore	..	0.89
" Chingleput	..	0.94
" Madras	..	0.96

The coefficients are very high and point out the great influence of price of rice in Rangoon in different markets. The accompanying graph also points out to the same conclusion.



Indo-China Rice and Indian Prices

In 1933-34 and 1934-35, there was a sudden increase in the rice imports from Indo-China and Siam and it was thought that this was the cause of the low price of rice in India at that time. With a view to counteracting this, a duty of 12 annas per maund was placed in April 1935 on imports of rice (not in husks) from foreign countries, but not on imports of paddy. As for the effect on prices, it was very limited. It is true that price rose from an average of Rs. 3.6 per maund in 1934-35 to Rs. 4 in 1935-36, but it

may not be correct to assume that the rise was entirely due to keeping out foreign imports; for we know that in that year rice production was at a rather low ebb in India (including Burma). According to the *Review of the Trade of India* for 1935-36, "The Rangoon market price of rice was generally on a higher level than in the preceding years" and "the quantity available for export between April 1935 and the end of the season was estimated to be smaller than in previous years" (p. 95). This led to some firmness in the Rangoon market and must have been the cause of the upward trend of prices in India. In spite of the continuation of the duty on broken rice in 1936-37, the prices continued to fall in that year due to a congestion in the Rangoon market on account of surplus production. Thus we see that the Rangoon market price of rice determines the price in Madras.

Evil Effects of the Fall in Prices

It has already been pointed out that rice and other cereals occupy a very important place in the agricultural economy of the province. So the continued depression in the prices of these commodities causes great misery to a very great section of the people both cultivators and farm labourers. The fluctuations of the price of rice immediately react on those of millets, and the former are shown to be regulated by the Rangoon market.

Raising Prices

The one conclusion that emerges from a study of the price trends is that in the present circumstances a rise of prices in India cannot take place so long as the Burmese prices remain low. But the immediate prospect of a rise in Burma is remote, considering the shrinkage in its foreign markets. In 1913-14, Burma exported 1835 thousands of tons of cleaned rice to foreign countries and even in 1931-32 the exports came to 2000 thousands of tons. But markets have contracted since and in 1935-36 exports came to only 1218 thousands of tons. Exports to Europe have greatly declined and even greater has been the fall in Chinese demand. It may be said that low prices may lead to substitution resulting in reduced production. But this may not always happen in countries where peasant economy prevails.

Economic recovery in Europe is bound to raise the price of rice, sooner or later, but if Burma and India are to benefit by it, we must improve the quality and grading of our rice and must carry on an active propaganda in Europe and America. Unless

such action is taken, it will not be possible to recapture lost markets.

Another alternative will be to restrict rice production. Restriction may be anti-social in the case of cereals in India, seeing that the existing production is hardly adequate for the proper feeding of her teeming millions. But it may be more justifiable in the case of Burma; for while Indian rice is produced mostly by peasants chiefly for their own consumption, the bulk of Burma rice is produced for the export market.

If prices continue to remain low in Burma, India will have to take action within the country. If prices are to rise, either demand must increase or supply must be restricted. In a country like India with millions of people unemployed or under-employed—and therefore underfed—the slightest increase in purchasing power will have immediate beneficial repercussions on the demand for foodstuffs. Hence the great advantage of an increase in employment at this juncture. Such increase may come from private enterprise or from public undertakings, and there is great scope for both in India to-day. But such attempts at raising prices internally will be nullified unless we control the imports of rice. When prices look up, stocks from Burma or Indo-China may come in and depress prices again. But it will not be advisable to keep out Burma rice by means of tariff. Even after separation, it is to the interest of both India and Burma to maintain friendly trade relations. It may be necessary, however, to regulate the imports of rice from Burma with a view to preventing a glut in the Indian market. Having regard to the conditions of the crops and the stocks available from time to time, licenses must be granted to importers. The object of the regulation, however, must be to prevent not only glut but also scarcity; for, we have to remember that rice is the staple food of the majority of India's population and that a great many more people are interested in it as consumers than as producers. For any such regulation, more accurate forecasts of rice crop are essential, and hence the importance of improving our crop statistics.

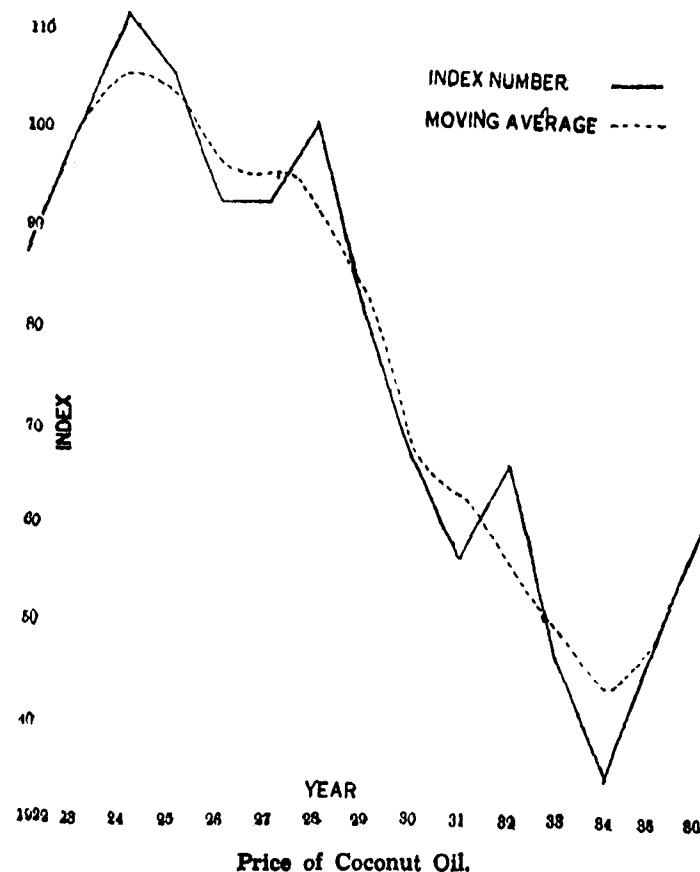
SECTION II—OIL-SEEDS

Next to food grains, oil-seeds occupy the largest area under crop with a total area of about 5½ millions of acres out of a total cultivated area of 39 millions of acres in 1933-34. Among the different kinds of oil-seeds groundnuts occupy the first place with an acreage of about 38 lakhs of acres, followed by sesamum with

8 lakhs and coconut with nearly 6 lakhs. The other kinds of oil-seeds account for about 5 lakhs of acres. Of the above three, sesamum seeds are used mainly for domestic consumption and figure very little in either export trade or industrial production. But coconut products occupied a very important place in pre-war exports and are now extensively used in the production of soaps and margarine in the country. As regards groundnuts, they formed only a small part of export trade in pre-war years, but in the post-war period they proved the most important articles of export among oil-seeds and were to a very large extent responsible for the prosperity of the producers and traders. In the following it is proposed to consider the trends in the prices of these two commodities in the post-war period.

COCONUTS

Coconut palm supplies the means of subsistence to a large number of people in South India, especially to the West Coast.



In the distribution of this crop in this Presidency, Malabar district occupies the first place with an area of about three hundred thousands of acres. Next in order come E. Godovari with an acreage of a little over fifty thousand acres, S. Kanara with a little below fifty thousand acres and Tanjore with about thirty thousand acres. The rest of the districts account for about a little over a hundred thousand acres. The concentration of this crop in the West Coast is due to the existence of better natural facilities exploited by the hardworking, resourceful ryots of those areas.

The most important markets for coconut products exist in the Indian States of Travancore and Cochin. In the following table the Cochin annual average prices of white oil per candy of 684 lbs. in different years are given. The data are obtained from the *Indian Trade Journal*. Oil is selected because it is the chief product for which accurate figures are readily available. There is a high correlation between the prices of oil in different markets of the States and neighbouring British provinces and as we are interested only in the trend of prices the above figures are taken for want of accurate data in the Madras centres. The table in the Appendix gives the monthly average prices for the different years.

TABLE I.

PRICE OF COCONUT OIL FROM 1922 TO 1936.

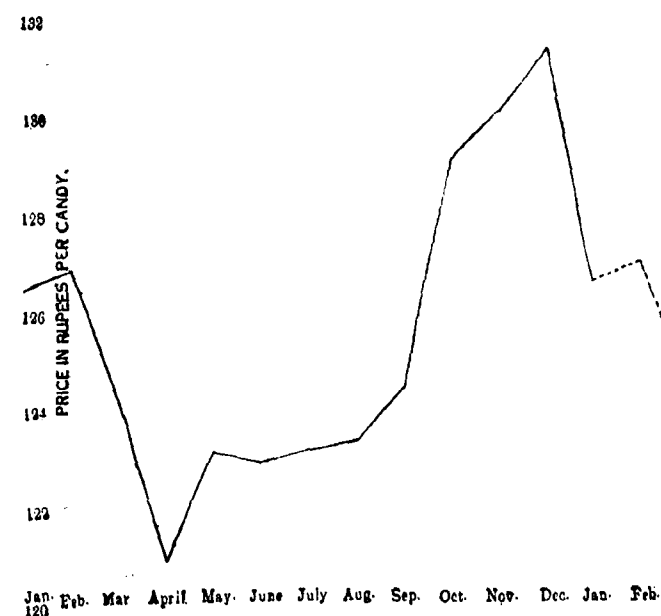
Year.	Average Price in Rs. per candy.	Index no. of price.	Three Year Moving Average.
1922	143.6	88	
1923	163.5	100	100
1924	182.1	112	106
1925	173.3	106	104
1926	151.3	93	97
1927	100.9	93	96
1928	164.4	101	92
1929	133.1	82	84
1930	110.8	68	69
1931	93.0	57	64
1932	109.7	67	57
1933	77.3	47	50
1934	57.0	35	44
1935	80.0	49	49
1936	100.7	62	

Note.—The base period for the index numbers is the triennium 1922, 1923 and 1924.

From the above table we find that the price touched the maximum level in 1924 and reached the minimum in 1934. From the year of maximum price there has been a tendency for fall in prices, until it reached the minimum value except for a slight spurt in 1928 and again in 1932. The rise in prices in 1932 is explained by the damage caused to the crop by the cyclone in May 1931 in the Malabar and Tanjore districts. The tendency of the fall in prices started much earlier for coconuts than for the food grains, and as in the case of these grains the fall was heaviest in the depression period. There was slight revival after 1935, though it could not reach even to two-thirds of the base period level. It will be interesting to see whether the prices of this commodity exhibit any seasonal variation. For this purpose, the average price during each particular month of the different year is calculated, and these values are given in the following table. The graph shows the monthly variation of these prices.

Month.	Average price during the period. Rs. per candy of 654 lbs.
January	.. 126.7
February	.. 127.1
March	.. 124.3
April	.. 121.1
May	.. 123.3
June	.. 123.1
July	.. 123.3
August	.. 123.5
September	.. 124.5
October	.. 129.2
November	.. 130.2
December	.. 131.5

From the above table we find that the price of coconut oil is maximum in December and minimum in April, the difference between these two being only about 10%. The prices in May, June, July and August are almost steady; and they begin to rise in August reaching the maximum in December. The last quarter of the calendar year marks the period of maximum prices. They again begin to fall from January and reach the lowest figure in April. This phenomenon can be explained by the fact that conditions are favourable for the manufacture of copra and extraction of oil during summer when the supplies are plentiful bringing down the prices. The restriction of supply during and after the monsoon is responsible for the fall in prices during that period.



Seasonal Variation of the Price of Coconuts.

Causes for the Fall in Prices

The fall in the price of coconut oil during the period under consideration is caused by two main factors, namely, the general fall in prices of all commodities after the post-war boom period, and secondly the achievements of science which brought a number of rivals to this commodity. In addition to the two above mentioned factors, we must bear in mind the remarkable progress that has been taking place in coconut plantations in different tropical islands. From a study of the relative position of the coconut producing countries of the world, it will be found that whereas in India the area under the crop increased by only 17% between 1921 and 1930, in the whole world it increased by so much as 30%. In 1921, India had the largest acreage, while in 1930 this position has been snatched from her hands by Dutch East Indies and Philippines having come up to her level. Apart from the acreage, the new rivals are producing the crop under a completely different method. By adopting large-scale methods both in production and sale they are able to effect economies and compete very strongly with Indian produce not only in foreign but also in the local markets. Whereas India was having a prosperous trade in copra and oil in the pre-war years, of late we have been seeing the strange phenomenon of claims of protection from heavy foreign imports.

Competition in Foreign Markets

In pre-war years the international trade in copra comprised of an average export of 500,000 tons, four-fifths of which was from the Asiatic zone. The principal figure was that of Dutch East Indies followed by Philipines, Ceylon and S. India. Exports from Oceanea were about 50 thousand and from Africa about 25 thousand tons. During the war the export trade came down to 350,000 tons. But whereas exports from Dutch East Indies fell down to a quarter of the level and those from British India became almost extinct, export from Philipines, Ceylon and Oceanea far exceeded those of pre-war levels. In later years when the demand for copra revived, Dutch East Indies, the Philipines Islands, the British South Sea Islands, British Malaya and Ceylon prospered, and India completely went out of the picture. This loss of foreign trade was to a great extent compensated by the increased demand from home market. But in recent years the cheap imports from Ceylon are proving a menace even in the home market. The following table illustrates these changes in the foreign trade.

TABLE III.
EXPORTS AND IMPORTS OF COPRA AND OIL

Year.	Exports.		Imports.	
	Oil in 1000's of gallons.	Copra in tons.	Oil in 1000's of gallons.	Copra in tons.
1918	3,885	1	22	7,807
1919	3,012	7,344	1	1,145
1920	1,794	2,582	1	1,025
1921	956	2,762	4	196
1922	806	13,856	1	6
1923	153	3,906	7	57
1924	112	292	13	63
1925	117	1	17	56
1926	186	2,034	—	7
1927	69	197	2	8
1928	78	—	24	45
1929	66	1	—	1
1930	43	—	2	14
1931	31	—	36	117
1932	20	—	364	5,853
1933	23	—	194	3,942
1934	29	—	650	5,101
1935	25	—	567	7,044
1936	9	—	695	14,855

The above table shows that the large export trade of about four million gallons of coconut oil at the beginning of the period dwindled to nothing by the end. On the other hand, since 1932, very heavy imports of oil are noticed. As regards copra, the export trade came to nothing even in 1928, and the continuous increase in imports is noticed from 1932. These facts clearly illustrate the great competition that India has to stand from the new plantations of other countries. This competition is accentuated by two factors, namely, the large number of acres planted in boom years in foreign countries and which are now bearing fruit and secondly the diminution in the market for coconut oil from the rise of a number of substitutes.

Improvement in oil technology and fall in demand for coconut oil.

Coconut oil has from a long time been used by the natives of eastern countries as an edible fat and as an unguent. But invention in 1880 of a process of rendering neutral the acidity and flavour made the refined oil popular for edible purposes on the European and American markets. Towards the end of the last century the introduction of improved methods in the making of margarine rendered it possible to use the oil in its refined state so that within a short time a great demand for it was created. But in post-war years oil technology has so much improved that many other inferior oils also came to be used for making margarine so that coconut oil lost its monopoly. At the same time the supply of copra increased very much resulting in a fall in price of the product. The heavy fall in the price of copra and coconut oil has been attributed to the following factors apart from the general causes (vide *Empire Marketing Board*, Vol. VI, pp. 168-70).

1. Heavy stocks of whale oil, which is in active competition with coconut oil in the manufacture of margarine and soap.
2. Increased production of groundnuts and oil palm fruits whose oil also is an important competitor with coconut oil in the manufacture of margarine and soap.
3. Increased production and low price of butter which limited the market for margarine and resulted in decreased demand *inter alia* for coconut oil.
4. The reduced demand in Europe for oil-cakes as cattle food owing to the abundance of pasturage and fodder crops and the very low prices ruling for cereals.

Prospects of Future Rise

The one conclusion that emerges from the figures of trade and prices is that the market for our oil is now almost completely con-

fined to our country, and any prospect of rise in prices is dependent upon the increase in the buying capacity of the Indian consumer. Yet we cannot disregard the influence of world factors. U.S.A. is now the principal consumer of coconut oil outside the copra producing areas, her consumption being more than double that of France which comes second in order of importance. United Kingdom comes next, and Germany which occupied the first place in pre-war years comes fourth. U.S.A. uses such a large quantity of this oil because it uses very little of whale oil in its margarine and soap industries unlike the continental countries. But nearly 90% of the American demand is met by Philippines and of late the demand from the former is not keeping pace with the increase in the supply from the islands, so that the balance is coming to the European market to compete with other countries. But since 1924, the demand from Europe is contracted by the increased use of whale oil and other oils like groundnut oil and the decreased sales of margarine since 1930 with increased sales of butter.

Hence unless the demand for soap and margarine increases with the general increase of population and standard of living and at the same time coconut oil can stand the competition from other oils, the prospect for this commodity is not very bright. Of course, the large increase in the share of coconut oil in the margarine industry in U.S.A. and its increased utilisation for making hard soaps, suitable for toilet and laundry purposes in England, point out the special qualities of this oil which make it preferable to other oils. But price considerations also play an important part in the choice of substitute fats and oils, and unless the price of animal and marine fats rises as a result of increased demand for them and restriction in the world livestock population and the whaling catch, coconut oil will continue to have serious competition from these substitutes. Coming to the local conditions, the demand for this oil is bound to increase with the growth of population and standard of living. But the heavy imports of cheap oil specially from Ceylon are coming and depressing the local markets. Unless some means are found to regulate these imports it will not be possible to increase local prices. But this problem bristles with several difficulties, namely the trade relations with Ceylon and Strait Settlements with which we have got an active balance of trade, the burden on the general consumers who are suffering from the fall in purchasing power, etc. At the same time, the need for relieving the distress of a very large population in the West Coast who depend entirely on this product for their subsistence must be recognised.

APPENDIX

MONTHLY PRICES OF COCONUT OIL (WHITE) IN RUPEES PER CANDY OF 654 LBS.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual Average.
1922					144.0	143.0	138.0	138.0	140.0	145.5	148.0	152.0	143.6
1923	154.0	156.0	162.5	162.5	162.5	155.0	155.0	155.0	163.0	169.0	179.5	187.5	163.5
1924	183.0	185.5	176.5	173.0	172.5	171.0	182.0	187.0	179.0	189.0	196.0	191.0	182.1
1925	175.0	169.0	163.0	162.0	176.0	170.0	169.0	178.0	173.5	187.0	180.0	183.0	173.3
1926	155.0	157.0	159.5	155.0	147.0	149.0	159.0	152.0	150.0	146.0	145.0	141.0	151.3
1927	135.0	137.5	136.0	134.0	138.5	146.0	153.0	147.0	156.0	174.0	176.0	178.0	150.9
1928	167.0	170.0	163.0	166.0	166.0	170.0	168.0	166.0	167.0	161.0	159.0	159.5	164.4
1929	149.5	141.0	135.0	137.0	130.0	130.0	129.0	129.0	129.0	133.0	127.5	127.5	133.1
1930	121.0	121.8	115.0	116.0	115.0	113.0	113.0	102.0	106.0	104.0	103.0	100.0	110.8
1931	93.0	93.0	103.0	93.0	86.0	82.0	82.0	84.0	85.0	97.0	101.5	116.0	93.0
1932	115.0	119.0	121.5	108.0	102.0	104.0	101.5	110.5	108.5	104.0	108.5	103.5	109.7
1933	96.5	90.0	79.0	75.5	79.0	84.5	78.0	74.0	72.5	67.0	68.0	63.5	77.3
1934	60.8	58.0	55.5	51.5	52.4	54.5	52.8	53.0	61.5	63.0	61.0	60.5	57.6
1935	61.5	80.0	72.0	68.0	81.0	78.3	75.3	78.0	76.0	91.5	95.5	98.0	80.0
1936	102.5	102.0	99.0	98.5	99.3	91.0	93.8	98.8	99.8	103.0	103.8	111.5	100.7
Monthly Average.	126.7	127.1	124.3	121.1	123.3	123.1	123.3	123.5	124.5	129.2	130.2	131.5	

GROUNDNUTS

Madras Presidency occupies the first place in the production of groundnuts in India, having an acreage of about 60% of the total. The following table shows that the rapid increase of production and export of groundnuts is a development of the post-war period. During this period it displaced cocoanuts from the first place in the exports of oil-seeds and during the last decade individually it contributed the largest part of the exports of oil-seeds. A very large portion of these exports are sent to the European markets among which France and Germany are the most important.

TABLE I.
AREA, PRODUCTION AND EXPORTS OF GROUNDNUTS.

Year.	Area in 1000's of acres.	Production of Groundnuts in shell in 1000's of tons.	Exports of Groundnut kernels in 1000's of tons.
1918	100	442	8
1919	1144	569	70
1920	1600	740	86
1921	1459	678	209
1922	1754	823	225
1923	1812	746	224
1924	1904	948	330
1925	2599	1264	370
1926	2680	1207	318
1927	3337	1671	472
1928	3679	1830	584
1929	3209	1522	583
1930	3572	1765	457
1931	2635	1234	496
1932	3517	1729	350
1933	3779	1777	455
1934	2351	920	436
1935	2525	1204	332
1936	3427	1652	639

From the above table we find that at the beginning of the period the area under groundnuts was just one million acres, and the exports were about 8 thousand tons. But from year to year both the exports and production increased at a very rapid rate. Thus increased production found ready markets both at home and abroad till 1930, when on account of the great economic depression and other factors foreign exports shrank in volume. The

minimum figure for exports for the whole period was in 1935, but the subsequent year proved to be the most prosperous with record level of exports.

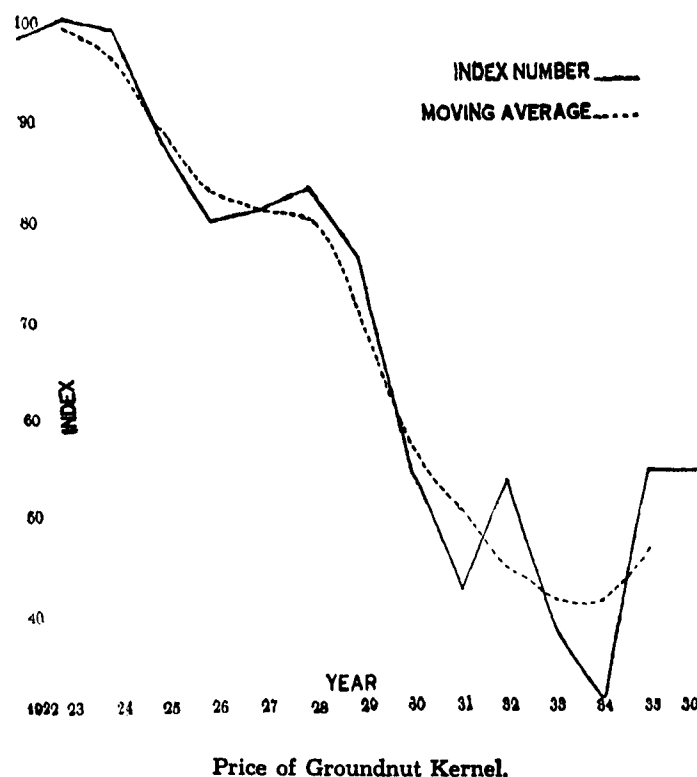
Trend of Prices

The average monthly values of Madras prices of machine decorticated groundnuts per French candy of 500 lbs. are given in the appendix. The data are obtained from the *Indian Trade Journal*. The following table gives the average prices in each calendar year computed from the monthly prices. For convenience of handling, these figures are converted into index numbers with the triennium from 1922 as base and the following table gives the 3 year moving average also.

TABLE II.
PRICE OF GROUNDNUT KERNELS.

Year.	Price per French candy of 500 lbs.	Indices of Prices.	3 yearly moving average.
1922	63.8	99	
1923	64.9	101	100
1924	64.7	100	97
1925	57.3	89	90
1926	52.0	81	84
1927	52.8	82	82
1928	54.4	84	81
1929	49.5	77	72
1930	35.6	55	58
1931	27.6	43	51
1932	35.1	54	45
1933	24.9	39	42
1934	20.9	32	42
1935	35.7	55	47
1936	35.4	55	

From the above table we find that the price was steady during the base period. But there was a sudden drop in 1925 which continued in subsequent years also. But the heaviest fall in prices occurred during the depression years and the worst year of the period was 1934 when the price was even below a third of the base year price. There was a recovery in the succeeding year which was maintained in the next year also. Still the price in the last two years was just equal to the price in 1930 when depression started and was a little more than half that of the base period. It may be surprising to notice that the great increase in exports



should synchronise with a period of falling prices. But this itself may explain the phenomenon. It is well known to all people in trade that groundnuts were good competitors to coconuts in European markets during the post-war period, and were to a large extent responsible for the contraction of the demand for the latter. Price of the commodity is the most important factor in influencing substitution at the margin, and when the price of coconuts was falling, groundnuts also had to follow suit to consolidate the ground already captured and make fresh attacks. The very fact that the area under production increased at a time of falling prices itself shows that this crop was giving better returns to the cultivator than the other substitute crops. But during the depression when the prices went down to very low levels, area under the crop was reduced and it did not show signs of increase till the prices looked up. That the prices of these two oil-seeds (coconut and groundnuts) were moving in the same direction can be illustrated from the following table.

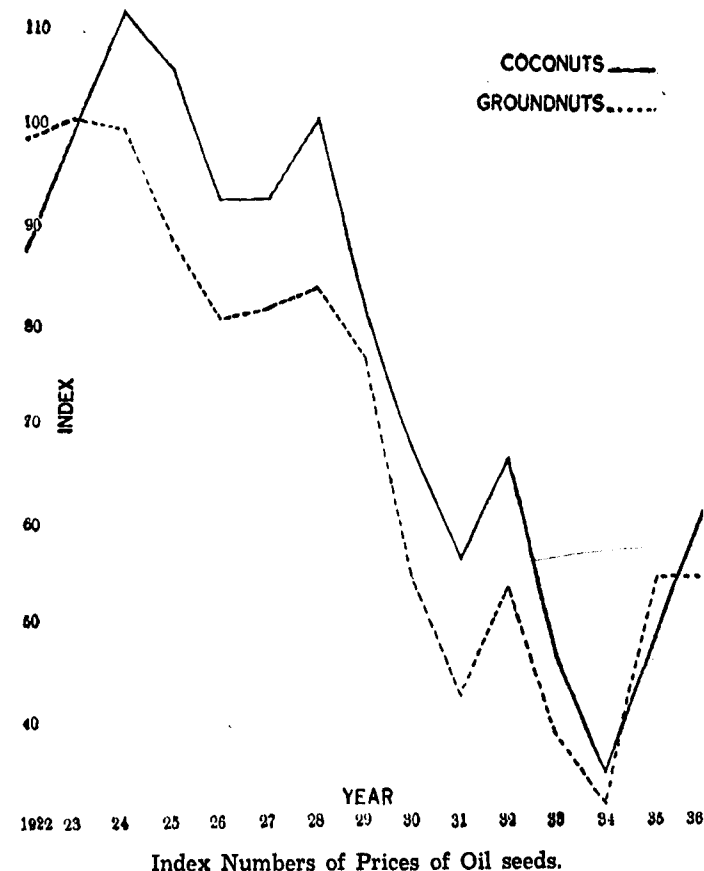


TABLE III.
INDEX NUMBERS OF PRICES OF COCOANUTS AND GROUNDNUTS.

Year.	Coconuts base 1922-24.	Groundnuts base 1922-24.
1922	88	99
1923	100	101
1924	112	100
1925	106	89
1926	93	81
1927	93	82
1928	101	84
1929	82	77
1930	68	55
1931	57	43
1932	67	54
1933	47	39
1934	35	32
1935	49	55
1936	62	55

We find from the product movement formula that the coefficient of correlation is nearly 0.9. The high correlation is partly due to the general secular trend of fall in prices of all commodities during the period under consideration, but still the marked sympathetic fluctuations of prices of these commodities is easily noticed.

Seasonal Fluctuations

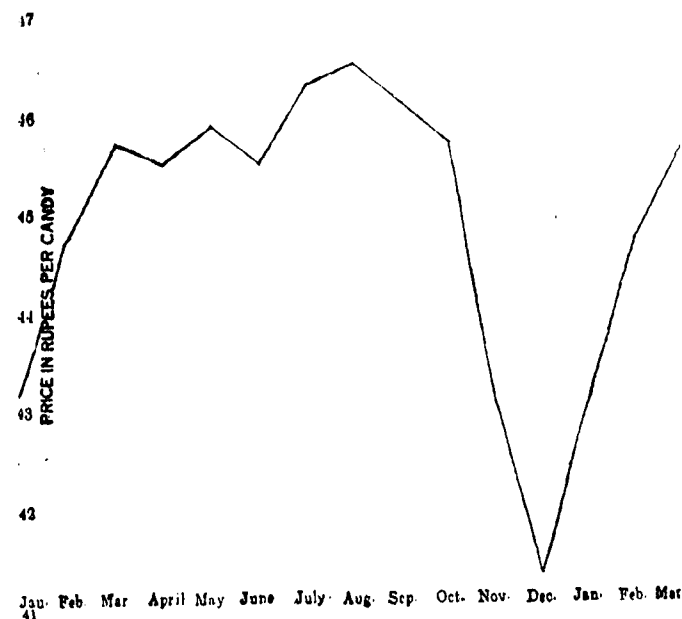
It will be interesting to see whether the price of groundnuts exhibits any seasonal variations. For this purpose, the average price for each month during the period under consideration is calculated. The figures are given in the following table and the results shown in the accompanying graph.

Month.	Average price during the period (Rs. per French candy of 500 lbs.)
January	.. 43.2
February	.. 44.8
March	.. 45.8
April	.. 45.6
May	.. 46.0
June	.. 45.6
July	.. 46.4
August	.. 46.6
September	.. 46.2
October	.. 45.8
November	.. 43.1
December	.. 41.4

The monthly values do not exhibit marked seasonal variations. From March to October they vary very slight about Rs. 46 per candy. As compared with previous months, there is a fall in November which continues in December also. But from January the prices go up. The fall in prices coincides with the harvest season when there are plentiful supplies.

Factors which influence the price of groundnuts

It has already been pointed out that the price of groundnuts depends to a very large extent upon the price of other oils especially coconut oil, and the demand for these oils in the European markets. During the period under consideration, advances made in oil technology pushed up this product as a cheap substitute for coconut oil in the preparation of soaps and margarine. This was



Seasonal Variation of the Price of Groundnuts.

mainly responsible for the fall in the exports of copra and coconut oil, and very large increase in the exports of groundnuts. So any rise in the price must be brought about by an increased demand for the oil-seeds from the European markets.

Apart from the competition of other oil-seeds the Indian exports are facing obstacles from other sources also. During the depression period, when the exchange position of Germany became very bad, they had to restrict imports of all kinds of raw materials. Germany is a very important market for Indian groundnuts, and the closure of that market caused serious loss of trade to India. France, who has proved to be the most important single market in recent years, passed a decree in 1933 under which an import duty was levied on groundnuts other than those grown in French colonies. This restriction of the market had a disastrous effect on prices. In the subsequent years it again passed another decree regulating imports on a quota system under which a definite percentage is reserved for imports from French colonies. In 1935-36 the import duties on groundnuts were further raised in France. The net result of all these decrees was a contraction of that market for Indian groundnuts. In the Empire market India is facing the serious competition from South Africa. The great trouble for our products is that they are produced on uneconomic holdings and

sold in a highly disorganised market, and hence are not able to stand the competition of better organised countries. Thus the restrictions in some markets and competition in others are proving disastrous to the products of this country.

APPENDIX

MONTHLY PRICES OF GROUNDNUT KERNELS IN MADRAS

(Rs. per French Candy of 500 lbs.)

Year.	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1922	55.3	57.0	68.5	70.0	71.5	69.3	69.3	64.8	60.8	62.5	60.0	57.0
1923	59.5	63.8	67.0	66.3	63.0	63.5	64.3	61.9	65.6	68.5	68.8	67.0
1924	63.8	65.0	64.0	62.0	59.8	59.9	64.3	70.8	72.0	74.2	63.3	57.0
1925	57.3	57.0	58.6	58.8	64.0	64.6	60.1	62.5	62.4	53.0	51.8	47.3
1926	47.3	47.0	51.1	54.3	56.0	60.0	57.5	54.5	52.0	54.0	45.5	44.8
1927	46.0	52.8	55.7	54.7	55.5	55.5	54.5	53.0	53.2	54.0	51.3	48.0
1928	51.5	50.5	50.7	50.3	51.4	54.5	56.0	54.5	54.3	61.2	58.6	58.7
1929	57.8	56.9	50.4	47.6	49.5	43.8	48.0	50.0	52.0	47.7	45.0	45.0
1930	41.5	40.5	38.8	41.5	40.4	37.5	36.8	36.1	33.5	28.8	27.3	24.8
1931	22.8	23.9	28.5	28.5	26.5	24.3	29.3	29.8	27.8	31.5	29.8	28.5
1932	30.8	38.0	41.4	37.8	35.5	34.0	39.0	37.8	35.7	32.8	29.3	29.3
1933	31.8	30.0	25.8	23.8	26.1	27.1	27.1	24.3	22.5	20.8	20.6	19.4
1934	18.4	17.8	16.4	16.7	18.4	17.5	17.5	22.5	25.0	27.5	27.3	25.8
1935*	30.6	39.1	37.2	37.9	38.6	38.4	34.6	35.8	35.8	34.8	34.1	31.6
1936*	35.4	32.8	32.9	33.7	33.4	33.7	37.0	40.3	39.6	35.1	33.8	36.8
Monthly Average	43.2	44.8	45.8	45.6	46.0	45.6	46.4	46.6	46.2	45.8	43.1	41.4

*The Prices are of machine decorticated kernels.

THE GENERAL SALES TAX

By

B. TIRUMALACHAR, M.A., B.L.

1. IMPORTANCE OF SALES TAXATION

One of the most remarkable developments in the field of finance in the post-war period has been the introduction of the General Sales Tax or Turnover Tax into the fiscal systems of many countries of the world. Faced with a financial crisis, such as was never experienced before, many European nations cast about for fresh sources of revenue in order to cover the ever widening gaps in their budgets. Extraordinary methods were adopted regardless of the principles of sound finance. Huge national debts were piled up in addition to the already existing ones; capital levies were imposed; and currency depreciation to an unprecedented degree was indulged in. Some countries introduced steeper and steeper progression into their income and inheritance taxes. But those countries which could not rely to a large extent on direct taxes, resorted to indirect ones, the most important of which was the General Sales Tax or Turnover Tax.

The General Sales Tax, however, was not entirely new in origin. It was known even in the days of antiquity. It was collected in ancient Athens; in Egypt under the Ptolemies and in Rome by Augustus and the later Emperors. The rate of the tax was generally ten per cent *ad valorem*, though in some cases, it was as high as 20 per cent.

The General Sales Tax appears to have been common in ancient India also. For instance, there is a reference to a trade tax in the Arthashastra of Kautilya: "The amount of Vyäji or trade tax due on commodities sold by cubical measures is 1/16th of the quantity; that on commodities sold by weighing balance is 1/20th of the quantity; and that on commodities sold in numbers is 1/11th of the whole."¹ Besides this, a sales tax was collected from the highest bidder, whenever immovable property was sold in public auction.² There are also many references to sales taxes in the Śukranītisāra and other works, though the rate of the tax

1. Arth. Bk. II Ch. 16.

2. Arth. Bk. III Ch. 9.

appears to have been very much lower than in the days of the Mauryas.

In medieaval Europe numerous taxes on sales of commodities were levied but the most noted of these was the *Alcavala*, which was introduced in Spain as a national tax in 1342 and continued to exist till the middle of the 19th century. Adam Smith condemned this tax for the harshness of its administration and the inequality of its burden on the taxpayer, and even ascribed to it the decadence of Spain.

In the modern period, many important countries have adopted the Sales Tax in one form or another. It was however, the financial emergency created by the Great War, that brought the Sales Tax into prominence as a fruitful source of revenue. Theoretically the General Sales Tax has not received much support from economists. In fact, Seligman condemns it strongly. He says "The General Sales Tax is the remnant of an outworn system; it is essentially undemocratic in its nature; and it would, if enacted exaggerate rather than attenuate inequalities of wealth and prosperity."³

Yet, it has spread rapidly over the world during the last twenty years. Germany adopted it first in 1916 and other countries soon followed. At present, apart from 32 States in the United States of America, it is found operating in more than thirty countries of the world. Great Britain is the only important exception, as it is believed that the General Sales Tax is harmful in its effects on trade and industry.

In India, the General Sales Tax has attracted much public attention at present. The Provincial governments are now engaged in carrying out far-reaching programmes of financial and social reform. On the one hand, they are pledged to carry out a policy of complete Prohibition and also to reduce the heavy burden of the land revenue on the small agriculturists. On the other hand, they have launched upon costly schemes of nation building, which necessitate the raising of large revenues. But the existing Provincial sources of revenue such as the excise, the land revenue, stamps, etc., have been tapped to their maximum limit. Further, the Provincial governments cannot hope to get much relief under the Niemeyer Award from the Government of India as that Government will have to face increasing expenditure in the near future on account of defence and the introduction of federation. The Provinces are thus in a state of financial emergency, and have been

compelled to resort to fresh sources of revenue, such as the Sales Tax, the Property Tax, the Employment Tax, the Tobacco Tax, the Electricity Tax and the Petrol Tax.

Of all these new taxes, no one has been subjected to such keen controversy as the Sales Tax. In Madras, public opinion is sharply divided as to the necessity and the justice of the tax. Businessmen, individually and through their chambers of commerce, have entered an emphatic protest against the measure, as they fear they may have to bear the entire burden of tax, without being able to shift it on to the consumer. On the other hand, it has received very strong support from official quarters for its productivity and practicability. A dispassionate study of the tax in all its aspects would be of great help to clear the issues involved and to arrive at a correct judgment of the problem.

2. THE SCOPE OF THE TAX.

(i) *Different forms of the Sales Tax.*—The Sales Tax is a levy imposed on the sales of all commodities and services. It assumes various forms, being imposed at a number of stages of manufacturing and marketing. The most usual form is a tax on sales in general. This form of the tax is found in Germany, Austria, Hungary, Poland and the U.S.S.R. It is such a General Sales Tax that is proposed to be levied by the various Provincial Governments in India.

The General Sales Tax has the great merit of having the broadest base. It yields large revenues at a low rate and is on the whole uniform in operation. But such a tax results in the integration of industries in order to escape the payment of it, while its general application at a uniform rate makes it regressive and covers numerous irregularities.

On the other hand a Manufacturers' or Producers' Sales Tax, such as is found in Canada, Australia and New Zealand has certain merits which a General Sales Tax lacks. Its administration and collection are cheap, being limited to a comparatively small number of taxpayers, whose transactions are relatively large. In industrial countries, it yields a large revenue. Its rate of levy may not be so low as is the case with the General Sales Tax. At the same time, it does not lead positively to any direct acts of industrial integration.

But the Producers' Sales Tax suffers from certain obvious disadvantages. The taxing authority must face the influential protests of the manufacturers, who are richer and better organised than the

3. Seligman: *Studies in Public Finance*, pp. 137-138.

general body of taxpayers. The rate of tax must be higher than that of the General Sales Tax, if an adequate revenue must be obtained. Besides, the manufacturers, while paying the tax, will add interest charges upon it till they recover it from the consumers. This means an enhancement of the price to the consumer, not only by the amount of the tax, but also by the amount of the interest on the tax.

A third form of Sales Tax is the Retail Sales Tax. This is imposed on a large number of retailers, which makes its cost of collection heavy and its administration complicated. It is not so productive as either the General Sales Tax or the Producers' Sales Tax. But the Retail Sales Tax does not encourage any integration of industry. Further, the tax, being imposed on the last sale to the consumer, does not involve much interest charges to the seller for carrying the tax. Besides being imposed at one stage only, that is when goods pass from the retail seller to the consumer, it is not cumulative in its effect.⁴

Finally, there is a fourth form of Sales Tax, namely, the Luxury Sales Tax. It has been introduced in France, Hungary and Poland in order to overcome the regressive effects of the General Sales Tax. But it is not found to be very successful, because of its unproductivity and difficulty of administration. It is hard in many cases to make a precise distinction between a luxury and a non-luxury. It has therefore been abandoned by certain states which had adopted it; *e.g.*, Germany and the free city of Danzig.

(ii) *Exemptions.*—The levy of any tax requires, first of all, a clear and definite description of the taxable commodities and services. Every country which has a General Sales Tax, always grants wide exemptions from its operation. In the first place, these exemptions include foodstuffs which are necessary for subsistence and raw materials which are required by the industries of the country. Very small transactions are excluded from the scope of the tax, because they involve heavy costs of collection and also press hard on the poorer businessmen. In Madras, the Sales Tax will be levied only on businesses, whose estimated turnover exceeds Rs. 10,000 per annum. It will thus generally exempt small traders who deal in articles of food, clothing, etc. In addition to this, the Government can by notification, exclude any other goods which it deems fit, from the scope of the tax. It is however felt in some

quarters that the exemption limit is too low and that it must be raised to Rs. 50,000 per annum. Otherwise, it is argued, the tax will kill many small concerns which are on the margin of existence.

In the second place, exports are brought within the exemption limit, as for example in Germany and France. This is done in order to see that the indigenous businessmen may not be at a disadvantage in their competition with those in other countries, which have no Sales Tax or which have it only at low rates. This disadvantage is felt very acutely when one State or Province employs a Sales Tax and a neighbouring one does not. Some of the States of the United States therefore expressly exempt from the Sales Tax commodities which are the subject of inter-state commerce.

In Madras, suggestions from influential quarters are made for the exemption of exports, such as hides and skins, handloom products, cotton textiles, etc. It is argued that business will shift from that Province to the neighbouring Provinces or States where no Sales Tax exists. But this argument overlooks many facts. Firstly, a small difference of a half a per cent in costs due to the tax will not be enough to induce business to migrate. Secondly, those businessmen who do migrate, will have to face other and perhaps worse ills which they know not of. It is however likely that the Madras Bill may exempt exports in its final form; or at least the tax may be imposed only once on the last sale.

In fact, the Select Committee on the General Sales Tax Bill has provided for certain specific exemptions from its operation in addition to the general exemption of all transactions below the estimated value of Rs. 10,000 per annum. Stocks and shares, bullion, cotton yarn and handwoven cloth sold by persons dealing in them exclusively are to be exempted wholly from liability to pay the tax. Hides and skins are to be taxed at one stage only. In the case of fully manufactured goods exported to places outside the Province, provision is made for a 50 per cent rebate. All these specific exemptions have been incorporated in the Madras Sale of Goods Act.

The reasons for these exemptions are not clear. Stocks and shares, securities and bullion are exempted probably because the profit on turnover in their case is very small. The exemption of cotton and yarn and handwoven cloth and the rebate allowed in respect of the exports of manufactured goods are based presumably on the ground that expanding industries may not be handicapped in their competitive power. In the case of hides and skins, it may be that the trade cannot stand a cumulative tax.

4. Vide The Indian Taxation Enquiry Committee Report pp. 296-297.

A third kind of exemptions includes imports of basic raw materials or other products so that they may be obtained cheaply by indigenous industries. For instance, France excludes the imports of hides, wool, silk, rubber, hemp, jute, flax and natural phosphates. On the other hand, Canada and Germany levy a higher rate of Sales Tax on imports which compete with goods produced at home. It may be suggested that in Madras also the imports of raw materials for the major industries of the province may be exempted from the General Sales Tax.

Finally, there is a fourth class of exemptions from the General Sales Tax. They refer to the services of professional men such as doctors, lawyers, accountants, headmasters, etc. In France, they are exempted because it is believed they do not engage themselves in business with a view to make a profit. But if they do so, they must also pay the tax. Since the Madras Sales Tax is a general tax on the sales of commodities, there is no question of exempting services at all.

(iii) *Rate of the tax.*—The rate at which the General Sales Tax is levied is usually very low. The rate is between one and two per cent and ranges from a small fraction of one per cent up to 6 per cent. Rates vary with the volume of transactions, with the classes of taxpayers or with the commodities and services. Since the World Depression of 1929, however, there has been a noticeable increase in the rates, as it was necessary to augment the revenues to cover the rapidly growing deficits in the national budgets. For instance, Canada raised the rate from 6 to 8 per cent in 1936.

Compared with the rates obtaining in other countries, the rates proposed for Madras are very low. Beyond the exempted limit of Rs. 10,000 per annum, every dealer will have to pay annually a tax on sales according to the following scale :—

	Rs.
(a) If the estimated turnover in the previous year was more than Rs. 10,000 and less than Rs. 20,000.	75
(b) If such turnover exceeded Rs. 20,000 and did not exceed Rs. 40,000.	150
(c) If such turnover exceeded Rs. 40,000.	Half a per cent of the amount of such turnover.

The Select Committee of the Legislative Assembly has substituted the following scale, which has been incorporated in the General Sales Tax Act.

	Rs.
(a) If estimated turnover in the previous year was more than Rs. 10,000 and less than Rs. 20,000.	5 per month.
(b) If such turnover exceeds Rs. 20,000.	Half a per cent of the amount of turnover.

On the whole, the rate will be about half a per cent for all taxable transactions. This percentage will represent approximately, a rate of one pie per rupee of the turnover. Obviously, it cannot be considered very high, particularly in view of the fact as stated in the Statement of Objects and Reasons to the Bill that it is not even one-third of the amount, which is usually set apart by most businessmen in the Madras Presidency for charitable purposes, in the form of 'Mahimai.' This very low rate certainly cannot affect business seriously. It cannot kill the 'goose that laid the golden egg'; nor can it be expected to drive business out of the Province.

However, it may be that in certain industries, which comprise a number of stages, as, for example, the cotton mill or the hides and skins industry, the rate of a half a per cent at each stage may make the total rate high. The cumulative effect of the tax may be burdensome; but considering the fact that these industries generally make a profit of at least ten to twelve per cent, that is about one anna per rupee, even a total percentage of about four or five per cent may not be quite oppressive. Beside these industries do not contribute much at all to the Provincial revenues; and it is but fair that they should do so. The Select Committee has in fact proposed taxation of hides and skins at one stage only.

But there is one point to be noted. The uniform rate of half a per cent on all taxable transactions will have an unequal effect on business. The burden of the tax will be heavier on the smaller businessman than on the large scale businessman; for it is obvious that the taxable capacity of the latter is more than in proportion to that of the former. A progressive scale of taxation may therefore be levied instead of a tax at a uniform rate. It can be done either by raising the rates for all turnovers above Rs. 40,000 per annum or by lowering the rates on the small turnovers. The latter alternative is preferable, as it makes the burden lighter and so avoids the objections of the businessmen to a large extent. The present

scales of Rupees 75 and Rs. 150 may be reduced by a quarter or even a half, so that the rate of tax on the small transactions will be less than half a per cent while those on the larger turnover will be about half a per cent. But this reduction of the rate can be undertaken only if it does not affect the productivity of the tax. But if thereby, the revenue from the tax proves to be inadequate, then the other alternative of raising the rate on turnovers above Rs. 40,000 per year must be adopted on a progressive scale, leaving the present scale of half a per cent on small business untouched. The Sales Act has in fact adopted the reduction of the rate on small turnover between Rs. 10,000 and Rs. 20,000 per year.

(iv) *Administration and collection of the Tax.*—There are various methods of levying the Sales Tax. Different countries have adopted different bases for its levy. For instance, in France, Germany, Austria, Hungary, Poland and the U.S.S.R. the basis adopted is the total turnover. In Belgium and Italy, the tax is levied on all sales of commodities except at retail. On the other hand, in Canada, Australia, New Zealand, and the Philippine Islands, it is a Producers' and Wholesalers' Tax. France has also a supplementary Luxury Tax. In Madras, the Tax will be levied on the sale of commodities in general and will be based on the estimated total turnover of businessmen as in France and Germany. A special tax at an enhanced rate is levied on the sale of tobacco and petrol.

In the beginning when the General Sales Tax was first introduced, grave doubts were entertained in many countries, regarding its satisfactory administration and collection. It was feared that the collection of the tax from innumerable small businessmen would be costly, that opportunities for evasion would be great and that it would be felt to be most inquisitorial and irksome by the tax payers. However, it was found in course of time, that these difficulties were not as great or as insurmountable as they appeared at first to be.

The maintenance of account books even by small traders has made the assessment and collection of the tax generally easy. In India too it is customary for petty dealers to make a note of the sum total of the daily sales as shown in their bills for cash or credit sales. It is therefore not difficult to assess their taxable capacity on the basis of such accounts. But in those countries, where account books are not maintained, a tax based on general estimates of the taxable capacity of the businessman as in France is eminently practical.

However, a Producers' or a Wholesalers' Tax is more advantageous than a General Sales Tax, from the point of view of administration. These classes of businessmen usually keep better accounts and are less numerous than retailers. Further, there is less possibility of evasion in the case of the Wholesale Tax, as the business concerns are more prominent and better known than small traders; or, if they are not known, they are easier to check on account of the smallness of their numbers and the big size of their transactions.⁵

But tax evasion, in any case, can be easily prevented by means of the stamp method for each transaction as in Belgium or the licensing method as in Canada or Pennsylvania in the U.S.A. These methods also minimise the cost of collection of the tax.

The General Sales Taxes are commonly collected through a national agency, sometimes with the assistance of local officials. In Madras, the Revenue authorities are charged with the administration of the Sales Tax. They are required to assess and collect the tax from business concerns as if it were a revenue demand. The assessments are based on the returns which every business whose turnover is over Rs. 40,000 per annum is obliged to submit to the taxing authority. In the case of the smaller business men, whose turnover is below Rs. 40,000 per annum, the assessment will be based on estimates of their taxable capacity fixed by the taxing authority after checking available external indices, pertaining to such a concern. However, the small dealer can also submit his returns, if he wishes to do so. Provision is made for meeting attempts at tax evasion by granting extensive powers to the taxing authority to enter business premises and inspect the accounts of the dealers. Besides, heavy penalties are laid down for attempts at evasion of the tax. Finally, chances of evasion are minimised to a large extent as the collection of the tax is in the hands of an efficient revenue administration with an extensive and experienced personnel behind it.

As adequate data are not available it is not possible to estimate exactly the cost of collection of the General Sales Tax. In certain countries, as in Canada and Germany, where the existing tax personnel has taken over the administration of the Sales Tax, costs are low. In Madras, also they may be expected to be low, as the levy and collection of the tax is given over to the existing Revenue authorities. It is however, estimated that even in countries with a

5. See Comstock, *Taxation in the Modern State* Ch. IX.

separate machinery, the collection costs of the gross Sales Tax has not exceeded 4 per cent of the receipts. In some countries, as in West Virginia in the U.S.A., it is as low as 1 per cent.

The revenue from the General Sales Tax is usually employed for national purposes though in some countries a portion of it is diverted to the use of the local authorities, as for example in France and Germany. In Madras, the General Sales Tax is levied to meet the growing demands made on the Provincial government; in particular, to make up the loss of liquor excise as a result of Prohibition. But it may be suggested that in course of time, when the Sales Tax becomes more and more productive, a part of it may be given over to local authorities, whose revenue resources are generally small but who are saddled with costly functions.

APPENDIX TO SECTION 2.—GENERAL NATIONAL GOVERNMENT SALES TAXES IN VARIOUS COUNTRIES.

Country.	Title of Tax.	Law establishing the tax.	Payment of the tax.	Basis of tax.	Rate.	Administration		Disposition	Exemption.
						Assessment.	Collection.		
Australia	Producers' Sales Tax.	Law of August 18, 1930.	Monthly.	Total sale of commodities by importers and producers.	5%.	By Department of Revenue.	By Department of Revenue.	To National Government.	Exports sales of agricultural foods, articles used in extractive industries and specified articles.
Canada	Sales Tax.	Law of July 1, 1920.	Monthly.	Total sales of producers, manufacturers and importers.	6% Annual License \$2.00.	By Commissioner of Excise.	By Department of Revenue.	To National Government.	Exports, agriculture, sales of essential foods, fuels, raw materials, equipment used in extractive industries.
New Zealand	Sales Tax.	Law of March 9, 1933.	Monthly.	Total sales of wholesalers and manufacturing retailers.	5%.	By Collectors of Sales Tax.	By Collectors of Sales Tax.	To National Government.	Exports, agriculture, foods machinery and implements and other special articles.
Austria.	Turnover Tax.	Law of April 1, 1923.	Annual.	Total business turnover.	Generally 2% to 8%, but vary with classes of commodities.	By National Tax Office.	By National Tax Office.	80% to National Govt. and 40% to Local Govts.	Exports.
Belgium.	Transfer Tax.	Law of August 28, 1921.	Monthly.	All business sales of commodities except at retail and for use in business.	Usual rate 2.5% with variations according to commodities.	By Tax Administration.	By Tax Administration.	To National Government.	Exports, Govt. purchases sales of prime necessities
France.	Turnover Tax.	Law of June 25, 1920.	Monthly for larger and annually for smaller taxpayers.	Total business turnover on special industries.	2% on ordinary articles, 3% to 10% on luxuries and various rates.	By Indirect Tax Administration.	By Indirect Tax Administration.	90% to National Govt. and 10% to Local Govts.	Exports, agriculture, professions, Government enterprise, and transaction liable for special taxation
Germany.	Turnover Tax.	Law of Dec. 24, 1919.	Annual.	Gross income of business and professions.	0.5% on annual sales of 1,000,000 marks.	By Finance Office.	By Finance Office.	70% to National Govts. and 30% to State & Local Govts.	Exports, Govt. enterprise transactions liable for special taxation and a few foods.
Italy.	Transfer Tax.	Law of Nov. 24, 1919.	Monthly.	Sales of commodities for use in business except at retail.	2.5%.	District Tax Office.	By Postal Department.	To National Government.	Exports, Government industry, Sales of essential foods.

3. INCIDENCE OF THE GENERAL SALES TAX.

A study of the shifting and incidence of the General Sales Tax is essential in order to estimate the ultimate effects upon the different sections of the community. Unfortunately it is not possible to say exactly upon whom the burden of the tax will fall in the last resort.

The General Sales Tax is an indirect tax ; and as in the case of all indirect taxes, the incidence of it does not rest on the person who bears the impact of it. In other words the full burden of it does not rest generally upon the person who pays the tax in the first instance. The taxpayer, whether producer or seller, shifts the tax forward to the consumer in the form of higher prices ; or, he may resort to lower the quality or reduce the quantity of the taxed commodity, without raising the prices.

But the shifting process is not always so simple or so complete. The consumer can, under certain circumstances, resist the attempt of the producer or seller to transfer the burden of the tax on to him. In such a case, the producer or seller must bear a part at least of the burden. In others, the consumer will have to shoulder the burden in full himself.

The shifting of the General Sales Tax depends upon the changing conditions of the supply of and the demand for the taxed commodity. On the side of supply, the commodity may be one which is produced under conditions of monopoly or of competition. But in actual business, production is subjected to varying degrees of monopoly and competition. It may, however, be generally stated that, other factors remaining the same, the chances of shifting the tax are greater if the commodity is produced under competitive conditions than if its production is carried on under monopoly conditions. Again the greater the mobility of labour and capital from the taxed fields to the non-taxed ones, the greater is the scope for shifting the tax to the consumers. As a matter of fact, it will be a long time before any changes take place in the investments of labour and capital from one industry to another, even under conditions of perfect competition. It is therefore only in the long run that a General Sales Tax on the volume of sales can be shifted to the consumers through a readjustment of supply or an increase of prices.

On the side of demand, the final incidence of the Sales Tax depends upon the elasticity or inelasticity of the demand on the part of the consumers for the commodity. The greater the elasti-

Country.	Title of Tax.	Law establishing the tax.	Payment of the tax.	Basis of tax.	Rate.	Administration		Disposition	Exemption.
						Assessment.	Collection.		
Hungary.	Turnover Tax.	Law of 1921.	Annual.	Gross receipts.	2% on ordinary articles, 10% to 25% on luxuries, various rates on special industries.	Sales Tax Bureau.	Sales Tax Bureau.	10% to 25% to Local Govts. & rest to National Government.	Exports and essential foods.
Poland.	Industrial Tax and License duty.	Law of July 15, 1925.	Monthly for larger and Quarterly for smaller taxpayers.	Gross income of business and professions.	Industrial tax 1.5% to 2.5%, license duty varies.	Fiscal Office or Tax Administration.	Fiscal Offices.	Local Govts. may add 25% to Industrial tax & 30% to licence duty.	Exports, State industries, non-profit associations of workers, certain raw materials and semi-manufactured articles.
Soviet Russia.	Industrial License duty.	Law of July 26, 1921.	In 5 instalments through the year.	Total Annual Turnover.	Vary according to classification.	Information not conclusive.	By State Banks.	Divided between National & Local Govts.	Information not conclusive.
Danzig.	Turnover Tax.	Law of July 7, 1922.	Annual.	Amount of receipts.	3% ordinary rate, 1% on retailing, 1.5% on agriculture, 10% on restaurants.	By Tax Bureau.	By Tax Bureau.	40% to State & 60% to Local Govts.	Exports and imports.
Philippine Islands.	Sales Tax.	Law of 1904.	Quarterly.	On gross receipts of printers, publishers, contractors, public utilities, laundries, etc.	1% to 1.5%.	By Bureau of Internal Revenues.	By Bureau of Internal Revenues.	About 10% to National Govt. & remainder to Local Govts.	Agriculture, small vendors and producers of specially taxed articles.
Madras.	General Sales Tax.	Law of 1939.	Annual.	Gross total turnover of dealers.	Rs. 75 on gross sales between Rs. 10,000 and Rs. 20,000 ; Rs. 150 on gross sales between Rs. 20,000 and Rs. 40,000 ; and 1/2% on turnover of over Rs. 40,000. [Rs. 5 per month on gross sales between Rs. 10,000 and 20,000 ; and 1/2% on turnover of over Rs. 20,000 (as modified by Select Committee).]	By Department of Revenue.	By Department of Revenue.	Provincial Government.	Small transactions below Rs. 10,000 per annum ; specially taxed articles and other goods which the Govt. deems fit. [Stocks and shares, securities, bullion, cotton yarn and handloom cloth ; hides and skins at only one stage ; 50% rebate on wholly manufactured goods exported outside the province (as modified by Select Committee) and adopted by the Sale of Goods Act of 1939.]

city of demand which depends on changes in habits, tastes and fashions or on the availability of substitutes the larger will be the scope for the consumer to resist the transfer of the tax to him by the seller. He may reduce his purchases of the taxed commodity or change over completely to a substitute. On the other hand, if the demand for the commodity is inelastic, as in the case of a necessity, the consumer must bear the tax himself, as he is obliged to purchase the same amount of the commodity as before in spite of a rise in prices or a reduction of the quality or quantity of the commodity sold to him as a result of the tax.

On the whole, the General Sales Tax, like all indirect taxes, tends to be shifted to the consumer in the long run. The consumer, on whom the incidence of the tax falls, may bear it in one of two ways: either by reducing the consumption of non-taxed commodities or by the sacrifice of savings in order to pay the higher prices of the commodities taxed. In any case, the General Sales Tax is certain to affect the standard of living of the masses of consumers in the long run.

4. EFFECTS OF THE GENERAL SALES TAX.

Having briefly analysed the shifting and incidence of the General Sales Tax, we can now proceed to examine its effects first on business and secondly on consumption, in order to finally assess its peculiar merits and defects.

(i) *Effects on Business.*—One of the strongest objections against the General Sales Tax is its alleged detrimental effects on business. In the first place, it is pointed out that under ordinary conditions of imperfect competition, the tax cannot be completely shifted to the consumer so that a part of it at least rests as an unequal burden on business. A uniform tax based on gross sales or gross receipts is unequal in its incidence as it evidently ignores the ever changing ratios of profits, capital investments, efficiency and credit in relation to sales in different kinds of business. Secondly, as long as sales take place, the General Sales Tax must be paid, regardless of profit or loss to the taxpayer. The tax becomes a tax on capital, for, when no profits are made, the tax is an additional loss which must be borne by the capital invested in the business. Finally, the inequality of the General Sales Tax is accentuated if discrimination by way of exemptions or differential rates is made in the levy of it.

The following table shows clearly the unequal weight on different kinds of business of a General Sales Tax based on gross sales at a uniform rate of 1 per cent.

WEIGHT OF A 1% GENERAL SALES TAX⁶

	A Retailer	B Wholesale grocer	C Food Manufacturer
	\$	\$	\$
Gross Sales	1m	1m	1m
Net Profits	30,000	10,000	50,000
Tax at 1% on gross sales	10,000	10,000	10,000
Profits after the tax is paid	20,000	Nil	40,000
Percentage of tax on profits	50%	..	25%

THE CASE OF THREE SHOE RETAILERS

	X	Y	Z
	\$	\$	\$
Gross Sales	100,000	100,000	100,000
Net Profits	4,000	2,000	6,000
Tax at 1% on gross sales	1,000	1,000	1,000
Profits after tax is paid	3,000	1,000	5,000
Percentage of tax on profits	25%	100%	20%

A second serious effect of the General Sales Tax on business is that it fosters industrial integration and so disturbs the industrial organisation of the country. Integration of industry is brought about in two ways. Firstly, in so far as the tax rests on business, it is an addition to cost. Any addition to cost must force marginal producers and sellers out of business. Business integration thus sets in with its unequal effects on wages, employment and prices. Again, many small concerns try to escape the payment of the tax by real or fictitious integration, as multiprocess concerns pay smaller scales of tax than the single process ones.

In fact, the tendency towards integration is observed in France, Germany, Austria, Canada and Australia. All these countries have taken measures to counteract this tendency. For instance in Austria, the tax is levied at a varying rate according to the number of processes involved in the business, though the business is carried on as a single concern. But this method of taxation is extremely difficult for adoption in countries like Germany and the U.S.A. where the taxable processes being too minute, are not easily distinguishable, the types of industrial organisation are too numerous and economic conditions are rapidly changing. However in Germany and Belgium the small businessman is safeguarded by pro-

6. Beuhler: General Sales Taxation, p. 200.

viding that, when a sale forms one of a series and the seller has never had the goods in his immediate possession, the transaction is exempt from taxation.

To sum up the effects of the General Sales Tax on business. When the tax is not shifted—and it cannot be easily shifted in many cases—it is a tax on gross receipts and therefore a highly unequal tax on business enterprise. Moreover though the Sales Tax is shifted to the consumers, in the long run, it stimulates business integration and business instability; and any open discrimination in the rates or exemptions will further enhance the inequalities.

In Madras there are many factors which counteract the injurious effects of the Sales Tax on business. In the first place, the exemption limit of Rs. 10,000 per annum excludes the numerous small concerns, which form the chief feature of business organisation in the Province. Secondly the rate of the tax, being as low as half a per cent, is too small to induce business integration or bring about any other radical changes in business. Finally any tendency towards integration—even if there should be any—can be met by adopting single sales taxes on producers or retailers.

(ii) *Effects on consumption.*—By far the most important objection to the General Sales Tax at a uniform rate has been that it is regressive in its effects on the consumer. The incidence of the tax, being generally on the consumer, it becomes a tax on expenditures. It presses most heavily on the expenditures of the poorest classes, as they spend a larger part of their income on necessities than the richer classes do. It thus trenches upon their standard of living. Again the marginal utility of money is higher to the poor than to the rich; and any tax which falls upon their money income inflicts a greater burden upon them than upon the rich. Further, the General Sales Tax, being based on the gross expenditure of the consumers, is not equitable in the distribution of its burden among them; for, it disregards the number of dependents on the taxpayers, their sources of income, their methods of spending or their savings from income. Finally, the inequality of the General Sales Tax is increased by the usual exemptions from the tax of the personal services of household servants enjoyed by the rich and of the services of professional men such as doctors, lawyers, teachers etc.

The burden of the General Sales Tax is felt more acutely by consumers during times of depression than in periods of prosperity. The tax reduces their already diminished purchasing power and so deepens the depression. But there is a counteracting factor. The

taxes collected by the Government are spent on ameliorating the conditions of the consumers and this expenditure takes the place of private consumers' expenditure.

Most of the countries which collect the General Sales Tax employ various methods to overcome its regressive effects. Extensive exemptions are granted for essential foodstuffs, fuel, light and power, sales of agricultural produce by the farmers themselves and transactions of small traders. Again in certain countries, as e.g., France, Luxury Sales taxes are levied as a supplement to the General Sales Tax. While the ordinary sales tax rate is 1 to 2% the luxury tax rate is 10% to 15%. Even then the luxury taxes have not been adequate to overcome the regressive effects of the General Sales Tax.

But the incidence of the General Sales Tax and the equity of its distribution must be considered in relation to the tax system of a country as a whole. A tax system, the burdens of which are equitably distributed, includes taxes the effects of which are compensatory. In other words, while consumption taxes press heavily on the expenditures of the masses, it is possible through progressive income and inheritance taxes to counterbalance this inequality.

In Madras, the wise exemptions of food, clothing and fuel, the further power of the government to exclude by notification other goods, the very low rate of the tax and the existence of a progressive income tax and luxury taxes at high rates—all tend to mitigate the regressive character of the General Sales Tax. Besides, the revenue from the Sales Tax will be utilised by the government for the betterment of the people, while the extension of the prohibition policy in the Province must undoubtedly increase the purchasing power of the masses on whom the burden of the General Sales Tax ultimately falls.

5. THE MERITS OF THE GENERAL SALES TAX

So far, the detrimental effects of the General Sales Tax both on business and on consumption have been considered. The methods of mitigating them, if not, of removing them altogether, have also been dealt with. But the tax possesses inherent merits of its own and has offered certain definite advantages to those countries which have adopted them as part of their fiscal system.

In the first place, the General Sales Tax has a broad base in that it is spread practically over the whole community. Numerous sellers and producers will be included within the scope of the tax, permitting large revenues to be collected at a low rate of taxa-

tion. Besides, the basis of the tax, being either gross sales or gross receipts, is more easily defined than that of the net income tax.

Secondly, the payment of General Sales Tax may be so arranged as to suit the convenience of the tax payers. It may be collected monthly, quarterly, half-yearly or annually according to the habits of the business community or the needs of the treasury.

Thirdly, since it is a tax on sales in general, the burdens of the tax do not rest upon one section or class but are diffused throughout the community and spread over the processes of production and consumption. It has therefore the unique merit of being able to reach those who cannot be otherwise taxed adequately. In this respect, the General Sales Tax is far superior to the taxes which now exist in the provinces of India. It is more widespread than the liquor excise or the land revenue which press heavily on one section and that the poorer section—of the community. The middle men and merchants who are now contributing very little to Provincial finance will also be reached by the General Sales Tax, so that the burden of provincial taxation will be more equitably distributed among all the sections of the community than before.

Fourthly, the General Sales Tax is a definite tax, being based on business receipts. The tax-payer knows exactly what he has to pay as soon as his accounts are made for the given period.

Fifthly, the Tax is an economical one. The costs of the tax administration to the Government are low, because in all cases, the responsibility is placed on business for making up the proper returns of taxable receipts on sales. Nor has the businessman to incur any special cost for this purpose, as it is habitual for him to maintain accounts in due course of business.

Sixthly, from the point of view of business, the advantage of the General Sales Tax is its tendency to be shifted to the consumers in the long run. The sellers feel that it is the consumers that pay the tax. To the extent that the sales tax can be shifted, it does not reduce profits, as it is added to the cost, which is covered by the enhanced price in the market.

Seventhly, from the point of view of the consumers, the regressive effects of the General Sales Tax are not felt by them seriously. The rate being generally low, and exemptions being usually wide, the weight of it is not so heavy on them as in the case of other taxes. Besides the consumers pay, without their being conscious of it in small instalments whenever they buy a taxed commodity or service. Further, under conditions of imperfect competition the whole tax is not shifted to them.

Eighthly, the General Sales Tax does not offend the susceptibilities of the free trader as do the customs duties. Nor does it wound the feelings of the Prohibitionists as does the liquor excise. Particularly in India now, the excise revenue is considered to be tainted money; and so, the General Sales Tax, being absolutely free from any moral imputation, will be a most welcome substitute for the excise revenue.

Finally, by far the most outstanding merit of the General Sales Tax is its productivity. Many countries have found by experience that the tax yields a large revenue at little expense. The yield varies with the scope and the rate of the tax, business conditions and administrative efficiency. However, the General Sales Tax has become a major source of revenue in a number of countries, yielding more than the Income Tax and Customs duties in a few cases and nearly as much in others.

The following table shows the comparative position of the Sales Tax as a source of revenue with those of the Income Tax and Customs tax.⁷

INCOME, CUSTOMS AND SALES TAX

Revenues expressed in percentages.

Country	Year	Income Tax.	Customs	Sales Tax.	Total
France	1934	19.5	15.1	17.5	52.1
Germany	1932-33	9.4	22.3	19.1	50.8
Hungary	1932-33	10.6	4.8	12.0	28.3
Czechoslovakia	1933	14.6	6.5	23.0	44.1
Austria	1934	19.4	16.0	21.2	56.6

In Madras, many have "amused" themselves by estimating the probable yield of the new sales tax. Their estimates have ranged from Rs. 3 crores to Rs. 15 crores. It is not, however, possible at present to arrive at even an approximate estimate of the yield from the Sales Tax, because of the woeful lack of statistical data on which to base any scientific calculation. Anyhow, with the general improvement in the economic condition of the masses as a result of Prohibition and other measures of social uplift the Sales Tax may be expected to yield enough to cover the total loss of exercise revenue and the partial loss of land revenue, both of which together is estimated to entail a loss of Rs. 6½ crores annually to the public fisc.

7. Findlay Shirras, *Public Finance*, Vol. II, p. 607.

CONCLUSION

Although the General Sales Tax was introduced as an emergency measure in the war and post-war periods, yet it has to-day become a permanent and major source of revenue in a number of important countries. It has entrenched itself securely even in the tax systems of these nations which depend much on direct taxes for their revenues. It is even more eminently suited for adoption in a country like India, where the Income and Inheritance taxes cannot be expected to yield revenues enough to meet the ever growing demands on the treasury.

Again, apart from acting as a powerful supplement to the existing taxes, the General Sales Tax is the most welcome substitute for the liquor excise in the Provinces of India. It is more equitable; it has a broader basis; it is less regressive in its effects on consumers; and it is absolutely free from any moral or political bias.

Besides, any regressive effect of the Sales Tax on consumers will be considerably lightened in course of time. The Provincial Governments which collect the tax spend the revenue on ameliorating the economic conditions of the masses. Their taxable capacity is bound to increase with an improvement in their economic condition. They will thus be in a position to bear the new taxes more easily than before.

Further, with the spread of Prohibition in the country, the purchasing power of the people will increase. Such an increase will enable them to buy more and more of other commodities than liquor. Trade transactions will thereby receive a tremendous stimulus. A small Sales Tax of half a per cent on the turnover cannot be such an intolerable burden on business as it is pictured to be.

Above all, the introduction of the General Sales Tax has a wider significance. It really marks an important stage in the reorganisation of India's tax system. It has been repeatedly pointed out that under the existing fiscal system, there is an unequal distribution of the burden of taxation among the tax-payers⁸; the small agriculturists and the large mass of rural labourers who cannot really bear the burden, are more heavily taxed than the trading classes and the urban population. In fact, the merchants

8. The Indian Taxation Enquiry Committee Report, Chap. XIV, and Sir W. Layton's memorandum to the Simon Commission Report. Part VIII.

APPENDIX TO SECTION 5

COMPARISON OF THE YIELD OF THE SALES TAX WITH INCOME-TAX AND CUSTOMS DUTIES IN CERTAIN COUNTRIES

Country and Year	Income Tax	Customs Revenue	Sales Tax
Australia, 1934	£9,315 thousands	£22,327 thousands	£8,696 thousands
Canada, 1934	£61,399 thousands	£66,305 thousands	£106,576 thousands includes taxes on sales, cheques and transportation.
New Zealand, 1934	£2,961 thousands	£6,485 thousands	£1,847 thousands
Austria, 1934	Schillings 99,482 thousands	Schillings 198,091 thousands	Schillings 262,056 thousands
France, 1934	Francs 6,860 thousands	Francs 5,312,000 thousands	Francs 6,151,000 thousands
Germany, 1932-33	Marks 463,307 thousands	Marks 1,105,969 thousands	Marks 948,093 thousands
Hungary, 1933	Pengos 37,466 thousands	Pengos 32,500 thousands	Pengos 83,500 thousands

(From the "Tax System of the World" 6th Edition, 1936).

and middlemen do not contribute much towards Provincial revenues. Reforms such as the introduction of higher progression into the income tax and the imposition of death duties are undertaken to bring about a more equitable distribution of the tax burden among the tax payers. But any increase of revenue from the income and inheritance taxes go entirely to the Central Government. On the other hand the new General Sales Tax will not only bring about a more equitable distribution of the tax burden, but will also give an expanding source of revenue to the provinces which stand in such urgent need of it.

On the whole, in spite of its deterring effects on business and its regressive effects on the consumers, the General Sales Tax is one of the most practical, productive, economical and equitable taxes. It is easily collected; it is dependable; and it is elastic. Business men feel it is not an additional burden upon them, as it can be shifted to the consumers. On the other hand, consumers will not feel the burden of the tax very much, as they pay it in tiny instalments, without any conscious effort on their part. Finally, the Sales Tax enables the Government to collect a large and increasing revenue in the most painless way and with the least expense and trouble.

The General Sales Tax is a new tax which is being introduced in India. A new tax is considered to be a bad tax and is always subjected to much criticism. Even the Income-tax met with strong opposition when it was introduced in England. But the Government machinery must be run. Every citizen—rich and poor—and every section of the community—producer, seller and consumer must contribute according to his ability towards this end. No other tax appears to be so admirably suited to achieve this end as the General Sales Tax, which excludes none, but includes every one in its all-embracing orbit. The Sales Tax must be viewed as one among several impositions that constitute the tax system of a country. Taken by itself it appears to have a few demerits but regarded as part of a general system and as one among alternative sources of taxation it has several excellent advantages.

SOCIOLOGY

By

DR. KEWAL MOTWANI

Sociology, as any other science, has been defined in various ways. The definitions alone, given by leading sociologists, would fill many pages. But I think the best way to define our subject would be to take a group of people, a community, or a nation, study its social life in all its manifold aspects and then distil out of the materials thus presented a definition of sociology. We shall take the example of contemporary India, make a general survey of the totality of her life, of her entire culture-complex and then define our subject at the end.

By culture we mean something more than what Matthew Arnold meant, "the study of perfection, the disinterested search for sweetness and light," which consists "in becoming something, rather than in having something, in inward condition of the mind and spirit, not in outward set of circumstances." Culture, in sociological parlance, means, as Tyler defined it, "that complex whole which includes knowledge, belief, art, morals, law, custom and other capabilities and habits acquired by man as a member of society." By culture, we mean the totality of group-life, both in its objective as well as subjective aspects. Culture is the tool-making, institution-making, value-making ability of man. Culture is a human product; no species of animals is known to have culture in this sense.

Now, two types of cultures with vastly different ideologies and values have come face to face in India, and are engaged in a deadly combat. India, with her rural, agricultural, handicraft culture, with an integrated view of life, with its emphasis on indefinable, qualitative values, on individual uniqueness, on dharma, on self-imposed poverty, on social synthesis, on a subjective, broad-based nationalism, on man and not the machinery of the government, on a life of religious experience and unfoldment, on power through repose, is confronted by a culture that stands for science and machine, for an urbanised, industrialised order, for an analytical view of life with its emphasis on neuroses and complexes, for mass-production, for quantitative values, for struggle for existence and survival of the fittest, for accumulation of wealth and economic imperialism, for assertive, arrogant na-

tionalism, for democracy and dictatorship, for religion of scientific humanism and rationalism. India has sought the vision of the Whole, not of the parts; she has been interested in living, not merely in the means of life. She has combined philosophic contemplation with action; she has stood for beauty and dignity, not mere utility. But, to-day, the culture of science and machine has taken a firm grip of India and is slowly seeping into her soul.¹

This conflict of cultures, this process of acculturation, is producing a considerable amount of social disorganisation. Let us take an example. When the steam-engine, material trait of culture of the West, came to India, it not only served to knit the various geographical regions into an organic whole, but also affected our social attitudes and organisation. It struck a death-blow at our caste-system. All castes, high and low, began rubbing shoulders at the railway station and in the train compartment. The process of communication became accelerated, and social distance between various communities and groups of people, artificially maintained by tradition and custom, began to take wing. Our static society began to yield before the machine of the west. The caste-system began to run away on the wheels of the train, the street car and the automobile. Communication is the heart and soul of all social and cultural change, as Professor Cooley pointed out many years ago.

India's life has gone through a considerable transformation during the last hundred years or so. The culture of science and machine has come to us, with all its products and social processes. Cheap Manchester fabrics and prints ousted the village weaver, and now Manchester itself is ousted by the Indian Manchesters of Ahmadabad, Bombay and Madras. Village sugar industry was crushed out by imported sugar; that, in its turn, is replaced by indigenous sugar industry, with enormous capital invested in it. The American oil replaced oil from the hand-press of the village. Village pottery and brass-ware have yielded their place to aluminium and enamelled iron-ware of local and foreign makes. Every industry of the village has been affected. Mechanised, large-scale agriculture is beginning to make its appearance and the signs of its displacing the peasant are on the horizon. The village smithy is being replaced by the modern repair shop. The village craftsmen are leaving their hereditary occupations on account of foreign competition. There is migration of labour to the

1. A fuller analysis of the two cultures is given in the writer's forthcoming book, "India: A Conflict of Cultures."

cities. The railways have destroyed the economic self-sufficiency of the village. The old system of barter and payment of wages in kind has given place to money-economy. The village, which has been the basic unit of our culture, is in ruins, and unemployment is rising every day.

The city has prospered at the cost of village. Our cities are growing in number and size. They combine financial, educational and industrial functions, as do the cities of the west. The mill-centres, the engineering workshops, the leather factories, the jute mills, these and other specialised centres of industry are rising in India very rapidly. The machine has raised its mausoleums of coal, smoke, iron and steam, of dirt, squalor and over-crowding; of coolie-lines and human ware-houses, in India also. The voluntary, spiritual co-operative communism in which all groups worked together for the welfare of the whole village, has disappeared, and India is to-day being broken up into two camps, arrayed against each other: capital and labour. Look where we will, we meet with this one problem in one form or another. The big landlord, the zamindar, the petty rajah, the industrialist or the capitalist on one side, and the hari, the peasant, the kisan, the jat, the wage-earner on the other. Strikes, lock-outs and sabotage are as common here as in the industrialised west. Conflict, not co-operation, is the pattern of our economic life to-day. India is fast being dominated by Marxian philosophy of class struggle. The capitalistic class is undoubtedly a formidable group already opposed to the interests of labour. Some of the legislation of socialistic hue, rushed through the various provinces, and the amount of opposition it has given rise to, bear testimony to the extent to which class conflict has gone in India. Industrialism, capitalism, class-war, this is the natural sequence. Once science and machine have gained admission into a nation, they must move on in their relentless course. There is no retreat, no matter however much that nation may shut its eyes. More science and more machinery, both yoked to the nation's welfare, is the only sane attitude.

Another very powerful factor, contributing to our general disorganisation, is the rapid increase in our population. Our population has doubled during the last hundred years or so, and if the statistics may be relied upon, it may be double of what it is at present by the close of the present century. The life expectancy is very poor. The average in India is 25 years, while it is 55 years in the U.S.A. and 58 in New Zealand. The average stature and weight of an Indian are decreasing. The average cultivated land is less than an acre per individual in India,

while it is 2.3 acres even in Britain. Such a great pressure of population on land must mean a steady decline in fertility of the soil as well as low standard of living. The vital statistics of our nation reveal some appalling tendencies. But we still continue to multiply indiscriminately and export our surplus population abroad, creating thereby serious international complications.

With the rural life uprooted and the land-man ratio upset, struggle for existence must become keener. Science and machine, in their present uncontrolled state, are no friends of the family institution. They are dealing sledge-hammer blows to the sanctity of marriage wherever they have gone. Divorce and abortion put in their appearance, and woman clamours for rights. The modern movie, a new contraption of science and machine, takes a hand in the game and puts virtue on the defence. Under such circumstances, the woman of a mechanised India will be a replica of her sister of the west. Cinema actresses of Hollywood and Gaumont brand will soon replace Savitri and Sita. Glamour so graphically depicted on the screen and the seductive arts so well portrayed on the stage must mean a good-bye to modesty that has characterised India's womanhood. The joint family system is breaking up, as it broke up in Europe with the advent of industrial civilisation. Family, like the village, is a group of primary contacts. An individual finds his place, his *locus standi*, there and becomes a person. Torn from the moorings of these primary groups, he becomes a physical and spiritual nomad. Walking, cycling, motoring round the world, are all signs of restlessness in a mechanised order of life. Fantastic experiments in marriage,² disintegration of joint family, increase in divorce, abortion, all have their roots in machine and science.

Social diseases, which came to us from the west, are now no longer confined to sea-ports and large cities, but are invading our rural regions as well. The health and vitality of our nation are at a very low ebb. Fortunately, we are just waking up to the greater value of our indigenous systems of medicine which are comparatively more efficacious and economical than those of the West. But the day is still far off when every man, woman and child in need of medical attention will get it. Cancer, known to be the disease of civilisation, is beginning to be common in India. Malaria,

2. See an essay on companionate marriage in India, submitted by a student as his thesis for M.A. degree in the Department of Sociology in the University of Bombay.

plague, cholera and kala-azar, though partially controlled, still claim a heavy toll of mortality. Artificial rejuvenation is beginning to be quite common in India.

Movie-houses multiply by the dozen in large cities, and the travelling picture-shows are invading our rural life. The Ras-Lila is fast being forgotten. Our people witness the movies screened in India or abroad, but they are cast in alien spirit; and there is an emotional reaction which is not Indian in tone. Everything is being westernised, vulgarised, mechanised. Profit-making motive is taking possession of arts and entertainment. Our daily metropolitan newspapers give more space to sports, games, stocks and shares, races, sex and cinema than to the actual news.

Crime, which is the unfailing index of social disorganisation, is on the increase. Train and mail robberies, rape, kidnapping, traffic in women and children, are quite common in India now, and the papers publish the news in flaring headlines. If we read the official reports submitted during the last year by the Inspectors-Generals of Police of the various provinces, we find one and all complaining of the rise in crime. The criminal in India emulates his colleagues of the west whose exploits he sees in the cinema and presses science into service. Hatchets and daggers are fast being replaced by pistols and guns, stolen from the government armouries. It will be quite a different story when the embargo over arms is removed by the government and the volatile temperament of the tropics gets control of them.

Amidst this wide-spread social disorganisation, there is very little intelligently organised social welfare work. We have yet to learn how to organise our charities so as to make every rupee go the longest way. Social welfare work is a science, and not mere soft sentimentality.

Our education cannot help representing the success of philosophy of science and machine. In the first place, all our institutions of higher learning, universities and colleges, are situated in cities, creation of machine and science. The success of physical sciences has led to our indiscriminate homage to the philosophy they represent. Consequently, the philosophy of struggle for existence and survival of the fittest has fought its way into our educational theory. There is no adjustment between education and life around us. While unemployment increases, while the village is in the process of disintegration and men herd together in cities in search of work, the universities continue to receive and send out graduates by the thousand. Meanwhile, the proportion

of possible employments to the number of claimants grows narrower, and there is a wide-spread dissatisfaction.

The number of subjects in our universities has certainly been increased; sometimes, one feels that the syllabuses are unnecessarily over-burdened. A want of idealism still clings to our educational system. Our students are compelled to develop a mania for success in examination. They want the greatest number of marks with the strictest economy of knowledge. Annotations abound. There is a great emphasis on natural sciences, and the social sciences are offered in a truncated manner. There is no binding link between them, they function in isolation and without reference to the realities of larger group life. The younger generation does not leave the halls of learning sufficiently strengthened to adjust itself to the new environment created by machinery and science, and discharge its duties to community on its return to the life of the world. When every boy and girl from the village comes running and seeks admission to the college and the university, the professors must be over-worked. The emphasis is on quantity, all along the line. There can be neither creative study on the part of the students, nor efficient teaching on the part of the teachers. Both must work under pressure and for a set purpose.

The philosophy of machine and science is conflict, and the relationship between the student and the teacher is based on conflict. The teacher can no longer be considered as one who imparts knowledge and should therefore be revered; and the student is no more a candidate for wisdom. Both become cogs in the machine, the former to earn a living, the latter to pass an examination and get out. Consequently, there is a continuous friction between the teacher and the student. The students have learnt to go on strikes in exactly the same way as the industrial workers do in the mills and the factories. They demand the dismissal of teachers and officials whose lives have been dedicated to India's service for decades. There is not a day that we do not come across a report of school and college strikes or leakage of examination papers, which is another form of sabotage. This is a sad commentary indeed on a country whose educational ideals and institutions have been models for imitation by other civilisations of early times.

The commercialised entertainment, the movie, the radio and the race course surround our young men and women in the cities; it is only natural that there should be a craving for sensation. False ideals of "getting rich quick" dominate the minds of the students, wealth becomes the criterion of appraising the greatness of individuals. The seeds for scramble for worldly goods are sown in the early school and college days of the students. Our

younger generation is no longer prepared to accept the social and the religious controls which the last generation has known, the link with the past is being quickly broken. Sex is already rearing its head and becoming a major problem in our educational institutions. In a situation such as this, it is only natural that our higher educational system should come in for a good deal of criticism, and the demand for its over-hauling become insistent.

When we come to view India's political scene, the effects of conflict with the western culture assume alarming proportions. Democracy, a child of science and machine, is being transplanted in India, with all its appalling futilities. We, like the West, are beginning to believe in the hallucination of numbers. We must have large electorates, legislatures with large numbers of representatives; whether these representatives attend the sessions regularly, look upon their tasks as grave responsibilities, and whether they have the brains to fully understand and appreciate the significance of the complex problems of a changing social order or not, is another matter. We judge the strength of our political organisations by their size. Quantity reigns supreme; quality is at a discount. It is the mob psychology that prevails. Those who wear a particular kind of headgear or have been to jail for a few months, have earned the right to sit in the deliberative bodies of a nation that places one brahman, one man of wisdom, above the heads of "the madding crowd." Our National Congress has a tremendous task before it if it only realised its significance.

The modern technique of propaganda is throwing up into lime light a new type of leader, who is very much like the political boss of the west. With the printing press and the platform at his disposal, he exploits the enthusiasm of the masses under the cloak of patriotism. Self-interest, not service of the people, is what counts. We have developed a plethora of parties; in one province alone, there are no less than nine. Our politicians are picking up the art of lobbying and jobbery. The capitals, provincial and federal, will soon be peopled by representatives of high-pressure groups who will always want some "protection."

One of the most interesting fields for study of effects of the new culture of machine and science is that of inter-provincial relationships. Fate called India to a synthesis of peoples, races, religions, philosophies. People moved freely from province to province, made their residences far away from their homes. This free mingling of people was further augmented by railways and other mechanical devices of the machine-culture. But by a curious

twist in our psychology, we have become victims of petty provincialism, division, isolation. Our petty provincialism is very much analogous to the aggressive nationalism of the western nations, some of which are smaller than our districts. If the Congress High Command has been compelled to accept this balkanisation of India, it is because the philosophy of conflict and self-interest has come to stay with us. We are subverting the processes of history, and with our limited vision, we are segregating people into their respective provinces. The Provincial Public Service Commissions advertise widely for applications for government posts, but they don't fail to make it clear that only the residents of the province need apply! We are sacrificing talent for the sake of provincial preferences and nepotism. But when viewed as processes of social life, they are exactly the same as those national hatreds that have made Europe a shambles and produced the holocaust of blood and flames of 1914-18. Only we have no weapons to carry on warfare, but the conflict-patterns, both in India and the west, have a family-likeness. To look upon India as a part of the world and envisage her problems from national and international points of view is something very much different from thinking of it in terms of a community, a party, and a province. That way lies death. The nemesis that has overtaken the west will be India's fate. Mobility, spatial and social, that is, migration of people from one province to another and along the sliding scale of social hierarchy, is one of the most vital elements of social progress.

The philosophy of rights, aggressive and assertive, is a creation of mechanical civilisation. The possessors and the dispossessed are always engaged in a mutual war. We, in India, are immortalising these legal fictions in our Constitutions. Duty, dharma, an intelligent adaptation to environment, with one's feet firmly fixed in the eternal verities, finds no place in our life. Our future generations, drilled in these dogmas of rights and privileges, in this philosophy of success at the cost of the other fellow, will rush at each other's throats, as will these provinces fight with each other. The repetition of Europe's history, in a slightly different form, is not a remote possibility in India. No matter how stable our political organisations and party programs, the process of national disintegration can slip through and clutch at our very souls. The present struggle between the Indian National Congress and the States gives us a foretaste of what can come in the near future.

How can any higher feelings or spiritual values supervene when the educational institutions give no attention to the problem, when social, economic and political institutions and ideologies are

based on conflict? Religion which smoothens social life, helps the individual to find his niche in the social cosmos and fulfil his dharma, which imparts enthusiasm to his efforts for service of fellowmen, which softens the blows of fate, enriches and expands his inner life and sustains him in his sorrow, that religion has no place in a mechanical milieu. Money-making becomes the *sumum-bonum* of life, people are all the time goaded on to success. The sources of friction, however trivial, between the two major communities of India, begin to multiply, and there is a continuous fear of a general disruption. Separation, Pakistan, is only an echo of the provincial balkanisation sanctified by the National Congress. They are all phases of the machine-mind. We are in danger of accepting a materialistic philosophy of life and a rationalistic religion of the same type and on the same scale as the west. The modern barbarian has his habitat here as in any other part of the world. Evidences of a new materialism in India are not wanting.

The present social disorganisation that we are witnessing in India is born of conflict of two cultures and has to be intelligently understood and controlled. But how are we to do it?

Our first task would naturally be to understand the history, evolution and functioning of these two types of cultures. We must get a clear grasp of the underlying social processes that eventually incarnated into these two cultural patterns or configurations. We shall have to begin with the study of the relationship between the organic and the inorganic environments and their relationship to and effect on man and his group life. Next would come the cultural history of the people, their ways of thinking and acting, their folkways and mores. We would then have to close in and concentrate our attention on man, his original nature, his biological endowments, the human nature acquired through the process of interaction between him and society, on the development of his social attitudes and ideas, on the processes of competition, conflict, accommodation, and final assimilation into the social order, on the mechanisms of social control by means of which society controls the centrifugal tendencies of its members, on the collective behaviour of people, men in mass. The problems of population, both in the quantitative and qualitative aspects, the standards of living, are significant aspects of social life. The techniques of propaganda and the formation of public opinion, would form another branch of study. Social mobility, both horizontal and vertical, that is, from one calling to another and along the sliding scale of social hierarchy, would give us a clue to the dynamics of the social order. The

major social institutions, such as education, marriage, family, economics, politics, religion, arts and sciences, their evolution and adaptation to the changing order, and the process of their maladjustment or atrophy, would give an idea of the direction in which the social life of the people is moving. Further, we would study the two types of communities, the rural and the urban, in which people live, their effects on man and the trend of civilisation. An interesting phase of study would be that of social change, evolutionary or sudden, the anatomy of revolution, the problem of social disorganisation, the techniques of social repairs, and social reconstruction. Finally, we would have to face the problem of values, and answer the question whether there is such a process as social progress, consciously willed and planned, or whether human life must drift along like an uncontrolled boat on an uncharted sea. If we attempted this procedure of understanding life of any group or nation, we would be studying SOCIOLOGY.

It is quite obvious that a subject, thus defined, will be suspected of encroaching on the boundaries of other social sciences, such as history, geography, anthropology, psychology, pedagogics, economics, politics, ethics, philosophy, religion; and of robbing them of their uniqueness. But on closer scrutiny, it will be found that it is not so much an encroachment as a drawing together into an organic unity these various social sciences that have remained and functioned in isolation, and not unoften in mutual antagonism. Sociology stands for synthesis. Its one imperative demand is that there shall be a co-ordination of these social sciences, representing different segments of social life. We can see the necessity of this synthesis if we take a concrete social problem and notice the inter-relationships of these social sciences. Let us take crime. The natural and social environments causing crime relate it to the region of human ecology; racial and hereditary factors connect it with cultural history, anthropology and biology. Maladjustment of behaviour, physical and mental disabilities, bring in psychology and psychiatry. Educational theory and practice reveal inadequate equipment given to an individual for creative living and earning a livelihood. Economics point to the direction of unemployment, poverty, poor wages, poor housing, pressure of population, old age, public health measures. Crime is connected with statistics, politics, jurisprudence, ethics and religion from their respective angles. All these social sciences are closely inter-linked in a pragmatic manner, and find their fulfilment in the architectonic science, Sociology.

Just as Biology studies the general phenomenon of life, which finds concrete expression in botany and zoology, the plant and the animal worlds, so does Sociology study associated life which finds expression through manifold institutions of man, represented by various social sciences. Indeed, the emergence of Sociology has given birth to many new connecting social disciplines, such as human ecology, social and cultural anthropology, social biology, social history, social psychology, social economics, social politics. The derivative and synthetic character of Sociology has turned out to be its strongest point; it has helped in filling out the unoccupied spaces between various disciplines and then synthesising their methods and points of view. In the institutions of higher learning in the west, particularly in those of America, it is being increasingly realised that no social science, taught in isolation, has a meaning, unless it is related to other social sciences. The Institute of Human Relations at Yale University or Graduate Schools of Social Research and Social Welfare in different universities are well-known. Here, the contributions of various social sciences are brought together and focussed on the one central problem of social life. The nineteenth century was a century of physical and exact sciences; the twentieth is that of social sciences. The era of analysis and monistic interpretation of human phenomena is passing away. Humanity has definitely taken a turn in the direction of synthesis and Sociology.

LOGICAL ANALYSIS OF THE THREE PROBABLE STAGES IN THE EVOLUTION OF PIE COMPOUNDS

By

C. R. SANKARAN

In a previous note on the same subject (NIA I. 1939. p. 744), I pointed out that the determinative karmadhāraya stage in the PIE is the *crude* substance-attribute stage. It was only sought to imply through this statement that true abstraction aside from mere receptivity must have been far beyond the uncivilized mind which must have been "incapable of comprehending many particular impressions under one general aspect or of fusing them into one whole, though such unification may not be purely conceptual but suggested by the percepts themselves" [Vierkandt, *Naturvolker und Kulturvolker*, p. 230. Hanns Oertel, *Lectures on the study of Language*, p. 320].

Here I wish to point out that the entire reasoning throughout my previous note is in strict consonance with the natural hypothesis that the PIE tongue was of a simple isolating structure, only superficially resembling the modern analytic type, the one reflecting fragmentary thinking and the other the developed analytic thinking. But far too strong a generalisation in the other direction is made, however, by some who believe that there has been a continuous movement from complex to simple structure and that man's earliest speech was of complex structure. However, there is still no good reason to reject the very natural hypothesis. [See my paper, "The Double-Accented Vedic Compounds" *Madras University Journal*, 1936, p. 68 f.n. 4 and p. 78; cf. also Carl Darling BUCK *Comparative Grammar of Greek and Latin*. Chicago-Illinois, pp. 58-9]

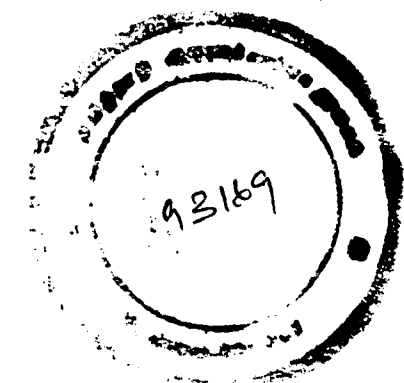
In this connection, it must be remembered that Armenian gives us a deep insight in regard to the primitive state of affairs with reference to a particular archaic feature of the PIE. In the latter, the augment was evidently not an integral part of the verbal form. [Vide my paper, "Accentual variation in relation to semantic variation" *J.O.R.M.* Vol. X. 1936, p. 320. f.n. c.f. also my paper, *Madras University Journal*, 1936, p. 82. With regard to the question of the accent of the augment, see my paper in the *Kuppuswami Sastri Commemoration Volume*, p. 138; Meillet, *Esquisse d'une com-*

parée del' arménien classique, p. 93, Vienna, 1903]. "In Armenian the augment is attached to past tenses of verbs which would otherwise be monosyllabic, but not to the polysyllabic forms a strongly original use." [Vide Edith Frances Claflin, *The Indo-European middle Ending* — *r Language*, Volume 14, 1938, p. 5].

Even according to the old Indian theory, the possibility of any thinking without language is disclaimed and language and conceptual thinking are made out to be identical. [See *Śatapatha Brāhmaṇa*, 8, 1, 2, 7]. What can certainly not be denied is that through a kind of abbreviation of associations, much perceptual thinking is carried on in words rather than in images. [cf. Stanley, *Language and Image*, *Psych. Rev.* Vol. IV, 1897, p. 67; *zt f. Psych. u. Physiol. d. Sinnesorgane*, Vol. XVII, p. 302; Pershing, *The Disorders of speech in Twentieth Century Practice of Medicine*, X, 1897, p. 769; Stout, *Thought and Language in Mind*, XVI, 1891, p. 181; Wundt, *Die Sprache und das Denken*, in his essays 1885, p. 244; Erdmann, *Die Psychol. Grundlagen der Beziehung Zwischen Sprechen und Denken*, in *Archiv f. systematische Philosophie* II, 1896, p. 355; III. 1897, p. 31, 150; Hanns Oertel, *Lectures on the Study of Language*, p. 317].

Finally, it must be admitted that the points brought forward in my previous note on the subject of the logical analysis of the three probable stages of the PIE compounds must necessarily remain somewhat problematical, since *no direct* proof can be supplied in support of the statements made there, and the question therefore now reduces itself to whether the intrinsic reasons offered far outweigh the absence of positive historical evidence.

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THE CLUSTER PHONEMES -SK- AND -SKH-
IN PRE-HISTORIC GREEK AND THEIR
RELATION TO ACCENT

By

C. R. SANKARAN

(The object of this paper is to demonstrate how the hypothesis I have formulated in my paper published in the Wackernagel Number of the *New Indian Antiquary* can be further verified.) In support of my rule regarding the pair of cluster Phonemes -sk- and -skh- in Greek,¹ I give below, in the first place, more instances. *skhein* (H. Hirt, *Der Indogermanische Ablaut*, Strassburg, Page 182), *skhésō*, *skhēma*, *gnóskō*, *blóskō* (C. D. Buck, A.J.P. 17 p. 281), *thnéskei* (H. Pedersen, *Hittitisch und die anderen Indoeuropäischen Sprachen*, Copenhagen, p. 81), *bibrósko* (Edmund Sandbach, *die Indogermanischen Zweisilbigen Schweren Basen und das Baltisch [Litauische] Präteritum*, Heidelberg 1930 pp. 15 and 50), **éiskō* (**wewikskō*) in contrast to *eískō* (Hanns Oertel, *Lectures on the study of Language*, p. 233, "Dissimilatory changes"), *ararísko* (George S. Lane, *Problems of Tocharian Phonology*, Language Vol. 14, p. 23).

A living category is not constituted in any sense by a considerable number of forms with present reduplication in *i*. This is applicable both to Thematic and Athematic verbs. But the reduplicated verbs in -skō which apparently were not generally obscure, hold an exceptional position. Instances are *gignóskō*,²

1. See my paper, **Gṃsk₁ó versus *Gṃskh₁ó*, *The Indian Antiquary*, Jan. 1939, Vol. I, pp. 632-636.

2. See also George S. Lane, *Problems of Tocharian Phonology*, Language Vol. 14, 1938, p. 29. "Such Hittite forms as *da-aš-ki-mi*, 'I am taking'; *da-aš-ki-si*, 'you are taking'; *da-aš-ki-iz-zi*, 'he is taking'; *Pi-eš-ga-u-e-ni*, 'we are giving'; *Da-aš-ki-it-te-ni*, 'you (pl.) are taking'; and *Pi-eš-kán-zi*, 'they are giving' contain a suffix ending in a variable vowel, and it is safe that all scholars would identify it with the thematic of Greek *gignóskō*, etc." See E. H. Sturtevant, *The Source of the Hittite Hi-Conjugation*, Language Vol. 14, 1938, pp. 11-12. See also H. Hirt, *Idg. Ablaut*, p. 80, Section 212, p. 197, Section 838. Cf. "In many languages roots can only be found as imaginary forms, by comparing a group of words and getting at the common part belonging to them all. Thus in Latin it appears from *gnosco*, *gnotus*, etc., that there must be a root *gno*, which carries the thought of knowing. Going on to

bibróskō, *mimnέskō*, and *didrásko*.³

Some reduplicating presents had so altered their appearance on account of sound changes that it is no easy task to divine the original existence of a reduplication. Such a one is *dizēmai* < **didiāmai*.⁴ Possibly, though very doubtful, *mísgō* < **mimzgō*.⁵ But it is more usually and convincingly supposed to come from **mísgkō*- strong root **mezg-*, cf., Latin *mergo*.⁶

Further, we have instances like the following in support of my rule. Gk. *-eskhárā-*, Gothic *-azgo-* (with Idg. *-sgh-*), Old Norse *-aska*, O.H.G. *asca* (with Idg. *sg*; *gh* > *g*). (See Holger Pedersen, *Kuhn's Zeitschrift* 32. 1893. p. 273).

It is necessary to point out that a comparison between the Germanic and the Baltic group, on the one hand, Goth. *-ga-raips* 'fixed, appointed', O.E. *geraēde* 'ready', Gothic. *geraidjan* 'prepare', etc., Lettish. *raids* 'ready', *riedu*, *rist*, 'arrange' and Tocharian, on the other, A *rituw-* 'be joined, bound', B *ritt*, with sbs. A *retwe* 'com-

Greek, there is found in *gignóskō*, *gnōsis*, *gnōmē*, etc., the same *gnō* with the same meaning." Edward B. Tylor, *Anthropology*, 1913, p. 144. See further for *gignóskō*. Latin, (g) *nōsco*; Irish, *gnáth*; old Bulgarian, *Znati*; Lithuanian, *Zinóti*. E. Zupitza, *Die Germanischen Gutturale*, p. 193.

3. Walter Petersen, *The vocalism of Greek Vowels of the type pitnēmi*, Language Vol. II, 1926, p. 14, footnote 1. "In case of *-ískhō* < **si-skh-ō* (strong root *-sekh-* in *eikhon* < **e-sekh-o-n*). This factor was assisted by other sound changes in other forms resulting in the present *-ekho-* and future *-exo*, so that the various irregularities could not have been interpreted according to any system." Walter Petersen, Language Vol. II, 1926, p. 15.

4. Fick, *Vergl. Worterbuch* I³ 108, 620. See also Walter Petersen, *op. cit.*, p. 15.

5. Wackernagel, *Miszellen Zur Griechischen Grammatik*, Kuhn's Zeitschrift Vol. 33, 1895, p. 39.

6. "Ein *-sko-* Präsens in gr. *mísgō* < **mig-skō*, weiter gebildet in Latin *misceo*." See H. Hirt, *Idg. Gram.* Teil IV, Heidelberg, 1928, p. 336.

In this connection it must not be forgotten that Ligurian suffix *-asco*, *-asca*, is not probably Indo-European (Krahe, *Hirt-Festschrift*, II, 252-253). The Indo-European *-sko-* is found as *-s-* besides *-sk-* in the *-B-* dialect of Tocharian. Hittite exhibits a tendency to use the suffix in iterative-durative sense while in Tocharian we find it used in causative sense. "It is also interesting that, while Tocharian is merely archaic in its use as the adjective in place of the genitive, a trait common to Slav as well as Luvian, it makes specially frequent employment of these suffixes A-*ši*, B-*še*, which is I.E. *-skīyo*, found in Armenian as *-oçi* and in the Slav *-isku* as well as in Germanic *-iska*." See A. B. Keith, *The relation of Hittite, Tocharian and Indo-European*, Indian Historical Quarterly, Vol. XIV, pp. 214-218.

binations, composition', B *raitwe* 'arrangement', is plausible.⁷ "The identity with the Tocharian renders imperative the separation of the Germanic forms from the root **reidh-* 'ride', and the connection with the base *(a)-*rēi-* 'join, fit' (in Greek, *ararísko*, etc.) all the more probable."⁸

Beside Gk. *phōs* from *pháwos* 'sun', an equivalent stem **phōs* with original *ō* on account of Homeric *phoōs* (contamination of *pháos* and **phōs*) must be assumed in order that the derivatives of the type *phōskei*, *diaphōskō*, *phōstēr* and Attic *phōs* (*pháos* from *pháwos* would not contract) may be accounted for.⁹

While -*aiskhúlos-* is in conformity with my rule, -*diaskopein-* is an exception.¹⁰ Similarly, -*aiskhos*, -*aískhistos-* *Aískhrōn* are exceptions. But contrast these with -*aískhrós*, -*aískhúlos*, from *aískh*, *aískhrōn* and *aískhrōs*.¹¹ Exceptions to the rule again are Greek *panaískhēs*, -*eúaiskhros*, -*kállaiskhros*, *sklabēnós*, Slavonian -*slovén-inu*, pl. -*éne* and also Gk. *sklábos*. But it must not be lost sight of that -*áskra* Hesych. and *skhoinous*, Arcadian -*skhoinos* Boeotian, obey the rule.¹² Among still further noteworthy exceptions are -*skēné*, -*skēnos*, Latin *castrum*, Greek -*skēnéō*, -*skēnōma*,¹³ *aískēthēs*, Irish *scathaim*.¹⁴ As against these, cf. -*iskhnós*, *ésketo*, Old Bulgarian -*iseknati*, Russian -*sjáknuto*, Lithuanian -*sèkti*, Lettish -*siku*, **sinku*, Sanskrit -*ásakra-*, *ásaçcant*, *víçaktām*,¹⁵ Greek -*epibaskémen*,¹⁶ -*skúzonai*,¹⁷ Gk. *iskhō*, *éskhon*, *skázō*. *Borousskoi*

7. Sieg, Siegling, and Schulze, *Tocharische Grammatik* 3, 462f. Lévi, *Fragments de Textes Koutchéens*, Cahiers de la Société Asiatique 1^{re} Serie II, Paris 1933, p. 140.

8. Cf. Walde-Pokorny 2. 397. George S. Lane, *Problems of Tocharian Phonology*, Language Vol. 14, 1938, p. 23.

9. See Brugmann, *Grundriss* 2.³ 536, 578; Brugmann-Thumb, *Griechische Grammatik* 4 75; Walde-Pokorny, *VWIS* 2. 122. E. H. Sturtevant, *Hittite h initial = Indo-European bh*, Language Vol. 13, 1937, pp. 116-117.

10. Jules Bloch, "Voir" en Indo-aryen; J. Wackernagel *Festschrift Antidoron*, Göttingen 1924, p. 148.

11. Vide, *Indogermanischen Eigennamen als speigel Der Kulturgeschichte* by Felix Solmsen, Heidelberg, 1922, Carl Winter, pp. 9 and 128.

12. Felix Solmsen, *Ibid.*, pp. 128, 51, 59, 51 and 60.

13. Ernest Zupitza, *die Germanischen Gutturale*, Berlin, 1896, p. 212.

14. Fröhde, *Bezenberger's Beiträge*, Vol. XVI, 1890, p. 182. See also Osthoff, Paul Und Braune's *Beiträge*, Vol. XIII, 459 Fick⁴ II, 308.

15. Rg Veda, I, 117. 20. Cf. J. Schmidt, *Kritik. d. Sonanten th*, 64. Also E. Zupitza, *Die Germanischen Gutturale*, p. 138. Cf. my paper, *Journal of Oriental Research. Madras*, 1935, Vol. IX, p. 129, for *a-saścāt-ā* (Rg Veda, I, 160, 2a).

16. See K. Brugmann, *Grundriss*, Band IV, Teil II, p. 60.

17. K. Brugmann, *Ibid.*, pp. 60, 26, 108, 38, 422.

is an interesting word (in conformity with the rule) in that it is the name of a tribe found by the humanist Stella in the Sarmatia of Ptolemy's Geography whence the name Prussian ('Borussian').¹⁸

On the other side are -*sk-ór*, *skat-ós*, Sanskrit -*çák-ṛ-t*, -*çak-n-é*, (Latin -*stercus*). "-Ces formes ne s'expliquent que par une flexion *Sák-ṛ-t* dat: *sk-n-A'i*."¹⁹

The exception -*áskhetos* can perhaps find a possible explanation in the fact that "syllabic divisions like *he-któs* and *á-skhetos* are forbidden by the long quantity of the initial syllable in these words."²⁰

-*sképtomai* is also an exception which can be easily explained away, for here we meet with the well-known phenomenon—metathesis.²¹

Possible real exceptions to the rule are: -*skirtēmátōn*, *eskedástlēsan*, *skeuasthēnai*,²² *skélē*,²³ *skándaloes* = snares,²⁴

18. R. Priebsch and W. E. Collinson, *The German Language*, Faber and Faber, Limited, 1934, p. 9.

19. de Saussure, *Mémoire sur le système primitif des voyelles dans les langues Indo-Européennes*, Leipzig, 1879, p. 225. "-*skór*, Gen. *ska-tós*, Skr. *Avaskara* (excrement, place of same). In *çṛṇa*, *sch* is due to contamination of *sker* with *schid* (Norse, *skide*), though Skr. *ch* < *skh* is perhaps found in *icchāti*: Old Bulgarian *iskati* (Wackernagel, I, Section 132)."

"For the sake of -*deti* cf. English *gives* for *makes* or *does* (*gives* a cry, dat. *gemitum*). An accusative *prius* from *skor*, again governed by *dū* (giving, making), in the old Bulgarian gerundial *skare-dū* (nasty, American Journal of Philology, Vol. 37, 1916, p. 169. *Pro Domo Mea*. Part II. *Operandus*)." E. W. Fay, *Irradiation and blending*, p. 157, Section 68. Studies in honour of M. Bloomfield. See further for *skór*, Kurylowicz *Études Indo-Européennes*. Kraków, 1935, p. 7.

20. Roland G. Kent's Review of H. Hirt's *Indogermanische Grammatik*, Teil V, Language Vol. V, 1929, p. 264.

21. For the earlier **spéptomai*. Brugmann, (*griech gramm.*).³ p. 296, Sec. 344, Note II) derives *sképtomai* from **spékiomai* (Latin *specio*) which before becoming *sképtomai* first became **skepiomai*, formed on analogy with *bláptō*, *krúptō*, *túptō*. (See also Hanns Oertel, *Lectures on the study of Language*, pp. 226 and 231.).

22. A. Prévot, *L'Aoriste Grec en-thēn*, chapitre V. *L'Aoriste en-thēn* Après Homère. Collection Linguistique Publiée Par La Société de Linguistique de Paris, XXXIX, Paris, 1935, pp. 53 and 145.

23. E. W. Fay, *Irradiation and Blending*. Studies in honor of M. Bloomfield, p. 138, Footnote (1).

24. Leo Tolstoy, *A Confession and What I Believe*. Translated by Aylmer Maude. The World's Classics, p. 371. Oxford University.

skállō, skáptō,²⁵ skéraphos, skídnamai, sklērós (Doric sklārós), skeletós, skólops, (Latin scalpo), skulon, skutos.²⁸

Gr. *iskhō* < **si-skhō* (strong root *sekh-* in *eikhon* < **sekh-o-n*) resulted in the present *ékhō* and future *héxō*, reduplication being assisted by other sound changes in other forms.²⁷

More important exceptions are *áskhetos*, *skairo* < **skō-rjō* L. *pario*.²⁸

As a refreshing contrast to *pá-skhō*²⁹ -fendo, we have *pháskō*.³⁰ Without much comment, I proceed to give a few more exceptions, if only for the sake of completeness: Idg. *skelā* V. ii. Greek *aposklēnai*, *sklērós* doric *sklārós*,³¹ *skeletós*, *skéraphos*, Idg. *skere*, *skiá*, Idg. *skejā*, *skídnēmi*, *skuros*, *skutos*, *skirtāō*, *skairō*,³² *hrēskoménōn* (contrast it with Homeric *skhésō*), *éskhēmai* (contrast it with *arésō*), Attic *éskhēka* (but contrast it with *schēma*, *skeletós*, *skhēmatos*. Hanns Oertel, *Lectures on the Study of Language*, p. 274.), Attic *aposklēnai*, Epich. *exesklēkótes*, fr. 106 Ahrens); compare *sklērós*.³³

25. Edmund Sandbach, *Die Indogermanischen Zweisilbigen Schwere Basen und das Báltische (Litauische) Präterium*, Heidelberg, 1930, pp. 30 and 45.

26. H. Hirt, *Idg. Gramm.*, II, Heidelberg, 1921, pp. 123, 79, 183 and 136.

27. Walter Petersen, *The Vocalism of Greek Verbs of the type pítnēmi*, *Language* Vol. II, 1926, p. 15.

28. Vide H. Hirt, *Idg. Gram.* V, 1929, pp. 210 and 212. Compare also Greek *duklewés* = Skr. **duhgravás*. Fick, *Bessenberger's Beiträge Zur Kunde Der Indogermanischen Sprachen*, Vol. V, 1880, p. 184.

29. Grassmann, *Ueber das ursprüngliche vorhandensein von wurzeln, deren anlaut und auslaut eine aspirate enthielt*. Kuhn's *Zeitschrift*, Vol. 12, 1863. See also my article, *The New Indian Antiquary*, Jan. 1939, Vol. I, p. 634, Footnote 4.

30. K. Brugmann, *Grundriss*, Band IV, Teil II, p. 63.

31. H. Hirt, *Der Indogermanische Ablaut*, Strassburg, 1900, Section 790, p. 162, also Section 301.

32. H. Hirt, *Ibid.*, pp. 91, 84, 101, 197, 15, and Sections 477 and 425. Bechtel, *Die Hauptprobleme der Indogermanischen Lautlehre seit Schleicher*, Göttingen, 1892, p. 115.

33. Compare Bechtel, *Ibid.*, pp. 191 to 193. The influence of the *i* of Greek *ístēmi*, *títhēmi*, *pímplēmi*, etc., on Greek *Skídnēmi* beside the aorist *eskédasa* was suggested by Holger Pedersen, *Die Präsensinfix n*. *Indogermanische Forschungen*, Vol. II, 1893, p. 293. Walter Petersen, *Language*, Volume 14, 1938, page 57, f.n. 24.

In support of the rule are *enskerhō*,³⁴ *apothnēskōn*,³⁵ *episkherō*,³⁶ *kikléskō*, *skhedíēs*, *epaurískō*, *epískopos*, *iskhandō*, *titúskomai*, *lissésketo*, *kikléskousin*.

In the foregoing, I have given fairly representative examples from which it can be easily seen that the real exceptions to the rule are not numerous and it need not be pointed out that in view of this fact there is a high degree of probability for the rule to have operated in pre-historic Greek.³⁷

ADDENDUM

In other Indo-European Languages this law did not seem to operate. There, after initial *s*, there is only non-aspirate occlusive. cf. J. Kurylowicz, *Études Indoeuropéennes*, p. 53. We have in Lithuanian *skiemuō*, *skiemeni*, *skiemenyys*, *skiemeniū*, *skiedziu*, *skaitmuō*, *skaitmeni*, *skaitiū*, *skaito*, *skauđu*. (Holger Pedersen, *Études Lituaniennes*, pp. 45-46 and 58.). We have in Hittite too, *šeškiški/a*—*Uš-kien-nu*, *Uškēnu*.

[Albrecht Götze and Holger Pedersen, *Mursilis Sprachlachmung* = Det Kgl. Danske Videnskabernes Selskab. Historisk-filologiske Meddelelser, XXI, No. I, Copenhagen 1934, pp. 18, 33, 35, 37.] *ku-is-ki*, *pi-es-kán-zi* (zum Typus des gr. *pháskō*), *pi-en-ni-es-ki-iz-zi* [H. Pedersen, *Hittitisch und die anderen Indoeuropäischen sprachen* 1938. Copenhagen, 174-82, also p. 67.]. "Hittite thematic verbs of the 'm-conjugation' are, for example, the verbs in suffix *-ske/a-* (*da-as-ki-mi*, *da-as-ki-si*, *da-as-ki-iz-zi*)" E. H. Sturtevant, *Language* 14, 1938, p. 291. [H. Pedersen, *op. cit.* p. 97; also pp. 104-5, 131-3.]. The iterative stem *tarák-* in Hittite (e.g. *tar-si-ki-mi*, Forrer, *Boghasköi-Texte in Umschrift*, 2. 23. A 2. 15) shows that the extended form of *dar*-had the suffix *s* instead of *is*, *es*. It is well known that in the Indo-European the *sco-* suffix was a conglomerate (*s+ko*) (Brugmann, *Grundriss* 2². 3, 350f). "The Hittite iterative *šk* was similarly found, as is shown by such series of stems as *au-* 'see'; *auš-*, *ušk-*, *halza-*, 'call'; *halziš(s)-*, *halzišk-*, *hanna*, 'decide a law suit, litigate'; *hannešsar*, 'justice, law suit'; *hannešk-*, *istamaš-*, 'hear' [See Holger Pedersen, *Hittitisch und die anderen*

34. H. Hirt, *Idg. Gram.* V. p. 287.

35. G. Herbig, *Aktionsart und zeitstufe, Beiträge zur funktionslehre des Idg. Verbums.. Indo-Germanasche Forschungen* Vol. VI, 1896, p. 158. Vide also Hanns Oertel, *Lectures on the study of Language*, 1913, p. 176.

36. Louis H. Gray, *On Indo-European noun declension, especially of -o- and -ā- stems*, *Language* Vol. VIII, 1932, p. 184.

37. See my paper, *The New Indian Antiquary*, Vol. I, p. 636.

Indoeuropäischen sprachen, 1938. p. 96.]; *ístamašk-*, *maušs-*, 'fall'; *maušk-*, *pa-*, *pi-*, 'give'; *peššiya*, 'give, throw'; *pippeššar*, 'gift' [H. Pedersen, *ibid.*, p. 117]; *pešk-*, *parh-*, 'drive hard, speed'; *parheššar*, 'haste'; *parhešk-*, *punuš(š)-*, 'ask'; *punušk-*, *uppa-*, *uppi-*, 'send'; *uppeššar*, 'zusendung'; *uppišk-*". E. H. Sturtevant, *Hittite h initial = Indo-European bh.* *Language* Vol. III, 1927, p. 113. [H. Pedersen, *ibid.*, pp. 131-3.]. The loss of aspiration is a far-reaching and unambiguous innovation which is common to both Hittite and Tocharian. cf. Walter Petersen, *Hittite and Tocharian*, *Language* Vol. IX, p. 15, 1933. It is significant that the use of the IE. present suffix *-sk₁o*, found in **g₂msk₁ó*, Skt. *gácchati*, Greek *báskō* 'go' or Latin. *Crē-sco* 'grow' has been developed by Hittite and Tocharian beyond other languages. Hittite *akkuski-mi* 'drink copiously', *eku-zi* 'he drinks', *daski-mi* 'I take' *da(i)-*, [vide Delaporte, *Éléments de la Grammaire Hittite*. Paris 1929. 51f.]. *Sk₁* side by side with *sk* seems to appear in the B dialect of Tocharian [Sieg, Siegling and Schulze, *Tocharische Grammatik*, 358ff], *pā-sa-ntär* 'they guard' [Latin. *pā-scu-ntur*], *kām-se-ñc*, causative of *kān* 'come into being', which is the Skt. *jan-*, Gr. *-gen-*, Lat. *jen-* < IE. **g₂en*. In Tocharian *praksam* corresponding to Sanskrit *prcchā-ti*, *-sa-* is IE *skh₁o* [*ska-* in the B dialect. cf. Walter Petersen, *Language* Volume IX. p. 15, f.n. 13 and p. 27. 1933.]. "If the spread of this formative goes back to the period of Hittite-Tocharian unity we must of course assume that the tendency of Hittite to use it in an iterative-durative sense over against the prevalent causative use in Tocharian was due to a secondary divergence."

Original *a* (IE *o*) is perhaps substituted by *i* on account of vowel assimilation in Hitt. *daski-mi* which contrasts its *-mi* with the *-o* of Lat. *crē-sco*. This first *i* in *daski-mi* might have been due to analogy with the 3. sing., where the *i* represents the *e*-grade of the thematic vowel [cf. Walter Petersen. *Lang.* IX. p. 28 and f.n. 94, 1933.].

In Hittite *ši-es-kán-zi* [*Die Boghazköi-Texte in Umschrift* by E. Forrer. Leipzig 2. 12A and *Keilschripte aus Boghazköi*. Leipzig. 3. 34. 2.] accepting E. H. Sturtevant's interpretation, we can seek a remnant of the original durative force of the stem *seske/a-*. That the stem does not contain the *-ske/a-* suffix and that it never had durative force was however the view held by Götze [*Kleinasia-tische Forschungen* I. Weimar. 1930. I. 233.] and Bechtel [*Hittite verbs in -sk-* 15. Ann. Arbor. Michigan. 1936. cf. also E. H. Sturtevant, *The values of the be- sign in Hittite*, *Language* Vol. XIII. 1937. pp. 287-8 and f.n. 12 of p. 288.].

The rule perhaps does not also operate in the non-Indo-European languages, for instance, see Blackfoot *kaiskstakisini* (compare C. C. Uhlenbeck, *International Journal of American Linguistics*, Vol. 9, p. 76) so that we cannot give universal validity to it; it could have operated only in pre-historic Greek. This fact shows that "that which applies to one language or group of languages need not always be valid for another". C. C. Uhlenbeck, *American Anthropologist*, Vol. 39. 1937. p. 388.

THE RELIGION OF THE GĪTĀ.

By

P. NAGARAJA RAO.

The Gītā is the most popular Hindu Scripture, at once claimed to be the inspiration of the reactionary and of the renascent Hindu. It is one of the three authoritative texts of the Theistic as well as the Absolutist Schools of Vedānta. Adapting the language of the ex-Dean of St. Paul's, Inge, the Gītā view of life can be defined as a revolutionary type of idealism which estranges the revolutionary by its idealism, and the conservative by a drastic revaluation of earthly goods. The Gītā gives expression to two seemingly different ideas of God, but fundamentally the Gītā view of God is that of a *personal deity* whose grace is essential to salvation.

Although some of the verses in the Gītā have been interpreted so as to sustain the Absolutism of Śaṅkara, it is clear that the stress of the Gītā is on a supreme *Person* (*Puruṣottama*) to whom loving worship and humble devotion are due. The Lord of the Gītā says "whatsoever thou doest, do it as an offering unto me". This and several similar verses show that the God of the Gītā is a God whose Law is the Law of Love, purified from all temporal and base attachments and desires. It has been said that this conception of God owes something to the influence of the Christian doctrine about the nature of God. It is hardly necessary to invent this explanation for the Gītā's stress on a Personal God, for some of the earliest Upaniṣads, undoubtedly, pre-Christian, are themselves theistic in character. The Gītā is fundamentally a scripture for life rather than a text for metaphysical speculation. It embodies a scheme of morality which is essentially scientific. It succeeds in reconciling absolute moral values with individual moral possibilities. It takes due account of the *svabhāva* (Nature) of the individual in prescribing his *svadharma*. This makes for individual perfection and simultaneously subserves the end of general social harmony.

We shall examine the relation of this doctrine to the scheme of the castes in India. The Gītā conceives of the caste in a manner radically different from the conceptions cherished by the reactionary orthodoxy of to-day.¹ Caste according to Gītā is

based on *svabhāva*, i.e., the individual qualities and propensities that go to make up the nature of the man. In the last analysis the caste of an individual is an achievement resulting from the strenuous pursuit of the good life. It is not a gift mechanically bestowed by an external agency. It certainly does not depend upon the accident or the circumstances of an individual's birth. The contemporary criticism of caste, valid as it undoubtedly is, against the mechanical caste system (*jāti*) actually obtaining in India to-day, is irrelevant in relation to caste (*varṇa*) as conceived in the Gītā and by the originators of the caste system.

The Gītā idea of Dharma is one of moral altruism. It rejects the mere efficient performance of rituals, quite as much as it rejects a vague and undisciplined allegiance to God, as both inadequate in themselves. It bridges the gulf between ritualism and humanitarianism. The Gītā lays equal stress on faith and good work. Faith without an active moral life is as vacuous and inadequate as a lofty moral idealism without a faith in God. Faith in God should be the informing principle of all moral activity. The Gītā is not therefore a mere compendium of ethical precepts, but primarily a religious scripture, the central emphasis of which is on a loving Father of Mankind who is the goal of human aspiration. The morality of the Gītā is ultimately and intimately rooted in Spirituality.

The moral teaching of the Gītā is not a static compound of prescriptions ready made for defined eventualities. It is a dynamic and living call to the individual man to live always in the fear of the Lord and to order his life in accordance with the teaching of the Lord concerning his duty to himself and his duty to society. It is rigid neither in regard to time, nor in regard to circumstances. The Kingdom of Heaven is not conceived by the Gītā as a realm of pure mystical experience unconnected with concrete human relationships. It is not an unearthly conceptual realm but a just and happy social order.

The *sanyāsa* of the Gītā does not imply the mechanical renunciation of worldly attachments. It is rather the taking upon oneself the duty of transforming by love and service, by example and

vaguely by Sri Aurobindo. Prof. D. S. Sarma has a splendid chapter on this subject in his book, *Lectures on the Gītā*. (p. 54-67).

Dr. Mees, the Dutch scholar, has maintained a very interesting thesis on *jāti* and *varṇa* in his book on *Dharma and Society*, p. 94; cf. *Young India*, M. K. Gandhi. (pp. 479-483).

1. The identification of *svadharma* with *svabhāva* was first suggested

precept, the existing fabric into a shining thing—a worthy offering at the feet of God. The consummation wished for by the ideal *yogin* of the *Gītā* is that through love and service he may attain ultimate fellowship with God Himself. It is far from being an unattainable and merely abstract idea. It is no impossible austere morality, but its adoption will turn the Earth into a Paradise. It does not preach a needless inhuman austerity or self-mortification and penances, but insists on the service of fellow human beings. The most inspiring and living embodiment of the ideal of the *Gītā* is Mahātmā Gandhi, the great political *sanyāsin* of India. He has interpreted our ancient Dharma in terms of modern life and taken up the message of Love and *Ahimsā* where Buddha left it. He restored the purity of Hinduism and purged it of its extravagance. He openly revolted against the rigid lifeless interpretation of the scriptures. He took his stand on the Bhagavad *Gītā*. To the utter surprise of the literalist section of the Hindu thinkers, the *Gītā* proved to be a revolutionary document in his hands.

HISTORY AND DEVELOPMENT OF THE MUSICAL COMPOSITIONS OF SOUTH INDIA

By

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Introductory

The great composers, in the flights of their imagination, stirred by emotion in the service of the Muse, create out of the elements of the art certain musical forms. These forms we call musical compositions. The purpose of these compositions is to have at hand always some finished pieces of music for use even during the uninspired moments. These forms in their turn serve as models for the ordinary artists and artisans and for the laymen to have an easy access to the world of music. Rāga is the basis of Indian Music. These compositions are crystallised melodies set in a particular tune and measure or tāla.

Classification of Compositions

Creators of these musical forms, according to the method of perceiving the art, and from the characteristics of their compositions, can be divided into classes. The men of letters with a good knowledge of music who wish to devote all their talents for giving expression to their fervent feelings form one class. The other class consists of masters of the art who follow art for its own sake, and wish to illustrate the beauties of the art by artistic creations. Consequently, the compositions of these two classes of composers are of two different types and these two varieties have earned their names as melodic and technical.

Melodic compositions are most often pieces of poetry clothed in fine music. The music is intended to be a vehicle for the profound subject matter contained in them. Hence in such pieces the *sāhityam* (*mātu*) plays an important part. Because of their literary value some compositions belonging to this variety are learnt by students of literature as well, e.g., Jayadeva's *Aṣṭapadī*, the *Tēvāra* hymns, etc. Melodic compositions appeal to our hearts. Some other examples of this type are the *kīrtana*, *pada*, etc.

In the compositions of the technical group the saṅgīta or dhātu, i.e., the musical aspect is more pronounced than the sāhitya. These compositions are intellectual while the melodic compositions are emotional. In this group compositions like jatisvara have no sāhitya at all. Where sāhitya is met with in these type of compositions, it is only intended to serve as a mnemonic aid to remember the music. In the technical compositions the purpose of the composer is to show the varied beauties of the art in its manifold forms and so the author thinks more of the musical aspect than the idea contained in the song. Composers sometimes utilise the sāhitya portion to supplement the musical illustration. For example we have the "lakṣaṇa gītas."

The Hindu conception that a gifted talent should not be expended on a work which has no devotional or spiritual significance has prompted the composers to attach a few words of invocation to God to the purely scientific pieces. A distinct feature of the technical compositions as compared with the melodic is the fixity of the music (sāhitya). In a kīrtāna for example saṅgatis are added, and ciṭṭasvaras are appended. In a technical form like a varṇa or svarajati such attempts are not made. These are finished pieces and there is no free scope to introduce the originalities of the singer. Now-a-days we may find manodharma svaras being sung to the parts of a varṇa, and saṅgatis introduced. Usually in the pada varṇas elaborations are introduced for manifold exposition of the same theme through dance. The technical compositions make the students of music familiar with the intricacies and subtleties of musical execution, initiate them in the critical appreciation of the art and serve as a guide to the correct rendering of the rāgas and tālas of our system.

With regard to the exactness of the classification of musical compositions under the above two groups, a few words may be added. Besides the purely technical and properly melodic compositions, pieces there are which share the characteristics of both types. The simple 'gītas' of Purandara Das are grouped as technical compositions and learnt with the same motive. Still they savour greatly of melodic compositions. Again, kīrtanas are deemed as melodic compositions. But the immortal creations of the Musical Trinity and other great composers are the main references in defining the lakṣaṇa of a rāga and thus serve a great scientific purpose. Further, the saṅgatis, ciṭṭasvaras, madhyma kāla sāhityas, etc., are nothing but technical, non-essential, and beautifying appendages. A 'Rāgamālikā' again is quoted as a technical type. The Mēlakartā rāgamālikā of Mahāvaidyānātha

Sivan, the 72 Rāgāṅga rāgamālikā of Subbarama Dikshitar and the Rāgatālamālikā of Ramasvami Dikṣitar, are indeed technical pieces. But pieces like 'Jayajayagokulapāla,' and 'Pannagendra-śayana' are as melodic as technical. Will it not be better to call such pieces as technico-melodic compositions?

Musical compositions have also been classified as art forms, devotional forms, dance forms and opera forms as well as sacred and secular forms.

Outside the pale of compositions which have been treated above, lie the hundreds of our most ancient as well as the most natural and endearing compositions—the folk songs.

Principal Music Forms

The principal musical forms of South India, at present, comprise a great variety of compositions. But the greatest difficulty in providing clear definitions with regard to these compositions is that the majority of the composers, impelled by their originality, introduce their own modes and styles with which they transform and modify the structure of their pieces, so that there is no fixed definition or standard for any composition.

Alaṅkāra

Passing over the Sarali variśai, Jaṇṭa variśai, Dhātu variśai and Svāra pallavi (the name itself explains the nature of the piece), the simplest form of composition, to which we attach much significance, is the Alaṅkāra. The alaṅkāras that we now learn were composed in the Māyāmālavagauḷa rāga and in the seven principal tālas and their varieties, by Purandara Das. The alaṅkāras have three aṅgas—Rāga, svāra and tāla. The svaras are grouped in their vādi samvādi relationship with a few conjunct svaras to have continuity. Though learnt as a separate item, as the name denotes, the form of grouping svaras is adapted to embellish musical forms. Alaṅkāras, prior to the time of Purandara Das, meant quite a different thing. These alaṅkāras were only mere artistic grouping of svaras (विशिष्टवर्णसंदर्भः अलङ्कारः) according to ārohi, avarohi, sthāyi and saṁcāri varṇas. (Ārohi and avarohi varṇas are the arrangements of svaras in their serial order of progression; sthāyi is the lingering of the same note by repetitions like sa sa sa sa, ri ri ri ri; saṁcāri is a mixture of all these forms. Thus the alaṅkaras are innumerable. The purpose of these alaṅkāras is: "रक्तिमः स्वरज्ञानं वर्णज्ञानं विशिष्टता"।

Gīta.

Gīta, a generic term meaning 'song' is also applied in a specific sense to a form of composition, learnt by all students of music

soon after the preliminary svara exercises, including alaṅkāras. A Gīta has four aṅgas—Rāga, tāla, svara and pada. The last mentioned is the point to note. The student for the first time is introduced to the 'Sāhitya' or 'mātu' of a composition. Now onwards the mātu also assumes the significance and dhātu becomes the framework. The Sāhitya is usually the praise of God in the ordinary Gītas. The music is very simple, moving in an even tempo. Syllables like अङ्गु तिरु etc., are interspersed in the sāhitya. This lakṣaṇa pertains to the Gītas of Purandara Das and Veyyi (1000) Gīta Paiḍāla Gurumurti Sāstri. These are the two prominent composers of ordinary gītas.

The Gītas are also made to serve technical purposes by certain authors—Venkaṭamakhi and Rāmāmātya. The Gītas of these are called 'Lakṣaṇa Gītas'. These Gītas are so called because they are written mainly with the purpose of illustrating the rāga and not only that, the Sāhitya itself gives a detailed account of the rāgas in which they are composed. Venkaṭamakhi has also composed a lakṣaṇa gīta for each rāgāṅga rāga similar to the Melakartā rāga-mālīka of Maha Vaidyanatha Śivan. He divides the body of the Gīta into three sections—Jāvaḍa, antari and a concluding portion.

Sūlādis

Sūlādis are similar to Gītas to some extent in as far as the structure is concerned, but differ greatly in character. Sūlādis are to put it briefly, tālamālikas, composed as illustrations of the Sūdādi tālas. Sūla is a corrupted form of the word Sūda. In one piece it employs all the seven principal tālas and sometimes their varieties. Sūlādis are of a much higher standard than the Gītas and require great scholarship to handle them. Not only is a Sūlādi set in different tālas, but also in different kālas (speed). In the Sūlādis, akṣaras are fewer than in the Gītas and there are vowel extensions in plenty.

Ṭhāya—Ṭṛṣ.

Ṭhāyam is like a Gīta in structure, but the distinguishing feature of ṭhāyam is that it includes a portion of pāṭa or Ṣolkattū. Sūlādis and Ṭhāyams have now practically fallen into disuse. Except to scholars and others who hunt for curios, these compositions are not familiar to students of music. Ṭhāyam is specially important to Viṇā students, to practise irattai or double meṭṭu. For in the solkattū portion two syllables are allotted to one note. E.g.,

ma ma ma ma
dīgu dīgu dīgu dīgu

etc. Whereas Gītas have only four

aṅgas, ṭhāyam has another additional aṅga, pāṭa. Venkaṭamakhi is the only composer known to have composed Ṭhāyams.

Prabandha

Venkaṭamakhi and Rāmaswāmi Dikshitar have composed prabandhas. Their lakṣaṇas will be dealt with in the later pages.

Svarajati—स्वरजति

The svarajatis serve as a stepping stone to the most scholarly of compositions—the varṇas. With the svarajatis a student first comes into contact with a set of compositions whose musical body is divided into different sections. The dhātu is divided into pallavi, anupallavi and caraṇa. Mātu or Sāhitya generally is an invocation. Sometimes the sāhitya deals with the valourous deeds of a renowned hero. In the mātu, svaras and pāṭa also will be introduced besides words. The svarajatis have a great rhythmical importance (jati) and thus have gained the name svarajati. The famous svarajati composers are Syama Sastry, Svati Tirunāl Maharaja, Chinni Krishnadāsa, Ādiyappiah, and Ponniah and Vadivelu (two brothers).

Jatisvara—जतिस्वर

As a counter part to svarajatis are the Jatisvaras. The chief difference between these two types is the absence of sāhitya in the latter. Jatisvaras are mainly intended for dance. In all other aspects jatisvara resembles a svarajati. The Ponniah brothers have composed many jatisvaras of which some are in the form of miniature rāgamālikās. These Rāgamālikā Jatisvaras are very popular in Travancore and hence it is said that these are the work of H. H. Svāti Tirunāl. In the svarajatis and jatisvaras, the tempo is not always uniform. They are intermingled with cauka and madhyama kālas.

Varṇa—वर्ण

Varṇa as it exists to-day has undergone great change from its original form. At present, a Varṇa is divided into three main sections:—

(1) Pallavi—This portion generally consists of two parts of two pāḍas.

(2) Anupallavi—is made up of a sāhityā portion at the beginning, followed by a svara passage. This Svara portion is called Mukṭāyi Svāra.

(3) Ettukaḍai—(एतुकाड़े) or caraṇa. This portion consists of first a sāhityā portion, followed by a series of svaras. This sāhitya forms a sort of pallavi which is sung after each of the svaras. This pallavi is called Ettukaḍai pallavi and the svaras, ettukaḍai svaras. Now we round off the varṇa with the ettukaḍai pallavi itself and this is the only example of a composition wherein the original pallavi is completely neglected after the middle of the piece.

Originally, the varṇas had another portion after the Ettukaḍai, called 'anubandham'. Anubandham consists of a sāhitya and then a svara portion. The sāhitya passage completes the idea contained in the earlier portion of the varṇa. Only with the Sāhitya of the anubandham, the idea will be completely expressed and the bhāva fully represented. This is absolutely essential when used in dance. For the svara portion, either there will be a fresh ciṭṭasvara, or the muktāyi svara will be repeated. At the end the original pallavi of the varṇa will be repeated. As the main purpose of the anubandham was to give a connected and explanatory meaning to the Sāhitya, so that the whole bhāva might be well expressed, it was of importance in nāṭya. But the later composers cut short this anubandham portion as it is not of much value to the ordinary singer. Adiyappaiah and members of the Dikshitar family have provided anubandhams for their varṇas. But Patnam Doraswami Aiyer never cared for this.

Varṇas are classified as Tāna varṇas, Cauka varṇas, and Pada varṇas. Tāna and cauka varṇas are devotional or erotic in sentiment. But pada varṇas are always erotic in sentiment. While Tāna varṇas are in madhyama kāla, cauka varṇas, true to the name, are in vilamba kāla. Most often cauka varṇas have sāhitya for the svara portions also.

There is a mistaken idea that cauka varṇas and pada varṇas are the same. Both have svara sāhitya. All pada varṇas have svara sāhitya, but it is not necessary for a cauka varṇa to have svara sāhitya. Whereas all pada varṇas are cauka varṇas, all cauka varṇas need not be pada varṇas.

Pada varṇas are Śṛṅgāra varṇas composed for nāṭya and set in slow time measure. The name itself might have been derived from its resemblance to pada in sentiment and speed. Padas are more rhythmic. In combinations and permutation of svaras, special attention is paid to group them according to the various jatis, and also in the svara-sāhitya, śolkattu is introduced. Balaswami Dikshitar has composed a padavarṇa in which the ettukaḍai pallavi

changes for every ettukaḍai svara. Ramaswami Dikshitar has composed a svarasthāna varṇa (svara and sāhitya syllables become the same letters). There are also rāgamālikā varṇas. Pada varṇas are also known as jati varṇas and padajati varṇas. The varṇa is a typical technical composition where the purpose of the author is to bring forward the varied shades and beauties of the rāga. Amongst technical compositions the varṇa ranks supreme.

Rāgamālikā

This is a composition in a cluster of rāgas. Thus there are rāgamālikā gītas, svarajatis, varṇas, kirtanas and padas. Some rāgamālikās are different in structure from any of these types. There are rāgamālikās, as a continuous piece consisting of sāhityas in various rāgas. Sometimes each sāhitya portion is supplemented by a svara-passage and then the original pallavi is repeated or (if a very long piece) passed on to the next rāga. When there are svara passages (intervening) at the conclusion of each rāga, the last few svaras of the first rāga is added to facilitate the return to the pallavi. At the conclusion of the whole piece there will be a Ciṭṭasvara in the vilomakrama of all the rāgas figuring in the composition. Dikshitar and others provide this portion with Sāhitya also. Ramaswami Dikshitar, Muthuswami Dikshitar, Subbarama Dikshitar, H. H. Svāti Tirunal are the prolific composers of rāgamālikā and Mahavaidyanatha Sivan's 72 Melarāgamālikā is quite well known. The rāgamālikās in Tamil are not embellished with ciṭṭasvarams.

Kīrtana

The most popular of the musical compositions of the present day is the Kīrtana—derived from the term 'Sankīrtanam'. The Kīrtana type of compositions was born in the 15th century and obtained its full form in the 18th century as is evidenced by the compositions of the Tālapākam poets, Nārāyaṇa Tīrtha and the Trinity. The body of a Kīrtana is divided into three main sections—pallavi, anupallavi, and caraṇa. These are the essential aṅgas. In the early days the Kīrtana had only a pallavi and caraṇa. Later on, Nārāyaṇa Tīrtha introduced the anupallavi from the latter part of the caraṇa. In the hands of Muthuswami Dikshitar the anupallavi becomes a separate entity. But for all others, the anupallavi and the latter half of the caraṇa have the same music.

Though the given account presents a kīrtana in its pristine form, in the long run, this type has undergone immense change. By the 18th century the great composers beautified and modified

the kīrtana according to their artistic conception. Several non-essential but beautifying appendages were added like sangatis, ciṭṭa svaras, svara sāhityas and madhyamakāla sāhityam. These added to the beauty of the kīrtana. In the kīrtanas in honour of Nataraja, Śolkattū is also introduced—a feature borrowed from darus.

In recent years, the ordinary plain kīrtana, and those with those appendages are classified as two different types. The former is called kīrtana, the latter kṛti. The chief distinctions given between the two are that (1) a kṛti is more musical than a kīrtana. (2) kīrtanas have more than one caraṇa. Such distinctions do not go to separate them into two types. Many compositions which have all other lakṣaṇas of a kṛti have three caraṇas, while a simple kīrtana sometimes has only one caraṇa. In such cases how are we to judge a piece to be a kṛti or a kīrtana. The same author has composed in different varieties, but of the same type. To what type do Mutuswami Dikshitar's compositions belong?—kīrtanas or kṛtis? What are Appa Rama bhakti (kānavardhanī), Ela nī daya rādu (aṭāna), and Koluvaivunnade (bhairavi) or, Elavatāra (mukhāri)? I think it is unnecessary to create two different types under such names. The term 'Kṛti' does not mean a separate type of composition. Kṛti means a composition—derived from the root कृ to do. Hence any workmanship is a Kṛti. What is composed, is a composition. Thus a gīta, varṇa and a kīrtana can be kṛtis. That which is composed by Tyāgarāja is Tyāgarāja Kṛti. 'Kṛti' is the generic term of which 'kīrtana' is the species. There is indeed a great difference between some of the simple Kīrtanas with abundance of words and of little musical importance and some of the master-pieces of Tyāgarāja and others. If there should be a separate name under which compositions of the latter type should be grouped, then 'Kṛti' will not be a suitable term. If a Kṛti also means a composition on any other subject other than Sankīrtana, then such pieces can be better called 'darus'.

Daru

The Daru is like a Kīrtana in structure but it has rāga, svara, tāla, pada and pāṭa. Daru can be composed on any subject matter.¹

1. See section on Narayana Thirtha for more information.

Pada²

One of the earliest types of composition, of the modern age, is the Pada. While kīrtana seeks to attain God by praise, pada claims to attain the goal through love. The origin of the pada can be traced to Jayadeva. The type of composition continued to be in existence though not in form, but in spirit, till in the hands of the renowned Kṣetrajña it gained its definite form. The dhātu of a pada is divided into pallavi, anupallavi and caraṇas. Except in rare cases the caraṇa is made up of the music of pallavi and anupallavi. The music is very slow, giving ample scope for the expression of bhāva. The mātu is based on Śṛṅgāra rasa and nāyaka-nāyikā-bhāva and depicts Vipralambha Śṛṅgāra. Underlying is the deep philosophical meaning of the craving of the soul to join the Lord.

Tillāna

Tillāna is a north Indian composition Tiritillāna imported into South India. It resembles a Kīrtana in structure but the mātu is largely composed of pāṭa, svara and a few words. The music is brisk and lively. Padas and Tillānas are greatly used for dance. H. H. Svāti Tirunāl, Pallavi Seshaiyer, Mysore Sadasiva Rao and Ramnad Srinivasa Aiyangar are the prominent Tillāna composers.

Jāvali

Jāvali is a composition of a lighter nature with a lively and attractive tune. It is a purely love song. This also has pallavi, anupallavi and caraṇas. Jāvali also is an adaptation of the North Indian Tumri.

With the introduction of the Kathā Kālakṣepam from the north, certain musical forms also came down to us. These are the Ovis, Abhaṅgas and Doharas. Todayam, Mangalam, Hechcharika, Śobhanam, Nāmāvalis and Divya nāma kīrtanas pertain to the 'bhajana' and are well adapted to mass singing.

Periods of Development of Musical Compositions.

The stages of development of South Indian Music fall into the:—

2. See 'Kṣetrajña'.

Ancient period—up to 13th century.

Mediaeval period—13th to 17th century.

Modern period—17th century onwards.

But as regards the musical compositions, the periods of their development fall differently. The different stages can be best demarcated with reference to the personages who mark the epochs.

I period, up to 12th century (from the Vedas up to Jayadeva).

II period, 12th to 15th centuries (from Jayadeva to the Tālapākam poets).

III period, 15th to 18th centuries (from Tālapākam poets to the Trinity).

IV period, 18th onwards (from the period of the Trinity onwards).

The first period is the ancient period. The second forms the mediaeval age. The third period forms the early modern and the fourth, later modern age.

The Ancient Period—Up to the 12th century

The earliest glimpses of Saṅgīta, we have in our sacred lore—the Vedas. By the time of the Yajur Veda professional musicians seem to have come into existence. The strict rules for Sāmagāna with the accompaniment of Viṇā are a sure proof that vocal music had developed beyond the primitive stage. The very term 'Sāmagāna' tells that it was not chanted like the other Vedas, but sung. The Sāman hymns are sung concertedly, various priests singing separate portions, and at certain portions joining together in a chorus. A variety of musical instruments are mentioned in the Vedas. The reference to Viṇā is sufficient evidence of the advanced stage of the development of music. Most probably there may have been other varieties of compositions as well, besides the hymns of the Vedas.

“सामवेदादिदं गीतम्” Music originated from Sāma Veda—is a well-known statement. Still, even prior to the period of the Sāma Veda we find the germ of the musical notes and modes. In the R̥gveda we have the earliest living example of words uttered in a musical pitch (the pitch accent). The R̥gveda is chanted in three pitch accents called Udātta, Anudātta and Svarita. Udātta is the highest pitch, Anudātta, the lowest, and Svarita comes between the two when gliding down from Udātta to Anudātta.

उदात्तानुदात्तश्च स्वरितश्च सरास्त्रयः ।

उच्चैरुदात्तो नीचैरनुदात्तः समाहारस्वरितः ॥

In keeping with the three svaras there are three modes known as Ārcika, Gāthika and Sāmika. If the direction is given as Ārcino gāyanti—sung in Ārcika—then that stanza should be chanted in the same one pitch. If it is Gāthino gāyanti—sung in Gāthika—then two notes. Sāmino gāyanti means sung in three notes in all the pitches. (It is a point to note that the scale or the pitch is taken in the avarohaṇa krama, i.e., from Udātta to Anudātta.). The three pitches used in the chanting of the R̥gveda can be identified as the three notes *ga, ri, sa* (Sādhāraṇa gāndhāra, Catuśruti ṛṣabha, and Ṣaḍja). Out of these three accents developed two more notes—(1) when the voice rose a little higher than the Udātta; (2) When the voice descended to a lower Sannatara or Anudāttatara—lower than Anudātta. A few of the last R̥gvedic hymns, the whole of the Yajurveda, and the early Sāman hymns are based on these five notes. During the period of the Sāma Veda the full scale of seven notes came into existence.

In this connection, it is worthy to note how Pāṇini explains the evolution of the scale. He says :—

उदात्ते निषादगान्धारौ । अनुदात्ते रिषमधैवतौ ॥

स्वरिते प्रमवाङ्गते । षड्ज मध्यम पञ्चमाः ॥

Udātta—niṣāda and gāndhāra; Anudātta—riṣabha and Dhaivata; Svarita—Ṣaḍja, Madhyama, and Pañcama. This fact corresponds to the idea of Vādi-Samvādi relationship, and thus we are informed how the scale has developed from the harmonic notes (स्वयम्भु ध्वनि) of the primal Sāmika mode. This same śloka is repeated by Nārada.

Coming to the Sāma Veda, the hymns get the distinguished title of Sāmagāna. The musical aspect is pronounced in these hymns. In the full scale used in the later (उत्तराधिक) hymns, the notes used are Catuśruti ṛṣabha, Sādhāraṇa gāndhāra, Śuddha madhyama, Pañcama, Catuśruti Dhaivata and Kaiśiki niṣāda, besides Ṣaḍja. This scale means our Kharaharapriyā rāga. Our Catuśruti ṛṣabha was made the graha or ṣaḍja and thus they obtained the scale. In the ancient scheme of rāgas this scale was known as the Saindhavi rāga. During the Sāman period, as the term rāga had not developed, the scale was known as Sāma Saptaka.

The following is a Sāma ṛk where only four notes— ga_2 , ri_2 , sa , ni_2 —are used prominently, slightly touching dha_2 :—

sa sa rii sa — nii sa rii sa sa — ri gaa ga rii saa
हु वे वा च वा च वा - च हु वे

sa sa saa sa — sa rii sa rii gaa — rii saa
वाक् शु णो तु शु णो — तु वा — तु

saa sa saa sa — sa rii sa — ri gaa rii gaa
वाक् स मै तु स मै — तु वा — क्

ni sa ri ga ga ri saa — ri ga rii sa
वा - म म ता र म ता म्

ri gaa ga rii saa. nii saa saa
र मा हम् तु वा ...

ni dha nii ri sa ; ni dha ni saa
हा ... औ हो व ... इ ह

nii sa saa gaa rii saa ||
इ ह इ ह

the following example dhaivata is used more than in the previous one :—

dha nii saa — sa nii dhaa
इ म स्तो ओ ... म
अ ई ते ए जा

gaa ri ga rii ri sa — ga ri saa saa
त वे द ... से ...

ni gaa ga rii — dha nii saa sa ni dha
होय् र थ मि व

dha ni saa ni saa ni ni dhaa — gaa ; ga rii ri sa
स म हे मा म नी

ga ri saa saa — gaa ; ga ri dha
व ... य अ होय्

nii saa saa sa nii nii ni dha nii saa saa
म वा हि न ... : म म ति

ni sa ni dhaa . gaa ga rii sa — ga ri saa sa ri sa
... .. र थ सं स — थ

gaa ga ri — nii saa saa sa ni sa nii dha
होय् अ नाथ स व्या य

saa saa saa sa nii ni dhaa
मा रा वा अ म

gaa, ga ri sa ga rii saa saa.
व य न्त व ...

gaa ga ri ri sa — ni sa ni ni dha saa
होय् ह द अ

The next gita comprises the whole octave :—

Saa sa saa sa rii saa
हावु ... हा वु हा व

ri sa rii sa — ri sa rii sa — ni sa rii sa
गा वो हा वु गा वो हा वु गा वो हा वु

ri ri ri rii saa rii, saa ; — ri ri ri rii saa rii ; sa ;
वृ व म प त्नी हा वु वृ व म प त्नी हा वु

ni ni ni nii saa rii, saa ; —
वृ व म प त्नी हा वु

saa rii sa saa saa saa, sa — sa rii sa saa saa saa, sa
वे रा ज प त्नी हा वु वे रा ज प त्नी हा वु

nii nii ni nii saa rii, saa ;
वे रा ज प त्नी हा वु

In the same svaras as the previous two lines, are sung the following two विश्वरूपहावु and अस्मात्तु रमन्वनहावु

gaa gaa ga gaa ga ga ri gaa rii ri sa
ते म न्व त प्र थ मन् ना म

ma gaa rii, saa, — gaa, rii,
गो ना म्

ri rii ri ri ri rii rii ri gaa rii saa gaa rii
त्रि स स प र मन् ना म जा ना न्

rii rii ri rii rii ri sa sa — gaa rii sa—
ता जा न ती र म् य तु ष त क्षा :

rii saa gaa ri ri ri sa rii—ri sa ri ga rii saa gaa rii
अ ... व्य भु त् अ इ णी र् य श स गा ... वो

ni ni saa sa rii saa — ri sa rii saa
गा बु हा बु हा बु गा वो हा बु

(Repeat till तेमन्वत प्रथमम्)

rii saa gaa rii gaa ri
गा वो गा ... वो ...

ri ri ri rii sa — nii saa ri gaa rii sa
वृ ष म प त्नी वै रा ज प त्नी ...

saa ri gaa rii sa — rii gaa rii sa saa sa ri
वि श्व रु पा अ स्मा सु र म ष्व न् ...

Repeat from the beginning up to अस्मासु रमष्वन्. The piece is then concluded by singing :—

ri gaa ri sa ni dha paa nii sa dhaa nii sa
अ स्मा सु र म ष्वन् हा ... बु

The remarkable feature of this gīta is that it touches the whole octave. Again this and the previous examples are illustrations of the privilege taken by the singer with the text of the piece. Words are permitted to be detached and grouped to suit the music. Syllables which are not in the text, e.g., 'Hoy' are added. Variations are introduced when the mātu is to be repeated. The method of singing each phrase thrice is called 'stoma'. If sung once it is known as 'stotra'. Fox-Strangways describes Sāmagāna thus :—"Sāman is, properly speaking, not music and words, nor words for music. Sāman is a melody for which words are found in the R̥gveda."

One full section or Bhakti of Sāma Veda consists of five parts sung by three priests one after the other at first but joining together in the last portion. The five parts are called Prastāva, Udgīta, Pratihāra, Upadrava and Nidhāna.

Passing from the Vedas, we come to the Purāṇic age. But the Upaniṣads and the Brāhmaṇas also deal with music, though in a vague form. In some of the Purāṇas we get important information regarding music. The Mārkaṇḍeya Purāṇa makes an incidental

reference to music telling the story of the boon given by Goddess Sarasvatī to Kambala and Aśvatara, in the following lines :—

सप्त स्वराः प्रामरागाः सप्त पञ्चगसत्त्वमौ ।
गीतकानि च सप्तैव तावत्यम्नापि मूर्च्छनाः ॥
तानाश्चैकोनपञ्चाशत् तथा प्रामत्रयं च यत् ।
एतत्सर्वं भवान् वेत्ता कम्बलश्चैव तेऽज्जघ ॥
चतुर्विधं परं तालं त्रिप्रकारं लयत्रयम् ।
गीतत्रयं तथा कालं मया दत्तं चतुर्विधम् ॥

Vāyupurāṇa deals with the seven svaras, three grāmas, mūrchanās, rāgas and gītālankāras.

Viṣṇu Dharmottara gives information about the Saṅgīta of the time in a series of sūtras. Two chapters are devoted to music proper, one called Gīta lakṣaṇa, and another to instruments. The most noteworthy feature in this purāṇa is the mention of seven gītas अपरान्तक, उद्धोप्य, मन्द्रक, मकरि, औवेणक, सरोबिन्दु, क्रग्गाथा, पाणिका, दक्षविहिता and ब्रह्मगीतिका. Of these the first five, seventh and eighth are mentioned by Bharata as sapta tāla gītas.

In the epics for the first time we come across music proper. The Rāmāyaṇa was composed to be sung. The lucidity of the style may be due to its musical setting. Vālmiki mentions the seven jātis. The poem constructed in stanza form was sung in the mārṅga style based on the grāma rāgas. In the Mahābhārata also there are portions to be sung. Another noteworthy feature in the epic period is that music ceases to be purely devotional. Human element is introduced. Sentiments of pathos, heroism, etc., are dealt with. The secular element creeps into the musical field through the songs of eulogy about the heroes who won famous victories and saved the country.

The Historical Period

The historical period of Indian music commences with Bharata, the author of Nāṭyaśāstra. Bharata is the earliest author of acknowledged authority on Indian music, and his work for the first time gives us substantial information regarding the theory and practice of music during the early centuries of the Christian era. 'Nāṭyaśāstra', as suggested by the name, is a work on theatrics. But chapters from 28 to 35 are devoted to music proper. Further, in the fourth chapter he mentions a number of compositions used for dance. Bharata gives the definition of Saṅgīta as "गीतं वाद्यं च नृत्तं च त्रयं संगीतमुच्यते." Saṅgīta is not only vocal and instrumental

music but also includes dance. During Bharata's time the rhythmic aspect, and with that, dance assumes prominence equal to music. This was necessarily followed by a development in the technique of music and a variety of compositions came into existence. Dhruvās and gītas are the two main types of compositions during this time.

Among the various compositions described by Bharata, the simplest is the *gīti*. Bharata defines it as “वर्णालङ्कार छन्दोश्चर समन्वितं”. Matanga gives only छन्दोश्चर समन्विता Nānyadeva (author of *Sarasvatī hrdayālankāra*) says : वर्ण एव गीतिः (varṇas here mean only *svara prastāras*). Śārṅgadeva (author of *Saṅgīta Ratnākara*) of 13th century gives the best definition in keeping with the examples given by him—“वर्णालङ्कारकृता गानक्रिया पदलयान्विता”—Gītis are short songs made up of *Varṇālankāras* to which a *Sāhitya* of few words is added, and are sung in different ‘*layas*’. They can be called *alaṅkāras* only if the *dhātu* is considered. But much importance is laid in the method of singing the *mātu* as well. The *gītis* are four in number—*Māgadhi*, *Ardhamāgadhi*, *Sambhāvitā* and *Prthulā*. Vemabhūpāla is the earliest scientific writer to quote examples for these *gītis*. The *gītis* consist of a few words invoking God and the pieces are lengthened out by repetition. While repeating, the speed is also accelerated. These *gītis* are used in the *Pūrvāṅga* (Prelude) of a dramatic presentation. The *Pūrvāṅga* is of three kinds—*Śuddha*, *Citra* and *Mīśra*. *Prthulā* is used in *Śuddha*, *Māgadhi* and *Ardhamāgadhi* in *Citra*, and *Sambhāvitā* in *Mīśra*. The *gītis* are divided into two groups—*Nivṛttapradhāna* and *Mātrāpradhāna*. The first two *gītis* belong to the first group. As the name suggests, the importance here is in repeating the *gīti*. For the other two, their distinguishing feature is their metre. *Sambhāvitā* is replete with *guru akṣaras*, *Prthulā* with *laghu akṣaras*. All the later writers have dealt with *gītis*. Matanga gives a clear definition in a brief manner :—

द्विरुक्तं द्विनिरुक्ता च चित्रा गीतिस्तुमागधी । लघुप्लुत कृता चैव तदर्धे चार्धभागधी
समाविता शुक्लचौ पृथुला दक्षिणे लघुः ॥

Raghunātha closely following Śārṅgadeva gives the most detailed account of the *gītis* with the method of singing them also.

विलम्बितेनैव पदेन युक्तं गायेत् कलायां पदमादिमायाम् । पदान्तरेणापि युतं तदेव
गायेत् पदं मध्यलयेन युक्तम् ॥ कलां द्वितीयामधिकृत्य सम्यक् कलां तृतीयामधिकृत्य पश्चात् ।
ते द्वे कृतीस्त्वेन पदेन युक्तं गायेत् द्रुतेनैव लयेन सार्धः ॥ इति त्रिरावृत्तपदां वदन्ति तां
मागधीं मागधराजह्वयाम् ॥

(The piece is called *Māgadhi* being liked by *Magadharāja*.)

Example—

gaa maa dhaa — dha ni dha ni sa ni saa
व न्दे ... दे वं रु द्रं ० रु द्रं
ri ga ri ga maa gaa rii saa |
दे व ० रु द्रं ० व न्दे ॥

Ardhamāgadhi—

अथार्धभागप्यपि लक्ष्यतेऽत्र विलम्बितेनैव पदेन युक्तम् । गायेत् कलायां पदमादिमायां
पदान्तरेणापि युतं तदर्धम् ॥ गायेत् पुनः मध्यलयेन युक्तं कलां द्वितीयामधिकृत्य सम्यक् । कलां
तृतीयामधिकृत्य पश्चादथ द्वितीयस्य पदस्य गायेत् । पदान्तरं च द्रुतमानयुक्तं सैवार्धभागप्यभि-
जायती स्यात् ॥

Example—

maa rii gaa saa — saa saa dhaa nii
दे वं वं रु द्रं
paa dhaa paa maa
द्रं व न्दे —

Sambhāvitā—

संक्षेपितेभ्यश्च पदैश्चतुर्भिः, शुक्लक्षरेभ्यश्चतुर्भिरन्विता च । कलादिमः स्यात् सविलम्बिता च
तथैव मध्यस्य पदद्वयस्य ॥ प्रत्येकमुच्चारणतो द्विवारम्
आधातिन्ति चापि पदे विहाय परा कला मध्यलयान्विता स्यात् । पदैः चतुर्भिः सहिता
द्रुतेन लयेन युक्ता तु कला तृतीया, पदत्रयं यत्र चकास्ति चैषा समाविता गायकसम्मतता स्यात् ।

Example is not given for this *gīti*.

Prthulā—

लक्ष्मोच्यतेऽथो पृथुलाख्यगीते समावितावत् सकला च वेद्या । लक्ष्मस्यराणां बहुलः प्रयोगो
ऽप्यरो मवेदेष तयोर्विशेषैः ॥

Example—

maa gaa rii gaa | maa dha ni dhaa dhaa
सु र न त ह र प द —
saa saa dhaa nii | paa ni dha pa maa maa
— यु ग लं प्र ण म त — —

Being used in the Pūrvaraṅga, the mātu is in the form of worshipping Śiva. Vemabhūpāla (in his Saṅgīta Cintāmaṇi) calls these gītis as “mārga dhruvās” (मार्गध्रुवा) and says they are sung in the caccatpuṭa (caturaśra laghu) tāla and its varieties.

Another set of compositions used in the Pūrvaraṅga and mentioned by authors from Bharata onwards, is the Pañca Dhruvās (पञ्चध्रुवाः)

They are : (1) Utthāpini	—(उत्थापिनी)
(2) Parivartani	—(परिवर्तनी)
(3) Avakṛṣṭā	—(अवकृष्टा)
(4) Aḍḍitā	—(अड्डिता)
(5) Vikṣiptā	—(विक्षिप्ता)

The peculiarity of these compositions is the division of the piece into four sections :—Upohana, Pratyupohana, Dhruva, and Śirṣaka. Herein we meet with the earliest instance of dividing the body of a composition into different sections. Upohana stands for the pallavi, Pratyupohana for anupallavi, Dhruva for caraṇa, and Śirṣaka is the concluding portion. The upohana is made of ‘Śuṣkāṣara’s’ without meaning like दिग्ले दिग्ले झण्डु झण्डु जम्बुक बलितक तेज etc. (di-gle di-gle jhandu, jhandu, jambuka, valitaka, teja, etc.).

उपोहान्ते स्वरा येन यस्मात् गीतं प्रवर्तते ।

तस्मादुपोहनं प्रोक्तं शुष्काक्षरसमन्वितम् ॥

One ‘dige’ or ‘jhandu’ is known as one ‘kala’ (कल) So the upohanas of different dhruvas have the different number of kalas. In Utthāpani upohana consists of 8 kalas, Parivartani 6 kalas, avakṛṣṭā—5 kalas; aḍḍitā, 4 kalas; and Vikṣiptā—3 kalas. All the dhruvas are in praise of Śiva.

Utthāpani

देवं त्रिभुं त्रिभुवनाधिपतिं, केलासपर्वत गृहामरितम्, सैलेन्द्रराज तनयादयितं, मूर्त्ता नतोस्मि पुरनाशकरम् ॥

Parivartani

चन्द्रार्धध्रुवजटं वरं वृषभकेतुम्	—upo.
केलास पर्वत निवासिनं सुरवरिष्ठम्	—P. upo.
सैलाधिराजतनयाप्रियं प्रमथनाथम्	—Dhruva.
मूर्त्ता नतोस्मि त्रिपुरान्तकं परमयोगिम् ॥—Śirṣaka	

Avakṛṣṭa.

वरदं सगणं त्रिपुरान्तं वृषभकेतुम्
गजचर्मपटं विषमेक्षणं भुवननाथम्
भुजगामरणं जगतां हितं भुवनयोनिं
प्रणतोस्मि भवन्तप्रुमापतिस्वसितकण्ठम्

Aḍḍitā.

प्रवरं वरदं प्रणमत सततम्—गजचर्मपटं धुनिजनसहितम्
उमयासहितं भुजगबलयिनम्—प्रणतोस्मि शिवं त्रिभुवनमहितम् ।

Vikṣipta.

त्रिपुरान्तकरं बहुलीलं उमया सहितम् बहुरूपं
भुजगामरणं त्रिपुरान्तं प्रणमामि सदापरमीशम् ॥

Before each of these portions the upohana in the given number of kalas should be added.

Vastunibaddha (वस्तुनिबद्ध) gītas and Aṅganibaddha (अङ्गनिबद्ध) gītas are other compositions mentioned by Bharata. The first group consists of the gītas called Madraka, Aparāntaka, and Prakari (मद्रकं, अपरान्तकं, प्रकरी). Aṅganibaddhas are Ullopyaka, Rovindaka, Oveṇaka and Uttara (उल्लोप्यकं, रोविन्दकं, ओवेणकं, उत्तरम्). In the Vastunibaddhagītas the body of the piece is divided into four musical sections like that of Pañcadhruvās. In the Aṅganibaddhas there is no such division but the parts are differentiated by dance movement like Mukham, Pratimukam, etc. Other writers like Viranārāyaṇa, Vemabhūpāla, Haripālābhūpa, Nānyadeva, Śārṅgadeva and those who follow him do not group these gītas as such. They call these, *Saptātāla gītas*, illustrative of the seven principal tālas of the time. Chandaka, Āsārīta, Vardhamāna, Pāṇikā, Rk, Gāthā and Sāman are other gītas exemplifying the Mārga tālas. Rk, Gāthā and Sāman are drawn from the Vedas. Bharata, Nānyadeva, Vemabhūpāla, Haripālā bhūpa (author of Saṅgīta Sudhākara) and Śārṅgadeva who have dealt with these gītas give examples only for the tāla aspect—how the time measure is manipulated to be exhibited in dance in various ways. Vemabhūpāla mentions a few songs to be used in the ‘Lāsyāṅga’—songs of love, songs of question and answer and dialogue songs. Besides these songs came the several ślokas—the Nāndi Śloka to be sung by the Sūtradhāra, another in the Prastāva, etc. Vemabhūpāla says that the Prastāva song is in the Maṅgalakaiśikī rāga and Caccatpuṭa tāla.

Songs used in drama gained a great impetus during the time of the Sanskrit dramatists.

The earliest writer to devote a full chapter to musical compositions is Maṭaṅga. Under the title *Deśi Prabandhas* Maṭaṅga mentions forty-nine compositions with brief accounts of them. Pārśvadeva and Dattila among the early writers mention these Prabandhas. But as Śārṅgadeva gives a great number more, and also supplies us with a detailed description of them, the Prabandhas will be dealt with in the section on Śārṅgadeva (author of *Saṅgīta Rātnākara*).

Mediaeval Period—12th to 15th Century

Musical compositions commenced with the setting of the hymns of the *R̥gveda* to musical notes. It was the period of poetry coupled with music. *Saṅgīta* is mainly used as a part of the worship of God. But during the Puranic and Epic times music overstepped the strict limits of religion. Ballads, warsongs, songs in honour of the great heroes came into existence. Still later it was thought that music should not only be sung and played on instruments but the meaning and *bhāva* contained in the pieces should be exhibited through *nāṭya*. Hence arose several dance forms based on various sentiments.

During the mediaeval period music drifted more and more from its component part, dance. With the progress in technique of the art and scientific study, scholarly compositions unconnected with drama and dance came into existence. *Saṅgīta* and *Nāṭya* grew up as two separated but related arts. To place the newly developing scientific music on a firm individual footing, songs were composed to serve the cause of music and to illustrate its beauties in its varied aspects. As early as the 7th Century *rāgas* had developed. The result of these changes was the numerous *gītas* and *prabandhas* in different *rāgas* and *tālas*. The loss of the position of dance as an indispensable part of *Saṅgīta* can be seen from the works of the later music writers who devoted only one of the five chapters of a book to *Nṛtta*. Every author devoted one full chapter to Prabandhas alone.

Jayadeva

Though this period abounds in technical compositions, still the Mediaeval Age opens with one of the most important and cherished composers of Indian music. It is none else than the renowned *Jayadeva*—the author of the *Gīta Govinda*. To the devotee and to

the student of literature, to the singer and to the scholar, *Jayadeva* is equally important. *Jayadeva* marks an epoch in the development of musical compositions. *Gīta Govinda* is the earliest *lakṣya* *grantha* that holds its sway even to this day. Here for the first time we come across compositions composed in a particular *rāga* and *tāla*. It is a matter of great regret that the original melodies of these songs have been lost. The *rāgas* and *tālas* given by *Jayadeva* are only found in the list given by Śārṅgadeva under the name of *prākprasiddharāgas* and *Mārga tālas*. This means that within a century, the melodies and the time measures of the songs of the *Gīta Govinda* ceased to be in vogue. The *Gīta Govinda* is also known as the *Aṣṭapadi* because in general each song consists of eight *caranās*. Of course there are examples where we can find more and less than eight stanzas. The whole work is divided into twelve *sargas*.

The *Gīta Govinda* is a pure lyric in as much as it is a dissertation on the predominant sentiment of love. In lucid style and choice phraseology *Jayadeva* describes the love relationship between *Rādhā* and *Kṛṣṇa*. But as an undercurrent runs the high philosophical sense of the '*Jīva brahma aikya vedānta rahasya*'. *Rādhā* stands for the individual soul and *Kṛṣṇa*, for the Universal soul. The longing of the human soul to attain its goal is represented in this *kāvya* in the form of *Nāyaka-nāyikā* relationship or the *Madhurabhāva* of *Bhakti*. *Gīta Govinda* is the earliest Indian opera; for we have here three personages—the *nāyaka*, *nāyikā* and *Sakhi*; and the theme is spread out in the form of dialogues. *Gīta Govinda* is the starting point of our *padas*. The term *pada*, as well as the nature, i.e., the *nāyaka-nāyikā bhāva* have been derived from the *Aṣṭapadis*. Again the author introduced something like a *pallavi* in these compositions converting the last line of the first stanza into the burden of the song.

Śārṅgadeva

The one well-known scientific writer during the mediaeval period of Indian music is Śārṅgadeva, who lived in the 13th century. In the work called the *Saṅgīta Rātnākara*, Śārṅgadeva makes a comprehensive study of the problems of musicians and gives a detailed account of the *lakṣya* and *lakṣaṇa* of the *Saṅgīta* current during his time as well as those that have ceased to be in vogue. (On this basis he divided the whole musical system into *Mārga* and *Dēśi*. *Mārga* is bygone and *Dēśi* popular). He gives an account of the four *gītas* and the *saptatāla gītas*. But above all these he deals

with many new compositions not mentioned by the previous writers.

First among these new sets of compositions are *fourteen gītas* to illustrate the fourteen jātis. These, like other gītas are continuous pieces consisting of a dhātu and mātu. The time measure is determined by the number of akṣaras present. But the whole piece is divided into a number of kalas (कल) which can be compared to our tāla āvartas. Śārṅgadeva and Haripāla Bhūpa have given examples of these gītas.

There is another set of *five gītas* given as examples of *grāma rāgas*. The gītas are named Śuddha (शुद्ध), Bhinna (भिन्न) Gouḍī (गौड़ी) Vesara (वैसर) and Sādhāraṇa (साधारण). The five grāma rāgas in which these gītas are composed are also known as Śuddha rāgas. The peculiarity of these gītas lies in the method of grouping the svaras of the dhātu and in handling the tempo of the piece. The distinction between the gītas and these gītas is that while in the former importance is attached to words and tāla, in the latter the significance is laid on the notes of the dhātu.

Ākṣiptikas (आक्षिप्तिक) are another set of compositions. Śārṅgadeva accounts for the title as पदतालाकाक्षितत्वात् आक्षिप्तिक। The ākṣiptikas are composed in the grāma rāgas. These have three aṅgas, svara, pada, and tāla. The distinguishing feature of these compositions is that they are composed in fixed tālas like Caccat-puta (tāla of four units), Cācapuṭa (3 units) Ṣaṭpitāputraka (6 units) etc. All ākṣiptikas consist of eight kalas and each kala is made up of eight dīrgha svaras. Thirty examples are quoted by Śārṅgadeva in his Ratnākara. The same examples are found in Raghunātha's and Haripāla Bhūpa's works. All the pieces are confined to the mandra and madhya sthāyī. Generally one akṣara is allotted to one svara but in some cases there are long vowel extensions. The theme of the Sāhitya of these pieces is praise of Śiva, Viṣṇu or Sūrya.

Other technical compositions mentioned by Śārṅgadeva are the *Kapālas*, *Kambalas*, and a vast number of *Prabandhas*. *Kapālas* are composed for the exposition of the Janaka jātis. (The legendary story goes to say that Śiva during his "bhikṣāṭāna" sang a few tunes which melted the crescent moon on Śiva's head into ambrosia. The amṛta falling on the kapāla-(skull)garland around his neck rejuvenated them and they began to accompany Him in singing. These songs being sung by the kapālas derived the name from them). There are seven kapālas in the seven śuddha

jātis. The kapālas are named Śāḍji Kapāla, Aṣabhi Kapāla, Gāndhārī Kāpāla, etc., after the name of the jātis. Śārṅgadeva gives the graha, amśa and nyāsa svaras of the piece, the alpatva and bahutva of particular notes, the range of the pieces and the number of kalas each should comprise. Śārṅgadeva concludes his description of the kapālas with a "phala Śruti".

इति सप्तकपालानि गायन्मन्त्रोक्तिः पदैः ।

स्वरैश्च पार्वतीकान्तस्तुतो कल्याणभाग्यवेत् ॥

Kapālas are sung by Brahma and others with words and svaras in praise of Śiva. In the Sāhitya words are few and are interpolated by many bijākṣras (बीजाक्षर) like अं, हौं, त्रै, हां, ऐं, है, हं, क, इ etc. Because of their nature the kapālas are considered to be very auspicious compositions. *Kambalas* got the name by being sung by Kambala (the serpent ear-ring of Śiva). *Kambalas* are composed in the Pañcamī jāti.

प्रीतिकम्बलदानेन कम्बलाय वरं ददौ ।

पुरा पुरारिरयापि प्रीयते तैरतः शिवः ॥

Śārṅgadeva devotes one full chapter in giving detailed lakṣaṇas of what are called *Prabandhas*. *Prabandha* being a generic term meaning a composition including a literary work, these prabandhas are called *Gīta Prabandhas*, to distinguish them from *Kāvya* and *Nāṭaka prabandhas*.

A prabandha has six aṅgas (component parts).

“आपस्वरस्यात् विरुद्वितीयं पदन्तुतीयं किल तेनकंच । स्वात् पञ्चमः पाट इति प्रतीत-
तालाभिधानं निगदन्ति षष्ठम् ” ॥

(Svara, Biruda, Pada, Tennaka, Pāṭa, Tāla).

Biruda means exclamations and words of praise.

Pāṭa means solkaṭṭu.

Tennaka—usage of the syllables तेन तेन as तेन is a form of the word तत् it is considered to be auspicious to use it in a composition.

A prabandha is described as a man and the six aṅgas are his six limbs. The purposes of these aṅgas are described as follows :—

“पदस्य चार्थप्रतिबोधकत्वात् तेनस्य कल्याणविबोधकत्वात् ।

पदञ्च तेनञ्च विलोचने द्वे प्रबन्धसंज्ञस्य च पूरुषस्य ॥

मृदङ्गवीणासुरजादि जम्बाकारादियोत प्रमवस्तु पाटः ।

प्रत्यर्थसेना प्रविदारणादिर्यतस्तुहस्ताभिनयैकसाध्य ॥

ततो ह्यौ सौ विरदभताचौ प्रबन्धनामपुरुषस्य पाणी ।

तालास्त्ररा सञ्चरणेकहेतुः प्रबन्धनामपुरुषस्य पादौ ॥

The mātu of a prabandha consists of pada, biruda, pāṭa and svara. It is the dhātu that sustains the piece. The dhātu is divided into four sections :—

- | | |
|--------------------------|----------------------|
| (1) Udgrāha (उद्ग्राह) | (3) Dhruva (ध्रुव) |
| (2) Melāpa (मेलाप) | (4) Ābhoga (आभोग) |

(1) उद्ग्राहते येन सोऽयं उद्ग्राहः—the portion with which the prabandha commences is *udgrāha*.

(2) उद्ग्राहमुपमेलेनात् मेलापः—that which connects *udgrāha* and *dhruva* is *melāpa*.

(3) ध्रुवत्वात् ध्रुवः—the portion that is necessarily present is *Dhruva*.

(4) परिपूर्णत्वेन आभोगः—Because this portion concludes the piece it is called *ābhoga*.

In certain prabandhas a section called 'antara' is also introduced. (the term and this section of the piece is even now present in North Indian Music). Śārṅgadeva describes the dhātu as

वातपिच्छका देह चारणात् धातवो यथा ।

एवमेव प्रबन्धस्य धातवो देहचारणात् ॥

The four sections of the dhātu of the whole piece are also referred to as 'chatur dhātus' i.e., four dhātus. It is not necessary that all the four dhātus should be present. *Melāpa* or *ābhoga* or both can be omitted. But no prabandha will be complete without two dhātus. *Udgrāha* and *Dhruva* are the essential portions. *Udgrāha*, *melāpa*, *dhruva* and *ābhoga* correspond to the upohana, pratyupohana, *dhruva* and *Śīrṣaka* of the early compositions, and the pallavi, anupallavi, carāṇa and the Mukṭāyī Svara or Madhyamakāla Sāhitya of Kīrtana of the present day. As the pallavi and carāṇa, so are the *udgrāha* and *dhruva*, and as anupallavi and the concluding passage, the *melāpa* and *ābhoga*.

In the case of the āngas, pada, pāṭa etc., also it is not necessary that all these should be present. According to the number of āngas present the prabandhas are classified into *medinī* (मेदिनी), *nandinī* (नन्दिनी), *Dipinī* (दीपिनी), *Bhāvinī* (भाविनी), and *tārāvalī* (तारवली) jātis having six, five, four, three and two āngas respectively. A few prabandhas have no fixed number of āngas.

Rules are laid down that certain prabandhas should be composed only in a certain rāga or tāla, or metre. Such prabandhas are called *Niryukta* (निर्युक्त). The others are known as *Aniryukta* (अनिर्युक्त). Matanga (author of *Bṛhaddeśī*) ; Bhūlokamalla or Jagadekamalla (author of *Ābhilaṣitārtha-cintāmaṇi*) ; Pārśvadeva (author of *Saṅgītasamayāsāra*) ; Haripālabbhūpa (author of *Saṅgītasudhākara*) ; Śārṅgadeva, King Gajapativīra; Śrī Nārāyaṇa Deva (author of *Saṅgīta Nārāyaṇa*), Raghunātha (author of *Saṅgīta Sudhā*, and Tulajāji (author of *Saṅgīta Sārāmṛtam*)—are the chief authors who have dealt with the prabandhas. In classifying these prabandhas into different groups there is much difference of opinion among them. Matanga groups them together under the one heading of Deśī gītas. Bhūlokamalla closely follows his predecessors. But all the others divide these prabandhas into three groups—

- | | |
|---------------------------|-------------------|
| (1) Sūḍa (सूड) prabandhas | (1) Śuddha Sūḍas. |
| | (2) Sālaga Sūḍas. |

(2) Ālikrama (आलिक्रम) prabandhas.

(3) Viprakīrṇa (विप्रकीर्ण) prabandhas.

Bhūlokamalla and King Nārāyaṇa give examples of some of the prabandhas. But the examples do not corroborate fully the definitions given by Śārṅgadeva. Besides the svara, pāṭa, and tennaka portions are not given always. Whether these portions are lost, or are intended to be sung extempore is a point in question. Certain hints point out these portions of the compositions are improvised by the singers.

Śuddha Sūḍa Prabandhas are eight in number (but Pārśvadeva gives eleven). These are *niryuktas* and composed in Sanskrit. Some of these have many varieties. The prabandhas are named as *Elā* (एला), *Karaṇa* (करण), *Denkkī* (डेक्की), *Vartanī* (वर्तनी), *Jhompaḍa* (झोपड), *Lambha* (लम्भ), *Rāsa* (रास), and *Ekatālī* (एकताली).

Elā (एला) is a very auspicious prabandha as the name is formed by the three letters अ, इ, and ल, the letters of Viṣṇu, Manmatha and Lakṣmī. In this composition much importance is attached to the literary aspect and the several varieties are distinguished by the Sāhitya portions, the metre, the language, etc. The subject matter should be in praise of a deity or a rājā. If it is a rājā the hero should be of sterling quality and the prabandha should speak of his admirable qualities.

कुलशीलवयोविधात्यागञ्जीर्यादिभिर्गुणैः ।

वर्ण्यते नायको यत्र तामेला कवयो विदुः ॥

King Gajapati Vira Śrī Nārāyaṇadeva gives the following example :—

Mallāra raga—Ādi tāla :

जयरोदिनिमुत सुरमण्डलनुत दुर्जन तर्जन पर्णतरे
आखण्डल खण्डपरशु कृतोद्धण्डावनिपतदमधर धुनिश्चिमर्णतरे
आखण्डलमणिखण्ड समप्रसिचयुगलतनु भूषिता आ
अम्बदतुम्ब नितम्ब महेश्वर गिरिनि मविगलित व्यपण आ
शैं शैं शैं क्रीण थोद्रट खट मट रट द्रो द्रमि झकिट धां कु धां सातरि सान्तारिता तादु
गता ॥

स नि च्वि स च तासं सम सनि ग मं च सं मनि मस ग निगता सा सा ।
तेना तेना तेना तेना तेना तेना तेना तेना ईषा ॥

(The portion marked आ... is known as prayoga (प्रयोग) and is defined as “आलापो गमकालसिरक्षरैर्वर्जिता मता”

i.e., prayoga is mere ālāpa without akṣara. This corresponds to the present day short rāga sañcāra introduced in the middle of a song sung by singers). This example gives all the six āṅgas of a prabandha.

The chief varieties of the Elā prabandha are mātra elas, the varṇa or gaṇa elās and the deśākhyā elās.

Gaṇa and Mātrā elās are only marked by the metre—varṇa vṛtta or mātrā vṛtta. There are two kinds of varṇa elās and are known as Bhogavati and Kusumavati. Bhūlokamalla gives the following definitions and examples of these :

Bhogavati.

गीतं सुधारसस्यन्दि वर्णमात्रेण भूषितम् ।

मोगवत्यां तु गतव्यं गमकैश्च विराजितम् ॥

Example :—

गोवर्धनं भूषणं देवं अमिनवजलधरभरसदशवपुषम्
परममरपतिमपगतखं सततमहंभ्यायामि विष्णुम्
उपदेशानुगृहीत जिष्णुं शलचक्रगदाधरं परमात्मानम्

Kusumavati.

त्रयं पादा दश षड्भिस्सर्वैस्सतदशाक्षरैः ।

प्लार्यां कुसुमावत्यां स्युस्वरान्तिवर्ण्यते ॥

Example :—

क्षितिपवन गगन हुतवह जल भवन प्रणतसुर धुनिजनावनं
मनुजा प्रवेद वेदांगपारग लोकावासविमो श्रीपते
कुसुमशर विवश युवतीशतरतिदक्ष शरभरपतन हत
सुरपतिरिपु पक्ष प्रतिसनिरुच प्ररोधसंवेदन मूर्ते विमलकीर्ते
सतन गमन विधिविरचित परविहङ्ग जयजयविदित जननमरणमयमङ्ग मे
(Incomplete).

In this prabandha also there should be prayoga, biruda and tennaka after the 1st line.

Deśākhyā Elās are those composed in the various local dialects like lāṭa, karnāṭa, gouḍa, āndhra, and drāviḍa.

Bhūlokamalla adds another variety called Lalita (ललित) Elā. It is so called because of the simple style of music, and lucid style of the sāhitya.

Example :—

शिशिरकर करनिकर सदृश शंखस्वकर
गतकमलरणदलिकुलमुलम् ।
धुनिजन वन्दितं चराचरपति शुचिमणिरचित
विकटमकुटं बहुदिति दनु तनय समर सुमत्
अनुगृहीत पार्थ वसुदेव नन्दनं
अजमजरममरपतिसखं मजतामतिशयितसकलमुखं
अनुगतेन्दिरं वेदवेदाङ्ग मन्दिरं कैटमरिपुं

पञ्चनामं तामहजमकम् ।

Karaṇa Prabandha (करण प्रबन्ध)

This is of eight varieties.

(1) *Svara Karana.*—Here the udgrāha and dhruva are composed of closely knit svaras and the ābhoga gives the name of the nāyaka of the piece and the signature of the composer. In all the varieties melāpa is omitted. The piece should end in the amśa svaras of the rāga in which it is composed. It should be in Rāsa tāla and Druta Laya. This is mentioned as Dhātukarāṇa by Bhūlokamalla.

(2) *Pāṭa Karaṇa.*—Composed of svaras and hastapāṭas (syllables denoting the sound of paṭaha).

(3) *Bandhakaraṇa.*—Composed of svaras and the sound of the muraja (murajapāṭa).

- (4) *Padakarāṇa* is made up of svaras and pada.
 (5) *Biruda Karāṇa*
 (6) *Thēna Karāṇa*

are also similar.

(7) *Citra Karāṇa* is that composed of svaras, hasta or kara-pāṭas, murajākṣaras and words. Svaras and hastapāṭa form the udgrāha and murajākṣaras and dhruva form the udgrāha. This prabandha is supposed to be pleasing to Śiva.

(8) *Mīśra Karāṇa*.—In this variety the different sections are composed of svaras, pāṭa and tennaka.

This prabandha is sung in three ways. In one way Udgrāha is sung first, then the dhruva and ābhoga are sung twice and then the udgrāha is repeated to culminate the piece. The method of singing is called Mangalārambha. In another called ānandavardhana, Udgrāha and Dhruva are sung twice. Then after the ābhoga the latter half of Dhruva is repeated before concluding the piece with udgrāha. In the variety called Kirtilahari first udgrāha is sung twice and then the Dhruva once. Afterwards the latter half of the udgrāha is repeated, followed by ābhoga and again the whole of dhruva is sung. Such methods of singing we do not meet with in these days nor do we attach importance to the repetitions of certain sections.

Śrī Nārāyaṇadeva gives the following example for the Pada Karāṇa prabandha. The udgrāha portion is missing.

Dhanāsi rāga—Abhra tāla

सीरधर धरणिपि तव शिरसि शोभते
 व्रजयोषिदधर रसपानकृत लोभेन ।
 वदन तल वदनतल सकल कबली कृतौ
 यस्त्वमपि विभुरस्तु कोस्यमहिमस्तुतौ ॥

Vartanī (वतनी) Prabandha—Śārngadeva says that this is like Svara Karāṇa, but is composed only in Kankala, Pratitāla, Kudukka or druta Maṭṭa tāla and in the singing of this the piece is rounded off by repeating the dhruva after ābhoga. But Śrī Nārāyaṇa Deva gives the following example and it is not in keeping with the above definition.

Gurjārī rāga—Yati tāla

वह्नीकर पञ्चोदर मङ्गिताञ्जन धातदरे
 मुष्टिकामिष मङ्गलज कायपोषता पट्टरे ।

द्विर्वदवारज कुम्भदारणकमिकेसरि नायके
 लङ्गलायुध सम मनस्वयि सङ्गते शुभ दायके

Denkī (डङ्कि)—Here udgrāha consists of two sections and melāpa is in the form of prayoga. According to one opinion both udgrāha and melāpa are without tāla, while others hold udgrāha is in ḍenki or Kaṅkala tāla. Dhruva and ābhoga are in a different tāla and laya from the udgrāha. The piece is rounded off by singing the dhruva with the last portion in the tāra sthāyi. This also has four varieties according to the metre of the Sāhitya.

Dakṣa Śrī rāga—Maṇṭa tāla

कामपावकुल माल मारहारिणि रसिजे
 तरवतगिरितनया परिदम्भ पृथुभुजे
 धुताटोपरिचित कोपकपट गोपशासने
 बलविलसतुद्दयं त्वयि निखिल कलुषनाशने
 द्रा द्रा कितये नाकिट तान्ता दिधिभिकिधोच्चीना ॥
 सा सा निगम पते मातेनातेनातेनातेना ॥

Jhompada (झोम्पड)—Consists of all the four dhātus but melāpa consists of prayoga with few prose syllables. The presence of this part is optional. When it is tridhātuka the piece is much simplified but with the melāpa, the profusions of gamakas make the singing of this prabandha very difficult, says Pārśvadeva. In this prabandha there is prayoga (ālāpana) in the udgrāha and dhruva as well. Jhompada is called Gadyaja, Padyaja or Gadyapadyaja as the Sāhitya is of prose, poetry or a mixture of both. This prabandha has only two aṅgas—pada and tāla. There are several kinds of varieties of this with their particular names.

Nārāyaṇa Deva in his example introduces pāṭa and svaras also.

Nāṭṭa rāga—Jhampa tāla

आकृष्ट दिवसकर तनयनयबद्धे
 बलितीर्थगमनपद कृतसकल शुद्धे
 रक्ष मामङ्गधुति पद दन्ति बक्ते
 धरणि भुजि धुतरोष इत हतनि चक्र
 भोङ्कित शेङ्गिणातात्वाविकि द्रा द्रा निगमसरिषपधिकट द्रमक द्रमितान्ता ॥

Lambha (लम्भ) This is a very interesting prabandha and its many varieties are noteworthy. The presence of ābhoga is uncertain in this prabandha and the method of singing is like Jhompada. Lambha is of seven kinds:

(1) When the udgrāha is sung without tāla in the form of ālāpa the prabandha is *ālāpa lambha*.

(2) When after the udgrāha, in the place of dhruva the words of udgrāha are repeated but in a different dhātu, there the Gīta is called *Pralambha*.

(3) After the first part of udgrāha, the second part of dhruva is sung. Then it is called *Bhāga lambha*.

(4) If the dhruva is repeated several times and if a new udgrāha is introduced for each repetition, then the prabandha gets the name of *Lambhapada*.

(5) If the process is reversed, i.e. if the dhātu of dhruva is changed each time with the same udgrāha then the piece is called *Anulambha*.

(6) When both the sections change the dhātu it is called *Upalambha*. (In the three last varieties ābhoga is omitted).

(7) When in the udgrāha the Sāhitya portion alone is changed and not the dhātu and if the prabandha has dhruva and ābhoga the prabandha is called *Vilambha*.

In Pārśvadeva's time this prabandha had only two varieties: *Vilambha*—If the udgrāha is without tāla and the other portions are with tāla. *Upalambha*—Where there is no ābhoga and the sāhitya of the Udgrāha and Dhruva is changed (without changing the dhātu) while repeating them.

Example given by Śrī Nārāyaṇa Deva—

आसवपानमधुरमरुणैर्दुतिचञ्चलमेचकतारम् कज्जितमध्यविलोलितमधुव्रत शोणित कमल-
मुदारम् हलधर ते वदने कमनीयं मनसि ममास्तु सतामवनीयम् ।

Rāsa (रास) This prabandha is composed in the Rāsa tāla and is like Jhompada in its lakṣaṇas. Based on the metre, the prabandha is described in eighty-two kinds. Though Śārṅgadeva says that this prabandha has only two aṅgas, pada and tāla, in the example we have all aṅgas and the tāla is different. (As Rāsa is ādi tāla there is not much difference).

Vasanta Rāga—Tripuṭa tāla

शिशिर मण्डल मण्डितोत्तम कुण्डलैकविराजितम्
चण्डकर सुत दण्डसण्डन पण्डितं त्रिदशार्चितम् ।
यादवान्वय दुग्धवारिधि कुमुदबान्धवमीश्वरम्
मावयामि भवन्तमनिच्छन्नरूपमनीश्वरम् ॥

ताता धारि कु कुद मिदाङ्कितन्धाङ्कटनाङ्कना
स रि रिग मप धनि सा सा तेनां तेनां तेना तेना ॥

—Śrī Narayaṇdeva.

Ēkatālī (एकताली)

According to Śārṅgadeva, the udgrāha of this prabandha should be made of prose passage while some others hold that the udgrāha is mere ālāpa. Śārṅgadeva says that this is a Tridhātu prabandha of two aṅgas. But the example is entirely different from this.

Bhairavī rāga—Rūpaka tāla

अरुणायितनयनकोशविमदीकृतरक्षसम्
करुणाकरविपुलबाहुमुद्वक्षसम्
चरणानत भव भवन्त माश्रयामि च ते
शरणावन मयि निधेहि कलितविविधशोचने

(Here comes some ālāpa).

श्री नील चलकन्धर फणिगतातनुवर्जितहिमभूधररे
मवसागर परिपतनममुं जनमवधमहर्निशयुद्धरे
आदिर्मेदिमिकिष धोङ्कित नाङ्कित सेंकुसे किण सातरिरे.
मम निध मम निसर्गानि धनिमम धनधतेनां
तेनां तेनां तेनां तेना तेन तेनो जय रोहिणिसुत सुरमण्डलनुत ॥

Chāyāḷaga or *Sāḷaga sūda Prabandhas*: These prabandhas are so called because these have only a resemblance of *Suddha sūda* prabandhas but are not fully like the previous ones. *Sāḷaga sūda* prabandhas are compositions in the seven fundamental tālas and their branches. In all these, melāpa is absent but except in the first antara is introduced. These compositions have only two aṅgas—pada and tāla. The Prabandhas are named after the sapta tālas.

1. *Dhruva* ध्रुव : In this prabandha udgrāha consists of two sections, dhruva three sections and ābhoga two sections. Dhruva and ābhoga are sung in a higher sthāyi than the udgrāha. For each branch of dhruva tāla there is one prabandha and the different compositions have separate rasas according to the tāla.

(1) The composition in Ādi tāla is based on Śrṅgāra rasa and promotes long life and prosperity for the composer. This is called *Jayanta*. It consists of eleven feet divided into four sections.

(2) Composed in Nissāru tāla with vira rasa, it is named *Sikhara*. It gives all prosperity.

(3) *Utsāha* is composed in *Prati tāla* in *hāsyā rasa*. This brings advancement to the family.

(4) Composed in *Karuṇa rasa* and *Hayalīla tāla* is *Madhura*. This fetches all desired pleasures.

(5) The composition called *Nirmala* is framed in *Kriḍā tāla* and *Śṛṅgāra rasa*.

(6) *Kuntala* is composed with *adbhuta rasa* and *Laghu-śekhara tāla*.

(7) *Komala* is in *Jhampa tāla* with the sentiment of *Vipralambha*.

(8) *Cāra* promotes joy and enthusiasm. The piece breathes *vīra rasa* set in *Nissāru tāla*.¹

(9 & 10) In *Ekatāla* and in *Vīra* or *Śṛṅgāra rasa* is composed *Nandana* and this brings satisfaction of all desires. *Tilaka* is another prabandha in the same *tāla* with the same *rasas*, but this infuses enthusiasm and gives success.

(11) *Candraśekhara* is composed in *Vīra* or *Hāsyā* or *Śṛṅgāra rasa* in *Pratimāṭṭa tāla*.

(12 & 13) That in *Śṛṅgāra rasa* and *Pratimāṭṭa tāla* is called *Kāmōda*. *Lalita* is also composed in the same *tāla* and *rasa*.

(14) The prabandha composed in *Dvitiya tāla* in *hāsyā rasa* is called *vijaya*. This promotes longevity of life.

(15) *Kandarpa* prabandha composed in *Hāsyā*, *Śṛṅgāra* or *Karuṇa rasa* is set in *ādi* which pleases God and grants all pleasures.

(16) *Jayamaṅgala* is another prabandha in *Kriḍā tāla* but based on *Śṛṅgāra* or *hāsyā rasa*.

The following is an example of *Dhruva Gīta* given in "Saṅgīta Nārāyaṇa" by Śrī Nārāyaṇadeva.

Dikṣiṇa Śrī rāga—ādi tāla.

जय जय जनकसुताधव राघव निखिल भुवनजन रञ्जने
हैहयवंशावतंसमहीपतिमञ्जन भृगुपतिमञ्जन रे—उद्गाहः—*Udgrāha*.
तरुणसुधाकरमुकुटशरासनशासन मनुकुलमण्डनरे
विपुल भुवन भूषण दूषणमुखस्वर सैनिक खण्डन रे—ध्रुवः—*dhruva*.
शरणागतजन तारण वितरण लज्जित निर्जर तरुवर आति आ आह अ अह आठ
अहति ता

नारायणनृपसुत भवान्—[आभोग]—*Ābhoga*.

1. There is much overlapping in the definitions. For example see 8th or 2nd—same definitions.

Maṭṭa (मट्ट)

II. In this prabandha the *Udgrāha* portion consists of one or two sections and *antara* is optionally introduced.

Example :—

उद्गाहः—

अविकलशरद शशधर वदन कुन्दमुकुन्दपरिहासकरदनम् ।

ध्रुवः—मनराताधिक सुरचिर कायम् मृत्तिलवा विधुत दुस्तरमायम् ।

पृथुतिल कुसुम सुसमवर नासम् वन्दे राममसितघनमासम्

आभोगः—

नारायण नरपति कृतगीतं सुखयतु सूरिजनम् सुखपीतम् ॥

For the six branches of *Maṭṭatāla* there are six prabandhas known as *Maṅgala*, *Jayapriya*, *Sundara*, *Vallabha*, *Kalāpa* and *Kamala* based on *Śṛṅgāra*, *Vīra*, *Śṛṅgāra*, *Karuṇā*, *Hāsyā* and *Adbhuta rasas* respectively.

III. *Pratimāṭṭakam* प्रतिमट्टकम् is like the *Maṭṭa Prabandha* in all aspects except the *tāla*. This *tāla* also has four branches and four prabandhas in them, with different *rasas*. The Prabandhas are called *Amara*, *Tāra*, *Vicāra* and *Kunda*.

Example :—

नौमश तदल मञ्चलानवमाहताखिलमानवः

खण्डिवाधिक गाधि सुतकृत यक्षे धातकदानवम्—*Udgrāha*.

प्रलयजघनाघन धोरगर्जन तर्जितारिशराशनम्

निखिलसिद्धि बलघुनि निकरदुःख विनाशनम् ॥

..*Dhruva* should be sung high.

रक्ष रक्ष कृपाम्बुधेति अ आई आई अ आह आ आई अति अति आ अ इ भूपरमण
नारायणम् ।—*Ābhoga*.

Nissārūka (निस्सारुक)

IV. *Nissārūka* prabandha is also like the previous ones, set in the *Nissārūka tāla*. There are six varieties of this prabandha. The chief prabandhas are composed in relation to *Vipralambha* and *Sambhoga Śṛṅgāra*. All of these have their particular names.

अह अह अह दशरथनन्दन कौसल्या हृदय सुचन्दनमन्दोदितहासमुखरे

तरुमृग पति विहितानन्दन सुर भूसुर विरचित बन्धन निन्दित जन्मसुख रे

—*Udgrāha*.

निर्जित सुरनायक गजवरशुण्डो भवभुजयुग निर्भर परिपालितनिर्जर

करुणा परिपूरित सुदुर्जनतितर्जननिर्दयकृतरिपु भयजर्जर

—*Udgrāha*.

ति अ आ इ अइ अइ अ आ आ आ आ ई आ इ अ इ अ इ अ आ इ अ अ
इ ओ आ आ.

तव रामप्रणमति चरणे नारायण भूपतीमणिमयमापुद्धर रे

—ābhoga.

V. *Adda Tāla* (अड्डताल) *Prabandha* is of six kinds and these are also composed in *Vīra*, *Śṛṅgāra*, *Vismaya*, *Vīra* and *Śānta rasa* respectively.

Example :—

सीतास्तनघन कुङ्कुम पङ्कललित वक्षसो लङ्कासुर शङ्कातुर सुरतहिहृतरक्षसो

—Udgrāha.

नमो नमो दिनकर सुतमिथुनि कृतिहेतवे
रोषवहन शोषविकल जलनिधिबद्धसेतवे
हरिचप मणिहृदय धरणिदारशरकेतवे

—dhruva.

इ अ इ अ इ आ इ अ इय इय इय आ अ इति नारयणगजपतिना गीतमिदं विरचितम्
—ābhoga.

VI. *Rāsaka* (रासक) *Prabandha* is composed in *Rāsa tāla* and this is of four kinds.

1. *Vinoda*.—In this the *dhruva* is composed of words ending in *ālāpa*. This excites delight in the hearers.

2. *Varada*.—Composed in praise of God and has *ālāpa* in the middle of *Dhruva*.

3. *Nanda*.—Here the first of the two *Khaṇḍas* of *udgrāha* is in the form of *ālāpa*. This suggests wonder.

4. *Kambuja*.—*Karuṇa* is the *rasa* of this *prabandha* when *udgrāha* is in *ālāpa* and *dhruva* of words.

Ekatāli (एकताली)

VII. *Ekatāli Prabandha* is composed in *Eka tāla* and this has three other varieties. (1) *Ramā*; (2) *Candrikā*; (3) *Vipulā*.
Example :—

हतदशकन्धर सखित सुरेश

निजकर संस्कार सीता केशव I *Khandha*.

मामव रघुनायक देव शङ्करकरविरचित पदसेव

त्वमसि नरोत्तम मामकशरणम्

कुरु हृदयं मयि धृतशुक्रकणम्—*dhruva*.

सुखयतु गुणिनं भुतिपथनीतम्
नारायणनृप विरचित गीतम् ।

Besides the examples quoted above Śrī Nārāyaṇadeva gives a few more compositions as *Sālaga sūda prabandhas*.

Manda tāla.

अमरवरमणिनिकर रुचिकान्ते कृतसुकुतमदन जनकननगतशान्ते

—Udgrāha.

रघुवंशतिलक मम शमय यमतापं
कृतवतो गुणनिधे तव विविधपापम्
त्वमाहं ध्यायामि विधृतशरचापम् साध्यैकगुणा श्रोतुः ।

—dhruva.

अइति आइ आइ अइति अइ आ आ
नृपतिनारायणं पाहि निमिजापते

—ābhoga.

Tripuṭa

2. सुरपतितनुतकरट धृतदण्डम् कुण्डलयुगमण्डित गण्डम्

—Udgrāha.

मजतामज हरयामि भवतम्—मनसोलव मिपिन नितमवतम्...

—dhruva.

नारायणनरपति कृतगीतम् जनयतुमुखमिदमनिमुदितम्...

—ābhoga.

3. पदपङ्कज रजसा कृतयोषे—क्षितिपतिदार विमर दम्पतरोषे

—Udgrāha.

भवतिद धातु मनोहिनिवेशम् मजतु जनकतनये शरलेशम्

आइ अति अ आइ आइ अइ इति आति आति आति आइ आ अ इति अ इ अ आ
—dhruva.

दण्डकविह्वरणमण्डिदेव नारायणनृपमवसुरसेव

—ābhoga.

Abhra tāla.

4. काकुस्थतनुविदित मदनशरोषम् पादुकादानकृतभरतशुक्रपोषम्

I *Khandha*.

शिरसि धृत जटभरविकृतवासः त्वामहं मनसि निदधामि शशिहासम्

—dhruva.

वेदेहिधन देहि हृदयमविगीतं अत्र नारायणक्षितिपतिगीते

—ābhoga.

5. निधिदुष्टदशवदनमपिवालिनम् लीलयानाथमिव माधवशशालिनम्
I Khandha.

हे राम तव नाम यदि वदति खेलया
तरति भवजलधिमपि दुस्तरं हेलया
कृतदुरित जातोपि सरितमिव हेलया

—dhruva.

रतिरस्तु मम भवति सुहृदि कपिभूते
ननु कुनुषि जनुषि नारायणयतिपते

—ābhoga.

Rūpaka tāla.

6. अमृतजाति जीवतनिव मृतेरुमृग संहिते
प्रतिपादितलिङ्गा प्रदिसोदर मुखसन्तते

—Udgrāha.

जयकुशल जनकतक हरिताहरणम् गुणनिधे
बलदनुचित वृषलदोष चलित रोष वारिधे

—dhruva.

इ अ आ ई अ आ ई अ ई अ ई अ आ नारायणवारण वारण वारणपति शरणं भवति
अ इ आ ॥

—ābhoga.

7. रमापति गमप निकामर धाम गमयसे
अहिताहित हितमपि किमिति नाथ न दयसे

I Khandha.

ति अ इ अ अ इ आ ई अ इ अ ति अ इ अ अ इ
आ इ आ दिनागतिजन पतिमति पतितं रघुपते
पाहि पाहि दुरितदाहि मलिजनमग्नम्

—dhruva.

अमरलोक शोकहरण रणमण्डित तवपदम्
भवपति पद्मनामनृपति तनुज एष भवपदम्

—ābhoga.

Ālikrama and Viprakīrṇa Prabandhas.

The basis on which the prabandhas other than Sūḍa gītas, are divided into these two classes is not clear. But these compositions in common have many differences from the Sūḍa Prabandhas. The distinguishing feature of the viprakīrṇa and ālikrama prabandhas is that they are composed in prākṛt, the South Indian languages and other local dialects. Again among these we have many rāga mālīkā prabandhas.

First of the ālikrama prabandhas is called *Varṇa* the name being derived from the Varṇa tāla in which it is composed. Varṇa is in Kannaḍa bhāṣā and udgrāha and dhruva are of Biruda in Kannaḍabhāṣā.

Varṇasvara वर्णस्वर is another prabandha composed in the same language with svara, pāṭa, pada and tennaka.

Gadya गद्य is a noteworthy prabandha in this group. As the name suggests this is a purely prose composition. This is a striking point i.e., to have prose compositions as well in the days when musical compositions were always pieces of poetry. This prabandha has originated from Sāmaveda, and thus opens with 'pranava.' (ओम्) All the fifteen gamakas and all the varṇas are used in this. In the middle of the piece as well as in the end svaras are introduced. But the last portion consisting of the name of the author and prabandha is sung in a particular tāla. The piece is concluded with ālāpa in vilambakāla. The Gadya prabandha can be of six kinds according to the metre, style and diction. They are called Vṛttagandhi, Utkalikā, Cūrṇā or Cūrṇikā, Lalita, Kanda and Citra.

Bhūlokanātha gives the following example :—

अतसी पुष्प प्रसरण मनकायकान्ती—

उत्सङ्ग विष्टरोपविष्ट लक्ष्मी लोल लोचना चारुचम्पेपीयमानागणय लावण्य पीयूष रसविसर
अमृतकरबिम्ब विडम्बिना कम्बुना-विह्वल बाणबाहु चक्रेण प्रति हत त्रिदिव पति परिपन्थि भुजौ अत
मदेगदया च न त्रिखिलनाकनायकनिकायकामिनि नयना नन्दिन विराजमान करचतुष्टयं अयस्तंभ
विभ्रम भुजदण्ड मण्डल पुरस्सर महस समर्थित पादपद्म युगल मनिष मेघष त्रिभुवन त्राणपरा-
यण महर्हरच्यतां जपतां ध्यायतां च ध्यायिनां भूगो भूयो भव भीषण भूम विभ्रन्त यो न भवन्ति
भवति च विलसति भवतिवर्द्धित जम्भाराति विभूतयो भूतयः

(The piece seems to be incomplete).

Kaivāḍa (कैवाड) is another prabandha, so-called because of the profusion of karapāṭas present.

Āṅgacārini (अङ्गचारिणी) can be sung in any rāga and tāla and conveys vīra and raudra rasa. The Sāhitya is in the form of biruda (Sambodhana). This has six varieties based on the number of tāla āvartas.

Example :—

असुरकुलान्तक दैत्यवंश दावानल बाणचाप भुवनकुठार रावणान्तः पुररावण संसारसागर
णयमशान्भुतप्रथं मधुकैटभ सूदन गोलित नयनेन्दीवरचन्द्रतरुलता प्रसव कंदतिकुंभर चन्दनस्तम्भ
शदगण कृतार्द्रम त्रमग त्राणरक्षमां देवनारायण ॥

The prabandha called *Kandam* (कन्दम्) is composed in *Karṇāṭa bhaṣā*, say *Śarṅgadeva* and *Bhūlokamalla*. But *Raghu-nātha* remarks that this prabandha can be not only in the *Karṇāṭa bhaṣā* but also in other provincial languages. The *Sāhitya* portion is in *āryā gītā* metre and has *pāṭa* also. But in the example this portion is omitted. (This also has several kinds).

सिरिकौस्तुभश्चि अन्त क्रूर दोटको सुषतांग पोरपविर परिरे एष विप्रसुरगण परवृद्ध
नेमगि ने विष्णु लेखित वरमम् ॥

Some of the prabandhas are named after the *tāla* in which they are composed. For example, *Turagalīla* (तुरगलील) or *Hayalīla* (हयलील) prabandha is so called because of the *tāla* of its name. The *Sāhitya* can be prose or poetry. There is also a view that the prabandha is so-called because of the 'aśvalīla' metre. *Bhūlokamalla* gives the *virutha* portion. But this should be preceded by *Svaras*.

सकल सुर मणिमकुट किरण सञ्चितचरण प्रणत भयकरण नारायण etc.

Gaja līla गजलील prabandha is composed in *Gajalīla tāla*. This also can be in prose or poetry.

Example :—

भवनाशकरं सकलार्तिहरं
प्रणमामि हरं भवदोषहरम्—

According to another version in between these two lines is the following— शुभकम्बुधरं वरचक्रधरम् ॥

Some prabandhas are named after the metre in which they are composed. Example :—*Krauñcapada* (क्रौञ्चपद) *Udgrāha* is made of *svaras*, and *dhruva* and *ābhoga* with *pada*. The prabandha is composed in *Prati tāla*.

Example :—

जनित कमलिनन्दं प्रणतसुरगोविन्दं दनुजकुलसंहार अथकमलनीहार भक्तजन भयहरण
सुरसङ्घनत चरण पुण्य सञ्चय सदन सरसीरुह निभवदन नीलजलधर वर्ण मकर कुण्डलकर्ण तरुण
रविनिभचक्र स्वभुजपालितशक हतदैत्यगणदर्प दमितकालीयसर्प कंस भुजबलचाणूरमर्दनामलन ॥

Āryā आर्या is a prabandha named after its metre. *Raghu-nātha* says that in this prabandha the signature and name of compositions are mentioned in *udgrāha*. There are also *svaraprayogas* in the middle. This has many varieties as well.

Dvipada द्विपद is so called because of the *Dvipada* or *dhotaka* metre. This prabandha has certain peculiarities. *Udgrāha*

and *Dhruva*, both can be of *svaras*, or *udgrāha* of *svaras* and *Dhruva* of *prayoga*. Or both parts will be *prayoga*. The whole piece can be of 'pada' (words) as well. In *prākṛt*, the prabandha is known as *Doha*. Based on the metre the prabandha has nine varieties.

Example :—

कुवलयकिसलयकान्तिर्वस्सौख्यं वितरतु विष्णुः त्रिभुवनसंभवपरिरक्षासंहरणप्रम-
विष्णुः ॥

Kalahamsa कलहंस is composed in the metre named *Hamsa*. After each foot there are *svara* passages. This is composed in *jhampa* or any other *tāla* of the same number of *akṣaras*. *Bhūlokamalla* says that the piece should be sung with words of adoration like *भुवन धारण महाबल विष्णो* etc.

Toṭaka तोटक is another prabandha named after the *Toṭaka* metre. This can be in any *rāga* and *tāla* and in *Sanskrit* or *prākṛt*. The prabandha concludes with *svaras*.

Example :—

अपिबामनरूपधरस्य हरे न धरासधराधरनारिनिधिः
पदमात्र मनुष्य गुणस्य—कथयेयुरमुं कथमल्पधियः ॥

This may be considered as the prototype of our present *Tōḍayam* (தோட்டயம்). *Tōḍayam* is also in the *Tōṭaka* metre. This is one of the few survivals we have together with *Daṇḍakam*, *Cūrṇikā* and *Maṅgalam*. The very names have survived.

One of the prabandhas is called *Vṛttam* (वृत्तम्) itself and is sung in any *tāla*. Perhaps *vṛttam* (வருத்தம்) is a derivative or the *Dravidian* corollary of this.

Gāthā गाथा is a prabandha similar to *āryā* but composed in *prākṛt*.

पा अ सरोरुह जाअलं लङ्गीणाहर सणमहमती ए जंसुमरिऊण पावह
मोक्रवसिरि सतिमुखोपि ॥

Cakravāla चक्रवाल prabandha is sung during the celebration of the spring festival (वसन्तोत्सव). The *Sāhitya* can be in prose or poetry and if poetry the last two or three syllables of the previous foot are repeated at the opening of the next foot. This is a familiar feature in *Tamil* poetry and is called *antādi*—(அந்தி)

The piece should be composed in prākṛt language in Hindola rāga and carcari tāla.

Example :—

कमला कुचकलशकलिकल्पित कस्तूरिकापत्रमङ्ग पत्रमङ्ग विषदापूतनाप्रलय करकालित
सुदर्शन दर्शनातुगृहीतपुरन्दर दरचकितमङ्गजनवत्सल वत्सलकौमुद प्रभाजाल सहस्रचन
विदग्धनिखिलदुरित भगवन्मारायण नमस्ते ॥

पञ्चचक्र वेमोयुदाशङ्क सफलङ्कि कुमुद वनवहते हिमकरे तदमाखिल विवसितं सितं विजयते
यते तव यशः चक्रवालकः॥

—Bhūlokamalla.

(Some svaras should be sung here).

Svarārtha or Svarastha—(संराधः—स्वरस्थः)

In this prabandha, with the svara syllables alone, the composer forms the Sāhitya and brings out the intended meaning. Sometimes a few words also can be interspersed amidst the svaras. The Svarasthāna padas and svarasthāna kīrtanas of the later period are further developments of this type of composition. The Svarākṣara sandhi is also a minor attempt of this skillful workmanship. This prabandha has only pada and āṅga.

Example :—

ga ma ga maa gama paa pa maada madhaani dhaa
sa ni maa ni dhaa ni paa pa pa sa ni ga maa ga
maa etc.—Bhūlokamalla.

Sa ri ma ga ri ma dhaa rii yat kā ma ma paa pa
dha dha nii saa mi ni ni ri rii ga ma nii sam ga
ma paa paa maa maa dhaa ma.—Śrī Nārāyaṇadeva.

Mātrkā मातृका

This prabandha is generally composed in poetry but it can be in prose as well. The different padas of the Sāhitya open with akṣaras in the alphabetical order. The pada of the Udgrāha portion opens with the vowels and the Dhruva with the consonants. When the prabandha is composed in Sanskrit language and Mārga tālas it is called Divya Mātrkā. When it is in Prākṛt and Deśī tālas it is known as Mānuṣī Mātrkā. When there is an intermingling of both the varieties, for example udgrāha being in Sanskrit and mārga tālas and dhruva in prakrit and deśī tālas or vice versa, the prabandha is called Divyamānuṣī. The ābhoga is composed in accordance with the variety. Sacred mantras and bijākṣaras are introduced in this prabandha, and it is thus considered very auspicious.

Example :—

असौ शरण्यशरणागतानामाकारमाहात्म्य परास्तकामः। इष्टार्थदायी सततं प्रजानामीत
शानकल्पः कलिकालसेता ॥ उदारनेपथ्यधरः परेषामुष्माणमंतं शमकारणेषु । भद्रिजैराहिके
तिग्मतेजा एकातपत्रं कलयन् प्रभुत्वम् ॥

ऐश्वर्यवीरो हरिणैक्षणानामुष्म प्रकम्पात्परमाप्त क्षम्यः। औदार्यवान् भ्रजदुपोढरागामङ्-
विपञ्चीमिवपञ्चलक्ष्मीम्। अः केन मसा पृथिव्या कृतावतारं किल कारणेन। सोमेश्वरश्चापतिरभगङ्गा-
रत्नसंस्पर्धियशास्त्रकास्ति ॥ by Someśvara.

Rāgakadambakam (रागकदम्बकम्)

As the name denotes this prabandha includes a cluster of rāgas or what is otherwise called rāgamālikā. Compositions of this type can be classified under two heads.

I. *Nandyāvarta* नन्दावर्त. In this the sāhitya is composed of many metres and with each metre the tāla changes. The rāgas change with every foot, or every Vṛtta or every half of the verse. According to one view if the tāla is of a few akṣaras like jhampa each portion should be repeated twice but if it is a long tāla like Simhanandana there is no repetition.

II. *Svastika* स्वस्तिक In this variety in rare cases there will be only one tāla for the whole piece. Generally this composition has eight vṛttas and eight tālas. This prabandha is also called abjapatra. This can be of 16 vṛttas and 16 tālas, 32 and 32, 64 and 64 and are called abjagarbha, Bhramara, Āmre-
dita. It is not known whether there are svara passages.

The prabandha can be in prose also and in this case there will be only different rāgas and not different tālas.

Gopālanāyaka (17th cent. commentator) remarks that Bhramara prabandha is in prose and the first part (udgrāha) of the prabandha is composed in Mālavaśrī rāga and Simhanandana tāla. The next part is in Darpaṇa tāla having all the āṅgas except pada. In the other part vṛtta is omitted. In the last portion all the āṅgas are present. The rāga aspect is the most important feature and hence the name.

Dhvanikutṭani ध्वनिकुट्टनि is a prabandha where udgrāha and dhruva are composed in two different tālas as layas.

संसार नारणाख गौधाराग त्रिदशपरिपालनम् कुलसूदनं दनुजघातनं जलधिजल
धायिनम् ।

कंसवधनाशकर्ण मनुजदेह बासुदेव मत्स्यकूर्म कालरौद्र वदन नरसिंह वामनांग राम
कृष्ण बुद्ध कल्कि मापदेव नमोस्तुते ॥

Pañcatāleśvara—पञ्चतलेश्वर

The very name suggests that this is a tāla mālīka as the previous one is a Rāgamālīkā. The prabandha consists of five sections of five feet each. Each section is set in one of the mārṅa-tālas and each foot has a separate dhātu. The piece opens with ālāpa and the antara of each section takes a different variety of pāṭa. The first section is in cacatpuṭa tāla and antara is made of pāṭa syllables of paṭahavādyā. This is of two tāla āvartas. The second section is in cācapuṭatāla and here antara is double the previous length.

The third section is framed in Ṣaṭpitāputraka tāla and with the sound syllables of Huḍukkā vādyā is used as pāṭa for the antara. The fourth section is in Sampakvēṣṭaka tāla and the pāṭa is of Śankha. The last section is composed in any other mārṅa tāla and antara is sung with svaras and murajākṣaras. The ābhoga is sung in an accelerated speed and the Sāhitya of this portion should be praise of the prabandha containing its name and the name of the hero of the piece. This should convey 'maṅgala.'

The prabandha, if in heroic sentiment, is called Virāvatāra; if in erotic sentiment Ṣṛṅgāratilaka.

Tālārṇava तालार्णव

This also is another tāla-mālīkā but not divided into several sections and composed with no change of dhātu. Udgrāha, dhruva and ābhoga are in different tālas. The Sāhitya can be prose or poetry and there is no fixity about the āṅgas.

Viprakīrṇa विप्रकीर्ण—prabandhas.

Śrīraṅga, Śrīvilāsa, Pañcabhangī, Pañcānana and Umātilaka prabandhas belonging to this group are rāga tāla mālīkas. The first (Śrīraṅga) prabandha is composed in four rāgas and four tālas; the next has five rāgas and five tālas and the piece is made to terminate with a svara passage. The third and fourth both have two rāgas and two tālas, but while the former concludes with tennaka, the latter concludes with pāṭa. Umātilaka prabandha is composed in three rāgas and three tālas with all the āṅgas, but ending in vṛtta.

Tripadī, Catuspadī and Ṣaṭpadī are named in accordance with the number of feet present in the composition. All the three prabandhas are in Kanarese language. The Sāhitya of Tripadī really has four feet but the third feet is split up into two halves

and the first half is added to the first two lines and the second half to the fourth line. At the end of dhruva there will be svaras. Example :—(incomplete).

मेदिनी वर्णसङ्कादिलु....

गयनलदन्त देवनपायुगतिके रहिमेय—

Bhūlokamalla

Catuspadī.

सुरगिरिभामाद्वियातवातिदरिमकः

सुरविलसि च यरोततलोडिदरुहरि अङ्गमालगलु ।

There should be svaras at the end.

Ṣaṭpadī.

Example :—

गडग दितर गणमिदि वर्णगळदीसिगोडे गांचतमगेत्तिवारति धासोडगलं पालिपालुगळ
लोतदं विण्णकु इत्तिक्कनमगस्त संसदण ॥

Tribhāṅgi

This prabandha is composed in three kinds of metres and tālas. It takes svara and pāṭa as well.

नीलनीर रुचे स्वकमाते कौस्तुभधुतिविराजितवक्षः पाञ्चजन्यपरिभूषितपाणो साच्चिरंशु
समलकमुचनानमः सृजसि देव जगतिरजोन्वितस्तदनुपालयसिस्तुटसत्त्ववान् अपि च संहारसेतम
सावृतो जगति चक्रमदंतवचेष्टतमः ॥

नामीसरोरुहजुषा चतुराननेन

संस्तूयमान पदपङ्कज पुष्कराक्षः

दुग्धाम्बुराशि भुजगाधिप मोगशायिन्

त्रायस्व मां दुरितनाशन कृतेनमस्ते ॥

अमरराजशिखामणि रामिचेरञ्जिताङ्घ्रिसरोरुहयुग्मकम् । वन्दे देवं त्रिभुवनगुरुं पावनं वासुदेवम् ॥

Vijaya, Simhalila, Hamsalila and Carcarī are some of the Viprakīrṇa prabandhas named after their tālas. Jhampata, Kanduka, Paddhati and Pahadi are named after the metre.

Daṇḍakam is composed in Daṇḍaka metre.

Example :—

अजमजरमजसतेजस्विनं चिन्तयन्तीहयतापसाः कापिपुण्येपादयोमित मनसः स्थिरीभूतः
यूतेन्द्रिया क्षान्ति माजः

समीभूत मृत्काञ्चनाः रुचिरचित सुरासुदं विभ्रतं विभ्रमादर्शमाद—

रंनमोषिजादिह कौस्तुभं हरिवेषत्रापामय ॥

Dhavalā is a prabandha very popular in the time of Śārṅga-deva. This composition is considered a very auspicious one because of the presence of the word

धवलाभाल उधवलया धवटाराण एवण धवटचन्द्र धवटमहेसर धवट चत्र आभदेव-
वसने धवट जसु आशीर्वाद युत्तैपादै रीदकि धवल पूर्वकैः ॥

Mangalam.

This prabandha is composed in maṅgala metre and sung in Kaiśiki or Botti rāga in Vilambakāla. The piece is adorned with the words denoting auspiciousness like śaṁkha, cakra, abja, koka, kairava, etc.

दधद्वर्कृत चूतपल्लव कनक कलशमातुलङ्गकम एस्वस्तं कनकावर्तनन्द कुसुम चन्दन कुङ्कुम
काजादिमङ्गल द्रव्यविप्राः प्रणयतमावोषतः महर्षयः देवमानरः

नवग्रह लोकपाल शिवशक्तिं महेश्वरः

एते प्रमत्तं तु मम मङ्गल ॥

Ovi, Loli, Dollari, and Danti are prabandhas in prākṛt, Kana-rese, lāḍa bhaṣā and other local dialects. The names are derived from the compositions ending with the word Ovi, Loli, Dollari and Danti.

Vastu, Tripatākā, Caturmukha, Heravilāsa, Sudarśana, Sva-rāṅga, Śrī Vardhana, Haṣavardhana, Vadana, Caryā, Virāśrī and Maṅgalācāra are other Viprakīrṇa prabandhas.

Matanga gives forty-nine prabandhas and Śārṅgadeva deals with seventy-five. Bhūlokamalla gives account of a few prabandhas with examples not mentioned by Śārṅgadeva. They are the following:—

Addhilla (अद्धिह).

This prabandha is in prākṛt language.

सोमगिपंपर पुण्डरीका सेविणं णंखामेकपुण्डरी अं अविसंगरणिजि अ पुण्डरि अं जोरख
इधीतरि पुण्डरी अं ॥

The same two lines are repeated for the latter half, but with a different meaning. If two more lines added, the prabandha is called Viddhilla.

रेह इह फुल सरोरुह वदणो नर्मकहा सुविसख कवचनो

लीलाविममरन्त अराम सामनहीपइ संगर रामो ॥

Jayamālīkā.

This prabandha should be composed in Jayatāla and the name of the prabandha is derived from the tāla as well as from the use of 'jaya jaya'.

Example—

जय भुज परिघोद्धत गोवर्धन धराधर जयकल्पान्तकालकरा—

लाकार कालियन् प्रशय कारिशत जयमधुवधू वदनविधुवि धुन्तुदा

जयगोपीजन नयन नीलवन विकाशशीतकिरण

जयमन्दमन्दर प्रावकषणनिर्मलीकृतकेयूरमणिकिरण भासुर मण्डल

जयराहुवधूवैधव्यदीक्षादानदक्ष जयनरकासुरकान्ता कठिन कुचकलशकस्तूरिकाभ्रासका-
हारिन् जयमठर कुहरनिक्षिप्तत्रिभुवन तायस्वदेव ॥

Hamsapadam (हंसपद)

The sāhitya consists of two feet both in Sanskrit or one in Sanskrit and the other in any provincial language.

जयनिर्जित दुर्जयदानव जनार्दनकंसासुरमर्दन

भक्तिदेवस माममृतमाधव मदीपरकी जेसूरम् ॥

Sukasārika (शुक्सारिक)

The peculiarity of this prabandha is that here the subject matter is set out in the form of question and answer. The prabandha is set in two tālas. The same prabandha when composed in Kannada and lāḍa bhaṣas is called Chukasārika (चुक्सारिक)

Sukasārika—बहिकोयं चक्रीधितरश्चिरान्दोहनघटीम्

हरिबालेसिंहं व्रज मजनिकाकाननभुवम्

मधुध्वंसीमुग्धे भवतु भवता चैत्ररिपुणा

जितोगोपीवाक्यैरिति विजयतेकंसमथन ॥

Chukasārika— चुक्सारिक

एल्लेलाली नीनेलि गेवारि लुत होदे हेनं देनगलानित हंदिस्म जाणउ हल्लि
ल्लुभमये तोरनासधां तुच्चतु इदं जइहा गोविन्द सह खिलन एनादेहानिनितेदारियुगोलं देवेम्।

एतगातत एन्द हेनीन्दोहरिपं गोविन्दनेन्दहे एनगातन तोरातोरा हणिजेकामाङ्गणसी
बाइलि आनारयणुजग तोरातोहम्मणे काहङ्गणशलाटलियनायणा जगहके रुगोसाविम् ॥

Sarabhalā—(सरभलील) This prabandha is composed in eight rāgas and tālas.

कन्देवनीलोत्पलदलसमानकायकान्तिविहित सकल भक्तलोकदुरितघात

इच्छामात्रजनितनिखिलजगज्जन्मकरकमल कल्पित पाञ्चजन्य

नामिनलिनस्थ पद्मसन स्तूयमान पादस्पर्श पवित्रीकृत वैनतैया

तननाकालिकेनैत्राद्युतायमानमूर्ते तुभ्यं नमः प्रासाधितबलकीर्ते ॥

Vicitra (विचित्र)

Vicitra prabandha is composed of various provincial languages set in many tālas decorated with pāṭa and tennaka.

ओजेणेरसातलउणु सामञ्च रूपेवेद आणियले ममूशिवन्याणियले । तोसंसारसा अरसा अरत्रणु महते राखो नारा अणुकूर्मेनाममन्दर वैचवैनवात सराराग मृतमंसाधनं कोददेव नेमगी-गेवरवा जोसुवररुवै बया आलुलैसिदाण उहरिणकवसुमाववि गाढं गोविटं धरणि उद्धरि अं सोदेउ यवरइहोउ पञ्चण्डेनि श्रीनारसीहुदैहिरण्यकशिपु रोममुगोछन प्रच्चवैनादित्यतुमनवल वेदिकन निच्चरिमम् ।

रूहमनरूपपुच रइपुकेति दैत्यबलिबल्लति भूमिने परिदहिन्मात्रेयाक सूषावेकम्पुधुकुरुसुके बाहणेरकुले उपनियुकातवीयांछुणो राजाहुरसे खण्ठमु परशुरामदेवु सेमहरममलकर उनंदगी उतेसायु सहाचो गोविजाणां पडिहे लोमेन अनें मोवि आ महणाच्यर आधर रआटनाभा गिहृकारि आकन्वो मरदासो अम्हाणोमिति आदेउ ।

बुधरूपे जौदाणवसुरा पंचउणिवेददूसण बोळवुणिमायूमोमाळिमोतेदे उपारिमा साउकर रुकतिक भूसृज्व अश्व मारुख सङ्गहस्तजनसंहरणोधतः निष्कृपगः कृपाण पाणिः कृपोपंकरोतुमे॥

Simhavikrāta— (सिंहविक्रात)

This prabandha should be composed in Adi tāla.

सुदर्शनदलित बाणबाहो शिरोमात्रावशे प्रकृतरौहोनिरवधि शास्त्रार्थोपदेशदक्ष-सङ्गररत्न दलितडिरण्याक्ष समुत्सारितपुरन्दरभयानहित प्रणत जनपापक्षय संसार पारावार सन्तरणसेतो—जयजयनादनैव तेयुकेतुकतो ॥ These should be pāṭa here.

Pratāpavardhana (प्रतापवर्धन)

त्वयामहाकुहमटस्यरूप धारिणा रसातलनिमग्नादंष्ट्राम् कुरामेनसमृद्धतानि वेदवेदाङ्गानि किन्न समानीतानि त्वयाकमठरूपेण पृष्ठभ्रमदमन्दमन्दरेणाक्षीरोदमुन्मथ्य किन्देवानाममृतमर्पितं त्वयावराहरूप धारिणा रसातलनिमग्नादंष्ट्राङ्कुरेण किन्न समुद्धूतात्वयानरसि हवपुषाकुल शशिवरर तैरनस यधिकामिः किं न दारितं हिरण्यकशिपोरुरः तस्मात् स्मरस्वमात्मात्मानम् राघव समाह्वय पञ्चगाकुल मध्येथ्यंछिन्दिमेधनादयुक्तन् नागपाशान् इति विकृतप्रोत्साहनारामः प्रणतमुनाम-कुटघटिताञ्जलिपुटैस्सुरगणैः तद्व्रणते स्मृत प्राप्तवैनतेय विघाटितनिविडनागनिटबन्धः सोत्साह शौर्यगुणारम्भः निशितदशननो दशरथ नन्दनो रक्षत्वस्मान् ॥

Muktāvali (मुक्तावलि)

आवटोगरकटिशयुवाजो वानारसिद्धदंदिस् इकालाहरिणुवेधं भूमरा सगनाठ जतुसन्देजहप रिवाजह गोवर्धनगिरिकाचरुग वारुणजह सुरेन्द्रहयुणवाशि मयोदेदमनमणकन्हादो वेवकभयुरो-वैसल केणो सावतमागो टतंवातसंपरिवैनयणां रविकदेदंटावातया ॥

Rasasandōha (रससन्दोह)

As the title suggests, the sentiment forms the significant feature in this prabandha. This consists of eight sentiments from Śṛṅgāra.

स्मरशर भरविशदराधाहचयबालगोपालमूर्ते कीटविकोततः ।

विकृतवदनदशनजनितहेसलोस्णनयुसोदकस्मृतमन्दोदरि ।

प्रलपदिक्षतस्त्राकृतमोरुमर्तवपगजातकंपावना दैत्यदयतासंभोहकारनारदानंदप्रवृत्तकुतनास्तन-वानञ्ज जकुष्टरुदाख....नामस्यष्टपञ्चकटवकृतनं दगोपगृह प्रांगणदुष्टदैलम्...

प्रस्तं चास्वालनमात्राविभुजा भुजपूर्वं नरहरिन पूर्वलोक सावस्मरोहं चकंचुकेश-भर्याय प्रवर्ततवहैस्तोत्रधुगारायुणा ॥

Svaramañjari (स्वरमञ्जरी) The theme of this should be praise of God.

नमो नारायणन्देवं त्रैलोक्यत्रणकारणम्

नमो नीलोत्पल श्यामं क्षीरोदावटशायिनम्

नमो शंखगदापद्मं च कनीरजदुर्मह

नमो लक्ष्माङ्गुचा भागङ्कुमाङ्गणितं हरिम्

नमो गोपेयस्त्रं सेजविकासनदूकरम् ॥

Some of the tālas used in these prabandhas are current at the present day though under different names.

Rasa or Ādi is our Eka tala (1). Pratitāla (100) is our Ādi or Tripuṭa tala. Yatilegna (01) is the present Rūpaka. Nissaruka is the present Jhampa.

The prabandhas and gītas continued to be popular up to the 18th century. They increased in number and variety and continued to be important forms in the first two centuries of the modern age. Pratapacakravarti of the 16th century gives a list of hundred prabandhas. In the seventeenth century Venkaṭa Makhi poured in his many lakṣaṇa gītas. Rāmāmātya, Venkaṭamakhi and Ramaswami Dikshitar have composed lakṣaṇa gītas and prabandhas. These compositions are reminiscences of the classical age during the modern period.

The following is an example of a rare grahasvara prabandha :—

Rāgam-Bhairavi—Matyā tāla

;; ni ni da da pa ma digi digi dam — dam —	ni da ni sa ga ga ma ga ri sa dru mi Ki ta tom — ga na — ngi
Sa ga ga ma ga ri Sa ni do ni tha tha da gam tha gam — — da gam	Sa ni nii da pa daa pa ma dhi mi dhi mi ki thom ki na
ga ga ma da pa ma ga ga ri sa tha ga na ga na ga na ga na ga	Sa ga rii gaa maa maa Chi a Ka ni Kra na
ni da ma ni da ni Saa Saa Ka — Sa na — ta Ka lam	ga ri Saa ni da ni Saa Sa Ka — ra thu ma Cha ri ri
Sa ga ga ma pa ma gaa ri Sa ma dhu ra Ka vi — jee va na	ga ri Sa ni da ni pa ni da ma Sa ra Sa dhu — Ka ma no — —
Pa da ni Sa ga ga ma ga ri Sa vi la — — — — — Sa	no da ni Sa ga ga ma ga ni Sa na va ra Sa ra Si Ka re — re
ga ri Sa ri Sa ni Saa Saa ni ri va la ra — ri ri	ga ga ma ga ri Sa ma ga ri sa the — na tho — na the — — nem
Sa ri ga ma pa ma ga ga ri Sa the — — — na the na the — na	gaa gaa ma ga ga ga ga ri the na the na the na the na
ga ri sa ri ga ma ga ri Sa ni the — na the — na the — nam —	Saa Sa ni da pa da pa ma da da pa ma ga ma ga ri
pa da ni pa da ni pa da ni Sa ga ma pa ga ma pa ga ma pa da	ma ga ga ma Sa ma ga ri Sa ri ri Sa Sa ri da ri Sa ni da pa
ni Sa ga ri Sa ni ni da nii pa da Sa ri da pa pa ma paa	Sa ri Sa ni da ni pa ni da ma vi ma tha ma tha vi ha — — ha
ni da da ni da ma ga ga ri Sa vi tha ra na na — the' — — ya	Sa gaa gaa ma ga gaa ma vi — dya — ga na thi
ma nii da ni pa da ni Saa U pa Sa na ppa ra pa thi	ni da ni Sa ni Sa ma ga ga ma Sa va tha va ri Ku Sa — na thi
ni da ni Sa ni da pada pa ma Ka ru no Ka — — rana ma ya	ga ga ri Sa ; ; ; pra vi — na — — —

REVIEWS

THE SUCCESSORS OF THE SĀTAVĀHANAS IN LOWER DECCAN by Dineschandra Sircar, M.A., Ph.D., Lecturer in the Department of Ancient Indian History and Culture, Calcutta University; Published by the University of Calcutta, 1939.

Since the publication of Professor G. Jouveau-Dubreuil's "Ancient History of the Deccan," the history of the royal dynasties that held sway over the Deccan and South India in the early centuries of the Christian era has been engaging the attention of scholars. Many monographs and articles bearing on the subject have been written and published from time to time; and South Indian history as a consequence of these researches has gradually lost its nebulous character, and assumed a tangible shape, though it still continues to be indistinct and vague in places. The present publication incorporates not only the conclusions of previous scholars in the field, but the valuable results of the author's own investigations. Dr. Sircar has, indeed, brought to light some important facts which remained unnoticed *e.g.*, the Nāga rule over the country of Arournoi mentioned by Ptolemy. If the identification of Arournoi, *i.e.*, Aruvanāḍu, with the coastal region between the Northern and the Southern Pennars is admitted, it follows from this that the Pallava rule in the Kāñcī region was preceded by that of the Nāgas. This seems to corroborate the statement in the Velūrpālaiyam plates that the first Pallava ruler obtained his kingdom through his marriage with a Nāga princess. Another important point to which Dr. Sircar has drawn attention is the probable conquest of Ikṣvāku dominions by the early Pallava king Sivaskandavarman. The authority of the Ikṣvākus, as far as it can be inferred from their inscriptions, extended over the coastal region between the mouths of Northern Pennar and the Krishna. As the Pallava kings from Sivaskandavarman onwards held sway over this tract, it is obvious that they got possession of it probably by means of conquest. Dr. Sircar's attempt to glean historical information from the titles embodied in the praśastis of these early dynasties, though not quite new or original, deserves notice, as he has clearly shown that they are not meaningless epithets devoid of significance. His interpretation of the terms *aśvamedha*, *dharma*, *dharma-vijigīṣuh*, *dharmamahārāja* is indeed interesting as it brings to light important historical facts which lie hidden under them.

Dr. Sircar's book consists of two parts. He describes in part I the history of the Ikṣvākus, the Br̥hatpalāyanas, the Śālaṅkāyanas, the Viṣṇukunḍins and the Pallavas in order. One important omission must be noticed here. The Rāmakaśyapa kings who ruled in the Godāvāri valley in the period intervening between the Viṣṇukunḍins and the Eastern Cālukyas find no place in this work. Dr. Sircar takes up the history of the Cūṭus, the Kekayas and the Kadambas in Part II. As the information about the first two of these dynasties is extremely meagre, this part is almost entirely devoted to the history of the Kadambas. The omission of the Gaṅgas and the Bāṇas on the ground that they ruled far to the south of the Sātavāhanas is hardly justifiable, as the Sātavāhana authority extended, as pointed out by the author himself (pp. 149-50) over the Kāñci region, i.e., over the Tonḍaimaṇḍalam or the Drāviḍa. This is probably due to the defective knowledge of South Indian geography which the author frequently betrays in the course of his work (pp. 131, 146, 197, etc.). Dr. Sircar has not considered it worth his while to bestow attention on the requirements of unity. The work produces the impression that it is made up of a series independent articles strung together without much internal cohesion. Moreover, the plan adopted in the treatment of the subject frequently breaks the progress of the narrative, and diverts the attention to small unimportant details and petty problems which ought not to find a place in a work of this description. The author's account of each dynasty falls into three sections, genealogy, chronology and history. His treatment of the last section is somewhat exceptional. Having settled the genealogy and chronology of a dynasty, he does not proceed, as one would expect him to do, to give a connected account of its history. Instead, he catalogues, with a brief introductory note, the inscriptions of each king, discussing the paleography, the orthography, and the meanings of administrative and other terms, as if he is engaged in editing them for some scientific journal devoted to epigraphical studies. Though these discussions are quite interesting in themselves they are entirely out of place in a general account of the early South Indian dynasties of the kind which the author has undertaken to give. The advantages of this method, whatever they may be are more than counterbalanced by its defects.

Dr. Sircar is the first scholar to lay emphasis on the importance of the history of the Ikṣvākus. Most of what he says about them is quite reasonable, though the fanciful anthropological gossamer which he attempts to weave around their origin (pp. 12 ff.) may not stand the test of scientific criticism. Dr. Sircar's reconstruc-

tion of the genealogy of the Ananda kings is utterly untenable. His contention that Dāmodaravarman of the Maṭṭepāḍu plates was a son and successor of Attivarman of Gorantla plates (p. 60) is contradicted by the evidence of paleography and language of the two inscriptions, though he labours hard to prove the contrary. His discussion of the early history of Veṅḡi is valuable as it rectifies some of the defective conclusions of the previous scholars. Attention may be drawn in this connection to the Prākṛt copper-plate inscription of Vijaya Buddhavarman who has been wrongly regarded as a prince of the Śālaṅkāyana dynasty. The reconstruction of the Viṣṇukunḍin dynasty, though not entirely free from difficulties, appears to be reasonable and satisfactory, but the chronology is utterly impossible. Dr. Sircar maintains that Viṣṇukunḍins continued to rule over Veṅḡi up to the end of the 7th century A.D. (pp. 116, 120) though he brings forward no proof in support of his contention. He brushes aside inconvenient facts. He attempts to discredit the evidence of Koppāram plates on the ground that they 'are full of textual mistakes' (p. 117). His statement that Karmarāṣṭra belonged to the Viṣṇukunḍins at the time of Pulakēśin II's invasion is erroneous; for the Chejjerla inscription of the Pallava Mahendravarman I (SII, vi, No. 595) clearly shows that Pallava sway extended as far as the Krishna on the eve of the first Cālukyan invasion. The Cālukyan invasion was not a passing episode involving 'temporary occupation' of the Viṣṇukunḍin territory as Dr. Sircar would have us believe. It resulted in the permanent subjugation of and the establishment of the Cālukyan power in Veṅḡi. The Koppāram plates state explicitly that Prithviduvarāja 'having defeated the circle of enemies by his arm has secured the kingdom for his son' (EI xviii, pp. 257 ff.). This disposes of the theory of temporary occupation. On the contrary, evidence of the Cālukyan rule over the east coast from Karma rāṣṭra to Palakirāṣṭra during the first half of the 7th century A.D. is furnished by the inscriptions. No useful purpose is served by attempting to explain them away. His account of the Pallavas, though interesting in certain respects, is on the whole incoherent. He pulls down the edifice reared by the patient labours of the scholars of the past generation, and holds up the dismantled bits for our admiration. His repudiation of the identity of Vijaya-Skanda with Śivaskandavarman is not successful; his contention that the term 'Śiva is not honorific when used singly though it has such significance when it is joined with the term 'Vijaya' is hardly convincing (p. 167). Much cannot be built upon minute paleographical differences, as such differences are discernible even in the inscriptions of the same king engraved at different times and

places. Dr. Sircar does not declare his attitude regarding the place of Yuvamahārāja Viṣṇugopavarman and his descendants in the Pallava genealogy. He quotes the opposing views of Fleet and Hultsch about the identity of the Maharaja Simhavarman in whose eleventh regnal year the Uruvapalli plates are dated (p. 170). His statement (p. 169) that 'the Pallava kings mentioned in these northern inscriptions can scarcely be identified without difficulty with the Pallava princes mentioned in the inscriptions of the rulers of Kāñci' does not bear examination. There are, no doubt, difficulties, but the available records contain valuable hints which indicate the connection between the two branches of the family.

The second part of Dr. Sircar's work presents a more connected appearance. There is, however, nothing quite new or original in his account of the Kadambas, as conclusions more or less similar to his have been put forward from time to time since 1929 (see e.g. Trilōcana Pallava and Karikāla Cōla, pp. 44-55). One important point, however, deserves mention. Dr. Sircar repudiates the identification of Śāntivaravarman, the jyeṣṭhapitā of Viṣṇuvarman, mentioned in Birūr plates with the Pallava Śāntivaravarman of the Hebbata grant suggested by Mr. M. Govinda Pai (p. 282). The suggestion is not only ingenious but quite plausible. The husband of one's mother's elder sister, according to the common South Indian usage, is also spoken of as jyeṣṭhapitā, and this requires no special proof. Moreover, an epithet applied to Śāntivaravarman in the Birūr plates seems to support Mr. Pai's identification. Śāntivaravarman is there referred to as raṇarabhasa-pracaṇḍadaṇḍa (see Kaṭūr No. 162 EC vi Plate II-b, l. 2) which is certainly more accurate than the erroneous 'raṇapravarttada' adopted by Rice and all others. 'Pracaṇḍadaṇḍa', it may be pointed out, is identical with 'Caṇḍadaṇḍa', the title of the Pallava king of Kāñci whom Ravivarman had vanquished. The fact that the Jyeṣṭhapitā of Viṣṇuvarman is described as 'lord of the lands of the entire Karnāṭa country adorned with (the capital) Vaijayantī' does not disprove this identification, as stated by Dr. Sircar. The Kadambas never succeeded in imposing their authority over the whole of Karnāṭaka. Now the Gaṅgavāḍi was as much a part of Karnāṭaka as Banavāsi or any other district. Nevertheless the Gaṅgas did not acknowledge the supremacy of the Kadambas. Moreover, it is definitely known that about this time they owed allegiance to the Pallavas of Kāñci. Therefore, the Kadamba Śāntivaravarman could not have been the 'lord of the lands of entire Karnāṭaka.' The Pallavas, on the contrary, could lay claim with justice to this title. It may be remembered in this connection that

Pallavas overthrew the authority of Kṛṣṇavarman I, who put forward his pretensions for independence. It is suggested that Kṛṣṇavarman 'usurped the throne of Kakusthavarman and ruled before Śāntivarman' (p. 283). Assuming that this suggestion is reasonable, it follows from this that Kṛṣṇavarman's rule extended over the whole of the Kadamba dominions. The Pallava king Śāntivaravarman, having put down Kṛṣṇavarman, installed his son Viṣṇuvarman, who, as pointed out by Dr. Sircar, revolted against his father, (p. 290). It is not unlikely that the Pallava king would have subdued the entire Kadamba territory including Vaijayantī. Though Viṣṇuvarman was placed on the throne of his father, the Pallavas took care that he was dependent upon them. They remained in the country as shown by the inscriptions of Mrigeśa and Ravi. The Birūr plates were dated in the third year (current) of Viṣṇuvarman, i.e., quite early in his reign. The Pallavas could not have lost their hold on the Kadamba territory so soon after the overthrow of Kṛṣṇavarman I. Taking all these facts into consideration, it seems reasonable to hold that the jyeṣṭha pitā Śāntivaravarman mentioned in the Birūr plates is not the Kadamba king of that name but a Pallava prince, as suggested by Mr. Pai.

There are other problems of interest discussed in this work. The note on 'Yavana and Pārasika' (App. I, p. 321) is quite interesting. Dr. Sircar supports his conclusions with sound arguments. The other problems discussed in the series of appendices demand careful attention. Dr. Sircar deserves the thanks of the students of South Indian History for having made the first serious attempt to present a comprehensive account of South Indian dynasties during the early centuries of the Christian era.

N. V. R.

FOUNDERS OF VIJAYANAGARA: By S. Srikantaya. The Mythic Society, 1938, Bangalore, Rs. 5 or 10sh.

From Sewell to Srikantaya is quite a huge library of Vijayanagara literature and the views held in these writings by the scholars especially on the origin of the city and the empire, on the persons who founded the city and empire, on the nativity of Bukka and Harihara and on the identity of the literary and religious personalities like Vidyāranya who are said to have taken part in the foundation of this empire, have been conflicting and to an average reader, most confusing. Recently the question of the origin of the empire has assumed great size thanks to the rise of provincialism, and here we have the latest book arguing the case that

Vijayanagara which was founded to stem the tide of Islam was a Karnāṭaka kingdom, not a Telugu kingdom. The contents of the book were originally delivered as lectures at Chidambaram, Bangalore and Mysore.

Mr. S. Srikantaya has taken great pains to digest the numerous articles and books, inscriptions and archaeological reports bearing on his subject. At every stage, he summarise some of the other writers' views but in many places, it must be said, leaves us in doubt whether he agrees or disagrees with them. We don't know where the Pūrva pakṣa ends and his Siddhānta begins. The following conclusions of his may be cited here.

Vijayanagara was Hosapaṭṭana, a residential capital of Ballāla III, then Hoysala emperor (p. 37). Harihara and Bukka were themselves chieftains under the Hoysalas in *all probability* (page 38) (*italics ours*). The Anegonḍi chiefs *probably* were feudatories of the Hoysalas (p. 41). Ballāla III *must have* (*italics ours*) greatly assisted in the foundation of the Vijayanagara empire (p. 63). *If* the Hoysalas were lords of the kuntalas, *if* Vijayanagara was in the Kuntalas, Vijayanagar was in the Hoysala territory. (p. 68). The first Vijayanagara rulers were Karnāṭakas and while Andhra defeat at their hands is referred to, Hoysala defeat is not referred to (p. 75). Ballāla III *must have participated in the foundation, even if he were not primarily responsible for it* (p. 98). It is to be noted that none of these statements are free from the grip of a 'Syādvāda' of 'If' 'Probably' 'Must have' and so on. Regarding the author's statement that Hoysala defeat by Vijayanagara rulers is not referred to anywhere, attention may be drawn to Mysore Arch. Report for 1936, p. 91, where Bukka I is mentioned as conquering Hoysala country. As against all the probablys, ifs and must-haves, it may be pointed out that the tradition of Bukka and Harihara having been Telugus employed in Telugu country under the Telugu King Pratāparudra is reinforced by a Nellore inscription which refers in A.D. 1314 to a subordinate of Bukka ruling over that region.

About the literary and religious personalities of the time of the foundation of this empire, Mr. Srikantaya holds that (i) Mādhavācārya and Cāvuṇḍa Mādhavā are different. (ii) Mādhavācārya became Vidyāraṇyā. This Mādhavā-Vidyāraṇyā was an eminent statesman and scholar. (iii) Vidyāraṇyā is not Kriyāśakti.

The first and third are easily acceptable conclusions, but not so the second; for, from the accounts we know of Vidyāraṇyā, he

was already pontiff when Vijayanagar was about to be founded, but some years after the firm establishment of the kingdom, Mādhavācārya as Mādhavācārya is still eulogised in verses in the literary productions of his brothers. Mr. Srikantaya's information on p. 138 that in the regular services for the pontiffs conducted at Śrīṅgeri there is none for Vidyāraṇyā proves definitely that Vidyāraṇyā was never on the Śrīṅgeri seat.

On p. 103, Mr. Srikantaya gives Prof. Venkateśvara's opinion about the identity of Vidyāśaṅkara. We are not able to know whether Mr. Srikantaya agrees with this view or disagrees with it. According to this view Vidyāśaṅkara is Sahaja Sarvajña, son of Śārṅgapāṇi, who is referred to in the Śaṅkara darśana, of the Sarvadarśana saṅgraha. This is wrong. For, Sahaja Sarvajña Viṣṇu bhaṭṭa referred to in the Śaṅkara darśana of the Sarvadarśana saṅgraha is the author of the Rju vivaraṇa or the Vivaraṇa vivaraṇa and was the son of Janārdana and pupil of Svāmīndra pūrṇa whereas the other Sarvajña Viṣṇu was the son of Śārṅgapāṇi.

To scholars like Mr. Srikantaya engaged in this subject, I wish to address two more problems of identity in the field of the literature of these times: (1) Who is the Nīlakaṇṭha Bhāratī Śrī carāṇa whom Sāyana Mādhava quotes on page 137 of the Sarvadarśana saṅgraha, Anandāsrama edn.? (2) who is the Vidyāśaṅkara Bhāratī who wrote the Jyotiṣa work Khacara darpaṇa (Adyar catalogue, II, p. 55-a)?

V. RAGHAVAN

MANU: A STUDY IN HINDU SOCIAL THEORY by Kewal Motwani (enlarged edition) 1937; Ganesh & Co., Madras. Price Rs. 3.

The study of Hindu social thought and the conception of Hindu social progress has been of late a favourite theme with many scholars in India and in the West. But no study has so far succeeded in placing the true view point of Hindu ideas and ideals. In the book under review Dr. Motwani endeavours to emphasise this point. The author begins his book with a survey of the science of sociology as understood at the present day together with an account of the sociological system as prevalent in the West (also published separately as a brochure entitled Sociology). After defining what sociology means, the author deals with the history of social thought, in India and in the West. The abstruse problem of social thought is approached from the ecological, cultural

and psycho-social points of view. After an examination of the different social processes, social change and progress, Dr. Motwani proceeds to study the psychological foundations distinguishing personality and individuality, and lays special emphasis on the unique nature of individuality.

But the really interesting part of this book is that on Manu which consists of nine chapters. In these chapters Dr. Motwani attempts to state the social theories of the Hindus, basing his exposition on the Code of Manu. The chronological examination of the Code is not sufficiently critical, though to assign it to the Epic period would not be unacceptable. In chapter iii the author shows with clarity how Manu follows closely the fundamental Vedic thought in regard to the form and character of social organisation which he formulates in his Code. Manu's social theory of varṇas and āśramas—which is of course the typical Hindu theory—is treated in the succeeding chapters. In dealing with the fourth group, the Śūdra, the author says that 'he is still once-born,' 'he is still in the child stage,' and 'still an undefined type of personality' in more than one place. It is rather difficult to accept such statements. For the Śūdra type of personality is as clearly defined as the other types, and its aptitudes and activities indicated. Manu does not seem to mince matters. This estimate by the author is due to the fact that following Western writers in general he sees in the term Śūdra an *ethical* reference. A critical study of Manu's Laws shows that in society the Śūdra groups has as much responsibility to shoulder as the other three groups. And the fact that a Śūdra is born from Brahma, as others, and that he could not be deprived of his freedom, would be sufficient to indicate the true position assigned to him in society at large.

The author proceeds to study in detail educational institutions and ideals, the institution of family and of marriage, its biological and ethical basis, economic institutions, and political institutions. In dealing with the state, the author refers to its three-fold basis—physical, political and spiritual. The attempt to find the legislature or the law-making body in Manu as distinct from the judiciary cannot stand critical scrutiny. One has to agree with the statement that the state enabled each individual to develop his or her personality and to aim at the goal which was true liberation of the soul.

After a brief enumeration of religious institutions, a bird's eye-view of Manu's conception of social progress is given in the concluding chapter. Manu is neither exclusively materialistic nor is he a theologian. He does not again subscribe to the biological

theory of progress. That Manu was eminently practical and that his theory was one that would suit all ages, leading the country not to social conflict but to social harmony are vividly put in this interesting book of Dr. Motwani.

The book, however, suffers from lack of diacritical marks and there are a few wrong spellings of Sanskrit words.

V. R. R.

THE GITA: A CRITIQUE by P. Narasimham, M.A., L.T.,—
Madras, 1939.

Professor Narasimham's name and the title of this slim volume raise great expectations; and there are some passages in the 270 pages of this book that will make the reader sit up and seek to think out for himself the path of spiritual progress that Mr. Narasimham is seeking to open out before him. But when he gets to the end of it all, we are afraid that the reader will lay down the book with a sense of unfulfilled expectations. To translate the Gītā, to criticise its doctrines and assess its philosophical value, to determine its place in the evolution of Indian thought, to expound your own attitude to life and test how far the Gītā supports or contradicts it, and finally to decide how much of the Gītā represents the original samvāda (conversation) on the battlefield of Kurukṣetra, what parts of it are later interpolations and to what sources they may be ascribed—these are totally different tasks; every one of them is well worth doing and would exact from the author the exercise of a great measure of specialised skill and aptitude. Professor Narasimham has sought to combine all these aims in his book; and in some of them he fails badly on occasions; that seems to us to be the main reason for the sense of dissatisfaction which grows on the reader as he works his way through it.

K. A. N.

THE YOGA-UPANIṢADS, translated into English by T. R. Srinivasa Ayyangar, B.A., L.T. and edited by Pandit S. Subrahmanya Sastri, F.T.S.; The Adyar Library, 1938; pp. vii, 502.

All who are interested in Indian Philosophy and religion owe a deep debt of gratitude to the Adyar library for their excellent edition of the 108 Upanisads with the commentary of Upaniṣad Brahmayogin. That debt is sought to be increased now by a series of English translations published and projected. The present volume comprises translations of the twenty Yoga Upaniṣads pub-

lished under that title by the late Pandit A. Mahadeva Sastri. The translator has provided a valuable and detailed table of contents, beside giving in a foreword the various śānti-pāṭhas with their English renderings. The commentary has been consulted in the preparation of the translation. A full and free use of the commentary is specially necessary in the case of a volume like this, dealing with details of Yoga, where misinterpretations are both possible and dangerous. The translator seems to have become alive to this danger only at a late stage of the preparation of this volume. Thus the translation of the *Maṇḍalabrāhmaṇopaniṣad* (pp. 217-245) is fairly accurate, while the rendering of parallel passages in the *Advayatāraṇopaniṣad* (pp. 1-8) is inadequate and misleading; the kuṇḍalini is not midway between the mūlādhāra and the brahmarandhra (p. 2), but "in the core of the suṣumnā-nāḍī" (p. 221). When there is practice of "intermediate introspection" it is not that "there ensues the great Ether" &c. (p. 4) but the sādḥaka "becomes the transcendent Ether" &c. (p. 223). The avoidance of such mistakes will make the translation more reliable and useful. Like all volumes from the Vasanta Press the volume is attractively and sumptuously got up. We shall eagerly look forward to the future volumes in the series.

S. S. S.

THE BHAVASAMKRANTI SŪTRA, THE BHAVASAMKRANTI ŚĀSTRA OF NĀGĀRJUNA AND MAITREYANĀTH'S BHAVASAMKRANTI ṬIKĀ. Restored from the Tibetan and Chinese versions and edited with Tibetan versions, English Introduction. English Translations and Indexes by Pandit N. Aiyaswami Sastri of Madras, Professor of Buddhistic Studies, Viśva Bhāratī, Śāntiniketan. Published by the Adyar Library, Adyar (1938).

A belief in *karma* and re-birth seems inconsistent with an attitude either agnostic or negative to a permanent substratum. The mere pentad of Form, Feeling, Ideation, Volition and Consciousness interacting and throwing a unity, strictly apparent and temporary, cannot explain *karma vipāka*. In his *Visuddhi magga*, Buddhagoṣa explains how there is rebirth but no transmigration of anything from one life to another. But there arose among the Buddhists the *Pudgalavādins* who held a rebirth through a transmigration (*Samkrānti*) for which they postulated something tangibly surviving called the *Pudgala*. Kamalāsīla explains that according to the school of the *Sarvāstivādins*, elements of existence have two

phases, real and momentary, and that the real phase of the five groups of elements explains transmigration without any need for a *pudgala*.

It is this question which is tackled in the *Bhavasamkrānti sūtra* in which king Bimbisāra puts the question to the Bhagavān. The Bhagavān replies: There remains nothing that transmigrates from body to body (*Tatra Mahā rāja! na kaścid dharmah asmāl lokāt param lokam samkrāmati*). This answer would mean that the text supports a rebirth without a survival and its transmigration, but Bodhiruci's Chinese version, the earliest, (A.D. 386-534), reads here the Bhagavān's answer as an affirmative: 'there really is one *Dharma* going from one world to another.' On this alternative reading, the title of the *Sūtra* also becomes more intelligible. The editor surmises from this vital variant reading that the *Sūtra* originally belonged to a school of *Samkrāntivādins*, either the *Pudgala vādins* or the *Sarvāsti vādins*. Though the Buddhists hold everything as perishing, they accept the fruits of karma as imperishable. The Buddha says so in this *Sūtra* that regarding *karma*, there is *Avipranāśa*. The editor understands this *Avipranāśa* as an agency through which karma produces its fruit, and on its basis suggests that the *Sūtra* originally belonged to the *Sarvāstivādins*.

To explain rebirth, the appearance of the old karman in it etc., the Buddha employs the analogy of one's recollection of a dream-experience. Though nothing out-lives death, the first consciousness in the new life catches up the karma of the past life, even as one recollects, after waking, his dream-romance. But does this dream-analogy explain a permanent substratum in which recollection could happen or explain *Sūnya* as the thing in which everything happens, the *cyuti* of the final *vijñāna*, the *utpatti* of the first *vijñāna* in the next birth etc.?

Mr. Aiyaswami Sastri first edited this *Sūtra* with an English introduction and translation, and with the Tibetan version in Volume V of the *Journal of Oriental Research Madras*. In this edition now offered through the Adyar Library, he has added English translations in parallel columns of the three Chinese versions and one Tibetan of the *Sūtra*.

In the *Journal of Oriental Research*, Mr. Sastri promised to explain the relation which a text called *Bhavasamkrānti* ascribed to Nāgārjuna bore to this *Sūtra*. In the present edition he has edited Nāgārjuna's short text with a commentary on it by Maitreya-nātha. The title '*Bhava samkrānti śāstra*' given by the editor to the text ascribed to Nāgārjuna is fashioned by him on the basis of its titles in the Chinese and Tibetan versions. Two of these ver-

sions are in verse and call themselves (Madhyama) Bhava saṁkrānti and Bhavasamkrānti parikathā and the third version is styled Bhavabheda śāstra and is in prose. There is no evidence to decide whether the Nāgārjuna to whom it is ascribed is the Nāgārjuna of 200 A.D. or his later namesake who flourished in the first half of the 7th century A.D.

Equally indeterminable is the identity of the commentator Maitreyanātha who cites Bhartṛhari's philosophy and mentions Śāntideva (circa 675-700 A.D.) twice. All that it is possible to say is that he wrote between the latter parts of the 7th and the 11th centuries.

The editor has given an English translation of Nāgārjuna's text and an English summary of Maitreyanātha's commentary. The Tibetan versions of all the three texts and indexes form the rest of the contents of this book. We would like to know the relation which is assumed between the Bhavasamkrānti sūtra and the text of Nāgārjuna; for the latter explains Śūnya in general and does not focus attention on Bhava-samkrānti.

V. RAGHAVAN.

INTRODUCTORY SCHOOL MATHEMATICS by L. Crosland, M.C., B.Sc.

The treatment of the subject is psychological and simple. The elementary ideas are dealt with by simple and direct methods. The author has devoted careful attention to the choice of Problems.

There are three parts in the text dealing with (i) Arithmetic, (ii) Algebra, and (iii) Experimental Geometry. Though almost an equal number of pages has been devoted to them, the distribution is not homogeneous so far as time element is concerned. Judging from the Madras Government syllabus the arithmetic portion does not completely cover even the third form course, the algebra is just short of the fourth form course and the geometry portion is just sufficient for the fourth form. The arithmetic portion stops merely with fraction and its applications. To be complete, it should include Ratio and proportion, percentages, profit and loss, and simple interest. The Algebra section should include an elementary treatment of brackets, multiplication and division by binomials, the first three identities and their application to numerical simplification.

The geometry section should drive more on practical problems than on practical questions. With these additions the book may be used as an excellent text up to the fourth form. As it is the middle school teachers won't prefer it as it contains far less in arithmetic

and far more in algebra and geometry than they require, and again most of the middle schools use text books in the mother tongue.

Whatever is treated in the book has been carefully considered and the best approach has been followed.

The get up of the book is very good.

K. SRINIVASA RAGHAVAN, M.A, L.T.

BULLETIN OF LEAGUE OF NATIONS TEACHING. THE TEACHING OF THE PRINCIPLES AND FACTS OF INTERNATIONAL CO-OPERATION. NO. 5. DECEMBER, 1938.

The special feature of this number of the Bulletin is the enquiry into the teaching of modern languages as a factor in the mutual understanding between peoples and the number of very interesting and instructive reports that resulted from the consultations of experts held during the year. We give below a number of extracts bearing on the study of modern languages, its relation to the mother tongue and on some wider problems of educational organisation and standards; these will be read with considerable interest by those who concern themselves with similar problems in our own country.

The question of modern means of spreading information in the cause of peace is the subject of an article which describes the League's efforts in this field. The technical work of the League furnishes the subject matter of several reports on the work of the Economic Committee, the European Conference on Rural Life, on Epidemics, the role of exhibitions in international education and so on.

EXTRACTS

I. *Modern Languages and the Mother Tongue*

(a) 'The mother tongue is the most direct means of expressing thought. Mastery over one's mother tongue is therefore an essential condition for acquiring a thorough knowledge of a foreign language.

'At the same time, the study of modern languages, by the comparisons to which it gives rise, is of use in adding to one's knowledge of one's mother tongue.' (pp. 19-20).

(b) 'In several countries, attention has been drawn to the imperfect way in which young graduates speak and write their own language, and it has been pointed out that a way of solving

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the difficulty would be to associate modern language teachers in a task which is of primary importance in public education since its aim is to give to children a feeling of respect for their own tongue.' (p. 30).

(c) 'It is only fair to note that when the teaching of modern languages was being organised in England, the methodical study of English and English literature was almost unknown in our secondary schools, and still more so in our Universities. Our pupils who study two foreign civilizations more often than not receive a singularly incomplete education. They have some pretensions to philosophy, but have neglected their mother tongue. They read Descartes and Pascal, but know nothing of Bacon or Locke. They will have no hesitation in holding forth on the style of Racine, when their own English style is still unformed. They are selling their birthright.' (pp. 79-80).

II. Influence of Universities on Secondary Schools

'We would mention those admirable institutions, Oxford and Cambridge, and the considerable obstacle they constitute. The conditions for entering those Universities and for obtaining their scholarships exert an influence that extends far beyond the chosen few who are in later life to perpetuate the entirely superficial rivalry of those worthy twins.

'French and Latin monopolise the attention of pupils who might more profitably study two modern languages; and those who are already studying two modern languages are often obliged to overwork in order to learn Latin at the same time. Latin and French overburden science students, who consequently neglect German. All that undeniably helps to discourage initiative. Yet the obvious remedy is simple: two languages should be required for the Faculty of Letters (or Arts), with no obligation to learn Latin, and for the Faculty of Science one only. We would mention the fact that the University of London has recently decided to accept certain modern languages on an equal footing with Latin. That is the beginning of wisdom.' (pp. 76-77).

III. Conditions of High School and University Education in Europe

'The number of college students is increasing at an abnormal rate: whether gifted or not, healthy or sickly, townsfolk or peasants, rich or poor, children are sent to the *lycées* and from there to the University.' (p. 84).

'A staff three times the size would be required to give proper instruction to such a large number of students of such varying standards. One can imagine the difficulties with which a professor has to contend at such lectures, the amount of time which he has to devote to them (often wasted) and the almost heroic resistance which he must offer to weak examination candidates who sometimes present themselves for the degree examination as often as four times.

'What are the causes of this rush to learning? Is it a thirst for knowledge, as was generally the case before the war? Alas, not in the least! It is almost solely due to the wish to obtain posts in the civil service—and poorly paid posts at that.

'On the one hand, there is an economic crisis: on the other, a crisis of mind and will. The free professions, such as trade and industry, are difficult to enter, and require initiative and endurance, which are lacking in most young people to-day. The post-war generation's markedly changed attitude to life is shown in a weakened sense of responsibility, and an ever-increasing claim to support and protection from the community. As a rule, the extent of the claim is in inverse proportion to the merit of the claimant.

'Under these conditions, the University offers a providential refuge. One enters freely. Matriculation fees are low. Lost in the mass of students, the lazy and incapable young man peacefully allows himself to drift on floods which overflow all barriers. An ancient and honourable tradition invests the student with a mantle of romance, and, what is more, provides him with many facilities of a material nature: he is cheaply housed and fed in student hostels and in "university cities" built by noble founders (such as King Alexander of Yugoslavia, who built a magnificent home for five hundred students in Belgrade, and Queen Marie, who contributed to the foundation of a home for a hundred students): he gets scholarships and longterm loans from funds to assist poor students, and he travels by rail at a quarter the usual fare!

'With the community making such sacrifices, one would expect the students to show an ability and intellectual energy worthy of encouragement. Unfortunately, although there are a limited number of gifted and hard-working young people, the great majority are unworthy of the noble name of student. They do not study; they have never been taught the habit, and are quite content not to learn. To get their degrees, they have only to follow the stream, get the "index" signed, and make a slight effort on the eve of the examinations.' (pp. 85-6).

IV. *On Examinations.*

'The *baccalauréat* should be reformed and its standard raised. This highly important examination has fallen into some disrepute. The war brought in its wake an absolute mania for kind-heartedness: anything, or nothing, was an excuse for leniency. We are told that the candidate is "poor," or "ill." If his composition is bad, why, "everyone can't be talented;" if it is chock-full of spelling mistakes, it is because the candidate was "nervous and upset." Nobody asks how his fellow-students so miraculously passed the examination. Instead of giving way to this leniency, which is ruining higher education by recruiting an army of second-raters, would it not be preferable to take pity on the entire generations of pupils who will be sacrificed at the hands of such teachers, and give a thought to our national culture, to which they are a menace? It is no longer a praiseworthy feeling of charity; whether it be demogogy or intellectual short-sightedness, it shows at any rate a deplorable lack of the sense of responsibility. The duties of a judge are not a personal matter; they are a social function' (pp. 88-89).

V. *Students and Society: An International 'Conversation' for Students at Luxemburg*

'The question of the autonomy of the University was considered from two points of view. One the one hand, who possesses this autonomy, and with reference to whom is it manifested? On the other hand, what are the functions of autonomy? The problem was dealt with in close connection with the problem of the responsibilities of the university towards the community. Everyone agreed that the separation between the University and society, if it ever existed, can no longer be maintained. The students who met at Luxemburg proclaimed their solidarity with society as a whole and manifested their will to serve it. They condemned, however, the tendency to enrol university young people in groups for direct political action, when their role ought to be, on the contrary, to seek with complete objectivity the elements capable of uniting the various groups which make up modern society.

'In discussing the problem of the university as a community between teachers and students, delegates were faced with the difficulty of finding a satisfactory solution, which would preserve the youthful personality of the student in its individual liberty. References were made in the course of discussion to certain methods employed in the Anglo-Saxon universities (tutorial system, study groups, etc.), and in various traditional schools in India.' (p. 110).

VI. *State and Text-books*

Seventh International Conference on Public Education.

'In spite of the great variety of views expressed in the course of the discussion, the recommendation adopted by the Conference is in favour of increasing the control of the State and the educational authorities over school textbooks. Section 2 of the recommendation states that, in countries where education is directed or controlled by the State, it is for the State to take appropriate measures to ensure the improvement of text-books and to supervise their use. Elsewhere, this duty would fall on whatever other authorities are responsible for schools.

'The Conference also emphasised the desirability of official action to secure the publication, for use in primary schools, of well-printed and inexpensive text-books prepared in accordance with sound pedagogical principles.' (pp. 199-200).

VII. *Technical education and vocational guidance*

(a) One important difficulty lies in the necessity of giving the pupils, at least in the first years of their secondary education, a sufficient degree of general culture to enable them, if it should prove desirable, to transfer from one type of education to another, at the same time providing all pupils with the necessary minimum of disinterested knowledge. Again, since not all children can study the classical humanities, it would be desirable to work out an educational method capable of obtaining from modern and technical studies their full cultural value.' (p. 209)

(b) 'The provision of sound vocational guidance for young people in schools and universities is one of the most effective means of promoting the re-establishment of a lasting equilibrium in the distribution of intellectual workers; such guidance should be based on systematic studies of the supply of and demand for intellectual work and its evolution.' (p. 224)

UNIVERSITY NOTES

During the year Diwan Bahadur S. E. Runganadhan continued to be the Vice-Chancellor. The Hon'ble Mr. C. J. Varkey became Pro-Chancellor from 7-1-39 consequent on his appointment as Minister for Education.

The Editorial Board of the University Journal was reconstituted by the Syndicate as follows, for a period of two years from August, 1938:—

Sri K. A. Nilakanta Sastri (*Editor*).
 „ V. K. Ayyappan Pillai.
 „ R. Gopala Ayyar.
 Dr. M. O. Parthasarathy Ayyangar.
 „ M. Damodaran.
 „ P. J. Thomas.
 Sri S. S. Suryanarayana Sastri.

Mr. William McLean, Registrar of the University, was made a Member of the British Empire; and the title of Rao Saheb was awarded to Mr. S. Vaiyapuri Pillai, Reader in Tamil, and Pandit M. Raghava Aiyangar of the Tamil Lexicon staff.

His Excellency Lord Erskine, G.C.I.E., Chancellor of the University, presided over the Annual Convocation in August 1938; and Sir Mirza M. Ismail, B.A., K.C.I.E., O.B.E., Dewan of Mysore, delivered the address to the graduates. This is the first time that a person other than a member of the Senate or the Academic Council of the University delivered the address.

Messrs. C. Achyuta Menon, Head of the Department of Malayalam, and S. Muhammad Hussain Nainar, Head of the Department of Arabic, Persian and Urdu, who had gone to London on study leave, returned in September last after obtaining the degree of Ph.D. of that University.

Dr. M. Damodaran, Director of the Department of Biochemistry, who had been to Europe to study recent developments in biochemical technique, returned in November.

Mr. N. Sundararama Sastri, M.Sc., Lecturer in Statistics, has gone on study leave to England.

The Department of Economics, which was entrusted with the work of investigating the effects of Prohibition in certain villages of the Salem district, has published its report.

The departments of Geography, Politics and Public Administration and Indian Music have now been made permanent departments of study and research.

Consequent on the inauguration of the Travancore University in 1938, the colleges in the Travancore State affiliated to this University are conducting only the senior classes; the Training College, Trivandrum, ceased to be an affiliated college of this University. Only the Maharaja's College of Arts, and College of Science, Trivandrum will continue as affiliated colleges of this University, in 1939-40 conducting the final year Honours class.

The Stanley Medical College, Rayapuram, Madras, was granted recognition for the Pre-registration and First M.B.B.S. courses; and several other institutions were granted recognition, affiliation or approval with regard to particular courses of studies.

New regulations were framed for the institution of a degree in Pharmaceutical Chemistry (B.Sc. Pharmacy) and the Diploma course in Librarianship. Regulations for the L.T. Degree course have been revised. Higher degree courses in teaching, B.Ed., and M.Ed., have been proposed. The number of branches for the M.L. examination (from 1940) have been reduced from nine to six. Hindi has been included as an optional subject for the B.A. and B.A. (Hons.) degree examinations. A new optional group 'Home Science' has been included in the B.A. and B.Sc. Degree courses.

A new Title of Sangita Śiromani and a new Degree of Bachelor of Music (B.Mus.) were instituted in the University under the Faculty of Fine Arts.

Three candidates qualified themselves for the D.Sc., eighteen for M.Sc., and one for M.O.L. during the year. Their names and theses are noted below:

Doctor of Science

Mr. B. V. Raghavendra Rao, M.Sc., for his thesis, "Investigations in Light Scattering and Spectroscopy."

Mr. K. L. Ramaswamy, M.Sc., for his thesis, "Studies in Electrical and Optical Polarisabilities of gases and vapours."

Mr. L. S. Ramaswami, M.Sc., for his thesis, "Some aspects of the Anatomy of Anura (Amphibia)."

Master of Science

Mr. A. Abraham, M.A., for his thesis, "Chromosome structure and the mechanics of Mitosis and Meiosis in *Lilium*."

- Miss S. Pankajam, M.A., for her thesis, "On some topics connected with Boolean Algebra."
- Mr. D. Krishnaswami, B.Sc., (Hons.), for his thesis, "Some studies in Magneto-elasticity and other papers."
- Miss P. Devi, M.A., for her thesis, "The Chemical composition of fat from the seeds of *Garcinia Indica*, etc."
- Mr. P. S. Krishnan, M.A., for his thesis, "The Globulin from the seed of the Water Melon, etc."
- Mr. T. K. Krishnaswami, B.Sc., for his thesis, "A New Glutelin from the seed of the Water Melon, etc."
- Miss Mary C. Mathen, B.A., for her thesis, "Studies in essential oils and their constituents."
- Mr. S. Rajagopalan, B.Sc., for his thesis, "Synthetic experiments in the Benzo-isoquinoline series."
- Mr. K. Ramakrishnan Nayar, B.Sc., (Hons.), for his thesis, "Glutamic Dehydrogenase from germinating seeds, etc."
- Mr. R. Ramaswami, B.Sc., for his thesis, "Isolation of 1-3:4 Dihydroxyphenyl Alanine from the seeds of *Mucuna Pruriens*."
- Mr. K. Sankaran, B.A., for his thesis, "Synthetic experiment in the 1-coumaryl isoquinoline series, etc."
- Mr. N. Subrahmanya Wariyar, B.A., for his thesis, "A chemical examination of some Travancore plant products."
- Mr. K. S. Srinivasa Ayyar, B.Sc. (Hons.), for his thesis, "On the Morphology, life-history and Cytology of *Riccia himalayensis*, st., etc."
- Mr. K. Bhaskaran Nayar, B.A., for his thesis, "The reproduction, Oogenesis, and development of *Mesopodopsis Orientalis* Tatt."
- Mr. N. Ganapati, M.A., for his thesis, "Studies on two new Sporozoa."
- Mr. M. D. Paul, M.A., for his thesis, "Studies on the growth and breeding of certain sedentary organisms in the Madras harbour."
- Mr. K. Lakshmana Rao, B.E., for his thesis, "Deflections in reinforced concrete structures."
- Mr. P. Uthaman, B.Sc. (Ag.), for his thesis, "Parasitism of *Striga Lutea* (Lour) on rice with special reference to its histology and anatomy."

Master of Oriental Learning

Mr. T. P. Minakshisundaram for his thesis, "The Tamil Sounds."

The University deputed the following delegates to the various Congresses or Conferences during the year :

Indian Mathematical Society's Conference at Lucknow in March 1938.

Dr. R. Vaidyanathaswami.

Fourth International University Conference at Switzerland in July 1938.

Mrs. Mona Hensman

Dr. M. Damodaran.

Indian History Congress at Allahabad in October 1938.

Dr. N. Venkataramanayya

Sri V. R. Ramachandra Dikshitar.

Session of the Indian Historical Records Commission at Poona in December 1938.

Prof. K. A. Nilakanta Sastri.

The First Indian Political Science Conference at Benares in December 1938.

Dr. E. Asirvatham.

Indian Philosophical Congress at Allahabad in December 1938.

Sri. S. S. Suryanarayana Sastri.

Dr. C. Kunhan Raja.

Indian Economic Association's Conference at Nagpur in December 1938.

Dr. P. S. Lokanathan.

Sri K. C. Ramakrishnan.

Karnataka Sahitya Parishad, Bellary in December 1938.

Sri W. Chennakesava Ayyangar.

Sri H. Rama Rao.

26th Session of the Indian Science Congress Association at Lahore in January 1939.

Prof. R. Gopala Ayyar.

Dr. R. Vaidyanathaswami.

Sri B. M. Tirunaranan.

Indian Statistical Conference at Lahore in January 1939.

Dr. P. J. Thomas.

At the invitation of the University, the Indian Science Congress has agreed to hold its next session in Madras in January 1940.

The Oriental Mss. Library which was till now situated in the premises of the Madras Museum, Egmore, has now been housed in the University Library.

Lectures as usual by Hony. Readers and Heads of Departments of the University and under various Endowments were delivered. University Extension Boards were, as in previous years, appointed to arrange lectures of a popular nature at various centres. There were also special lectures by the following :

Lt. Col. R. B. Seymour Sewell (Retd. Professor, University of Cambridge)

Dr. F. W. Thomas (Emeritus Boden Professor of Sanskrit, University of Oxford)

Mr. Adolph Myers (Times of India Press, Bombay)

The following work was published by the University in its Historical Series :

Administration and Social Life under the Pallavas by Dr. C. Minakshi.

A proposal of the Government for the reorganization of Elementary, Secondary and University Education was considered by the University Authorities and the following two resolutions were communicated to the Government :

- (1) That the University establish its own Matriculation Examination for entrance to its courses ; and
- (2) that no change be made in the length of the Intermediate & B.A. Degree courses of this University.

The question of the institution of Extension Boards with a view to inaugurating a programme of Adult Education is engaging the attention of the University, and with a view to taking further steps in the matter, Principals of Colleges were circularised on the question of the formation of such associations to conduct night schools, rural welfare work, etc.

A scheme for the institution of an Employment Bureau was adopted by the University. After consulting the Madras Chamber

of Commerce, South Indian Chamber of Commerce, Madras Trades Association, Employers' Federation and other interested bodies, a representative Employment Bureau was constituted. Wide publicity was given of the institution of the Bureau, and about 230 applications were received for registration with the Bureau. A small Sub-Committee consisting of 4 members with the Registrar as Secretary was appointed to interview applicants in the Madras area. District (and Divisional) Committees, where there were candidates, were also constituted with the assistance of Chambers of Commerce and D.E.Os for purposes of interviewing candidates in the locality. It is the intention of the Bureau, after interviewing suitable candidates, to draw up a list of persons who could be recommended to employers.

The following subjects are under the consideration of the University Authorities :—

Institution of a Diploma Course in Co-operation.

Institution of a Degree in Physical Education.

Institution of a course in Technological Education.

ACKNOWLEDGEMENTS

Journal of the University of Bombay, Vol. VI, Part vi, Vol. VII, parts ii and iii.
Annals of Oriental Research of the University of Madras, Vol. II, part ii and Special supplement and Vol. III, part i.
Quarterly Journal of the Mythic Society, Vol. XXIX, Nos. 2 and 3.
Brahmavidyā (The Adyar Library Bulletin), Vol. III, part i and ii.
Journal of the Andhra Historical Research Society, Vol. XI, parts 3 and 4.
Indian Co-operative Review, Vol. IV Nos. 3 and 4.
The New Review, Vol. VIII, Nos. 47, 48, Vol. IX, Nos. 49, 51, 52 and 53.
The Madras Agricultural Journal, Vol. XXVI, Nos. 10, 11, 12, Vol. XXVII, Nos. 1, 2, 3 and 4.
The Old College Magazine, Trivandrum, March 1939.
The Madras Engineering College Magazine, Vol. VII, March 1939.
Journal of the Annamalai University, Vol. VIII, No. 1. October 1938.
The Nagpur Agricultural College Magazine, Vol. XIII, No. 2 and 3. Indiana, November 1939.
Fortnightly news of the League of Nations (Information Section).
The Monthly summary of the League of Nations, Vol. XVIII, No. 10, 11 and 12, and Vol. XIX No. 2.
Bulletin of League of Nations Teaching No. 5.
The Recreational Cinema and the Young (League of Nations).
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