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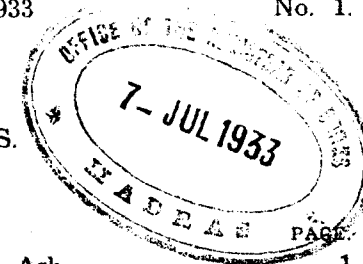
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THE MADRAS GEOGRAPHICAL ASSOCIATION,

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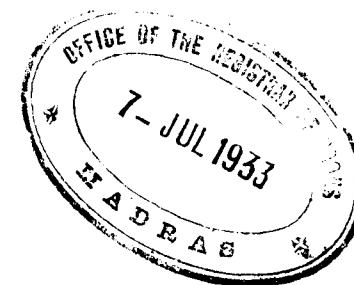
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The Journal of The Madras Geographical Association

Vol. 8. April 1933 No. 1.

Vizagapatam Harbour

By

MR. W. C. ASH.

Under the auspices of the Vizagapatam Branch of the Madras Geographical Association, Mr. W. C. Ash, Engineer-in-Chief of the Vizagapatam Harbour Construction, delivered on the 15th December 1932 a lecture in the hall of the new Medical College, the subject being the Vizagapatam Harbour.

The lecturer first drew, by means of diagrams, a parallel between the conditions prevailing at Vizagapatam and those at Madras. He explained that the "littoral drift", which has had to be so seriously taken into account at Madras, evidences itself also at Vizagapatam, despite early reassurances to the effect that this volume of sea-sand would be interrupted in its northerly travel by the deltas of the Godavery and Kistna and would merge itself into them. Although this may actually happen, it does not, in the outcome, dispose of the difficulty in connection with Vizagapatam, since it would appear that the deltas lose on the northern side, as a result of oblique wave action, as much as they gain on the South and the littoral drift is to all intents and purposes continuous. A million tons of sand per annum pass any point on the shore at Madras and a similar quantity is found to be in motion at Vizagapatam.

The differences in configuration of Madras and Vizagapatam had not been greatly taken into account when the early scheme for a harbour at Vizagapatam were under consideration, and the diagrams showed a strong resemblance between the project car-



ried into execution at Madras and those which had been proposed for Vizagapatam.

CHANGE OF PLAN

Ideas had later veered in favour of an inner harbour, such as was now being provided, and it was now clear that, had the former plans been acted upon, very serious trouble, in the way of maintaining the entrance to the outer harbour, would inevitably have been encountered.

The scheme which is now in hand for securing protection for the harbour entrance was explained by diagrams, and the possibilities in the way of expansion of the inner harbour, once the difficulty in connection with the channel was surmounted, were demonstrated. The land acquired by Government for the construction of Vizagapatam Harbour and its later extension comprised the greater portion of a vast lagoon, in process of siltation. Advantage had been taken of the scope offered by this magnificent site for laying out a harbour capable of expansion to any considerable size. The railway, road and marine facilities which this development might call for had been carefully studied and provided for and the methods of reclaiming the great areas of swamp whilst dredging the waterways had been schemed out.

A parallel was next drawn with the Port of Durban, and it was explained how the very close similarity in the configuration and physical conditions of the two harbours had led the lecturer to visit South Africa for the purpose of making a special study of conditions there. It was shown that this similarity was accidental, in so far as it rested on certain physical facts, but that the natural processes resulting from these had inevitably been alike in both cases, and had thus combined to make the similarity more striking. The earlier physical features consisted of an area of high ground, roughly forming a crescent in each case, the enclosed area at one time having been open to the sea. A stream, of small volume in the dry weather, drained in each instance through the lagoon. Tidal conditions were very similar and the dominant winds corresponded in a large measure. The result was, at both places, that the channel formed under the lee of the "bluff"; that it was impeded by a sand bar, which for a harbour to be maintained necessitated persistent dredging; and that a sand spit formed between the sea and the inner lagoon.

patam had each been partly sited, as a matter of course, on these corresponding sand spits. The comparison was made by means of lantern slides, showing the close likeness not only between the respective configurations but also between the external aspects of the various features.

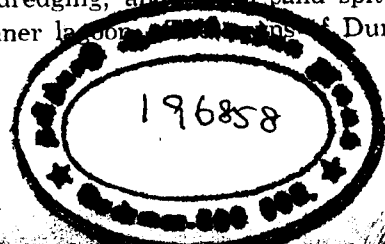
Durban's Success. A number of slides were shown to illustrate the great developments which had taken place in both the town and harbour of Durban, mainly as a result of the solution of the difficulties encountered in making the harbour accessible for ships of all draughts and sizes. This struggle, on which Vizagapatam was entering, had taken many years at Durban, as was shown by means of graphs; and the curves showed also the great prosperity which had rewarded the final success. There was no mistaking the fact that the increase in figures of trade, in population and in wealth were, in the case of Durban very largely to be attributed to the overcoming of the difficulties in connection with the harbour, and it was hoped that there would be a similar trend at Vizagapatam. The views of the town and harbour were commended to the audience as a pointer to what might happen, given favourable conditions, in the case of Vizagapatam, of which Port Durban might be regarded as a "big brother" with a strong family resemblance.

The lecturer endeavoured finally to convey, by means of a slide of a working model, an idea of the entrance to Vizagapatam Harbour when the two ships, now being prepared for sinking, have been placed in position to form the core of the new breakwater. This novel scheme for creating a breakwater had been decided on in view of the urgency of the problem of obtaining a measure of protection at the Outer Channel and also of the fact that merchant ships were, during the present trade depression a drag on the market and could be bought for inconsiderable sums. The object of the barrier thus to be created was to cause the sand to deposit in an area clear of the channel and to afford protection under which dredging could be carried out.

Mr. B. V. Narayanarao, one of the Assistant Engineers of the harbour, brought the lecture to a close by a display of cinematograph views of the construction work and of the recent entry of the s.s. "Janus" into the harbour.

Sir J. C. Coyajee, who presided, said that the lecturer (Mr. Ash) had envisaged a century of prophecy, indicating Vizagapatam's rise in the future.

U g m 211, 1926/19
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Geographic Controls

By

MR. TEKUMALLA RAMA RAO.

It is generally recognised at the present day that individuals and groups of individuals are influenced by their environment, and that they react to such influence by modifying the environment itself, of course within certain well-defined limits, to suit their needs. Such direct relationship is not as obvious in the life of the urban populations as in the case of those of the rural areas, who are more truly the children of the soil and products of the environment. The city life is determined in a large measure by influences which go beyond the limits of the immediate environment by means of industrial, commercial or cultural contacts with distant and sometimes different environmental influences, while the economy of village life is based largely upon agriculture and allied occupations, which depend upon the direct exploitation of the geographic opportunities afforded by the home region. The nature of the soil and the relief of the land have their share in the shaping of the life that is evolved in their midst. Even in the case of the urban and industrial population a careful investigation will show that in the final analysis, the town will depend on some local advantage of site or situation, which will account for its development.

A cursory examination of the physical environment gives us three or four important factors, whose operation may be looked for in the geographic study of any human group; as for instance, relief, geology, climate and vegetation.

Relief.—The study of relief gives us an idea of the general lie of the land, the distribution of the mountains, valleys and plains, oceans, rivers and lakes, in fact of all the physical features, which exert some formative influence on the life of the region.

Consider first the great physical fact of the primary distribution of land and water on our globe. Over 70% of the earth's surface is covered by water leaving only a little more than one quarter of the globe dry. This vast sheet of water is one great nega-

tive region from the point of view of human settlement. If we consider, in addition, how nearly a quarter of even the dry land is over 3,000 feet in altitude and for the most part inaccessible, while there are vast deserts at much lower heights we see at once how strictly limited are the resources of the world. The world's present population is about two thousand millions; and according to Ravenstein's calculations the earth will attain the maximum population of some six thousand millions in two centuries, even with the proper treatment of the land and at the present rate of increase. Thus we have here a great and fundamental geographic control, expressed in general terms, whose incidence nevertheless is bound to be increasingly felt in the future.

Turning to the oceans and seas, we see that they had acted for a long time as barriers in the way of human intercourse, while they still continue to be effective geographical boundaries. At the same time, their value to human life may be appreciated when we consider how they function as the inexhaustible reservoirs from which we draw our water supply in the form of rain. Regions that do not come under the oceanic influence for their rain develop into deserts, such as the Sahara, which are so little conducive to life of any kind.

The mountain ranges of the world are another great physical feature. They are even today but sparsely populated barring a few hill stations and tourist centres; thus they are by themselves a negative region. They have also acted through the long historic times as barriers to human movement, in many cases confining peoples into isolated groups, the effects of which isolation persist even to-day as differences in national individuality, linguistic dialects, cultural development, social tradition, and sometimes religious belief, all of which differences make all too complex the already complex problems of the world.

The mountain ranges of the world have influenced human life in an indirect way also, by influencing the climate. For, they are as much of a barrier to the spread of climatic influences as to the spread of population. In Asia, for instance, the great system of mountain ranges stretching from Asia Minor far into North-Eastern Asia may be considered to be a great climatic wall between the great land mass to the north of them and the group of peninsulas to the south. It is well known that the Himalayas protect India from the inflow of cold winds in winter from the high-

pressure region of Central Asia, while they cut off the interior of Asia from the monsoonic influence in summer. The Alps in Europe similarly protect the Mediterranean Region from the cold Central European winds in winter and help to give that region their characteristic mild winters. The Rockies in North America afford even a more unique example of climatic barrier owing to their north-south trend. They shut off the interior of the continent from the oceanic influence conveyed by the westerly winds blowing from the Pacific, and restrict the development of the Mediterranean climate to a narrow strip on the Californian coast and the warm temperate oceanic climate to British Columbia. Thus the vast interior of the continent suffers from extremes of climate even at low latitudes.

Before we leave the great mountain regions we may also note that mountain life in general tends to make the people hardy, independent and self-reliant. At the same time, life conditions are rendered so difficult that this type of region has not been able to develop any high type of civilisation.

We may now pass to the plains, which afford a significant contrast to what has been said about the mountains. The great civilisation of the past, of China, India, Babylonia and Egypt were all river plain civilisations; and it is not mere accident that determined their localisation. For, it is obvious that for the development of the higher side of man facilities for the permanent settlement of fairly large groups of men and a certain amount of leisure afforded by easy and abundant production of food products are among the first conditions to be fulfilled; and such favourable factors obtain easily in the fertile river plains, where agriculture can be most profitably practised.

The plains, even today, hold their own, being still some of the most densely populated regions of the world. Though mineral wealth and industrial development are accounting for dense concentration of population elsewhere, the plains, whether in the Americas, Australasia or Russia or in their more limited distribution in other parts of the world, are still important as the great and sole sources of our food products and some very important raw materials, and they are bound to remain so in future, so far as one can see.

Geology.—There are two outstanding ways in which the subject of Geology makes its incidence on Geography felt, by the study of soils and by the study of mineral wealth, both of which throw considerable light upon the distribution of man and his occupations.

The influence of soil is most obvious in the great alluvial tracts such as those already mentioned. The point may be further illustrated by reference to cases of specially rich soils; the Black Cotton soil of the Deccan Plateau, the Black Earth of Russia and the rich volcanic soils of Java to utilise which rice cultivation is carried thousands of feet up the side of extinct volcanoes.

As for the minerals, their distribution, particularly of coal and iron, has assumed very great importance since the Industrial Revolution. We may consider England as typical of the industrial age. Her population has increased at such rapid rate that she is not agriculturally competent today to support her very population for two days in the week if left on her own resources.

Germany, which was predominantly agricultural until quite recently, is of late importing much food. Even a young country like the United States of America is apparently passing fast from agricultural to the industrial age.

From the point of view of the distribution of population the outstanding feature of the new age is the great drift of population from the rural to the urban areas, which are the seats of industry and commerce. Consequent on such a drift there has been impressive growth of cities. Side by side with the manufacturing towns or groups of towns, we have sea-ports like Marseilles or Hamburg, and the great regional centres of politics and high finance like London and Paris. An extreme case of very high concentration is furnished by Great Britain which is terribly urbanised, having nearly 40% of her population packed in seven monstrous conurbations. A similar development of industry with similar concentration of population may be seen in Germany in the Middle Rhine Valley and the Ruhr Basin.

Among other factors of localisation coal has been, so far, the most effective, for the location of modern industry is regulated by the position of motive power, which is by far furnished by the coal-fields at the present time.

Climate.—Climate is another important physical control, whose importance may be appreciated when we consider how it furnishes the basis for the delimitation of the worlds' Natural Regions. Temperature and rainfall are, of course, the most important elements of climate, over both of which man has no control. These two factors in conjunction with soil are primarily responsible for the varied vegetation of the world. The hot and moist equatorial forests, the Mediterranean Lands with their characteristic mild and moist winters and hot and dry summers, the monsoon Lands, where rains occur in the hottest part of the year, the temperate grass lands, which are the granaries of the world, as well as the hot and cold deserts of the world, all are first and last effects of climate with corresponding influence on human reaction.

I have indicated very briefly some of the important geographic controls, which direct and regulate human life. In the study of such controls we have to bear in mind two important points. Firstly, these influences never act in isolation, one or more or all may act in a region; secondly, the incidence of the different factors may vary from place to place and from time to time.

In all that has been said emphasis has been laid upon the physical environment of man. But to complete the picture and put things in their right perspective, we should remind ourselves of the great principle that human development is the product of interaction of two forces, the force of circumstances, which will include all the factors of physical environment, and the force of human intelligence, which will include within its scope the collective experience of the ages, which is the common heritage and the richest asset of any human group. These two forces constantly interact in the evolution of the life of our race; and the degree to which the latter has succeeded in utilising the possibilities of the former and in overcoming the limitations set by it furnishes a measure of the civilisation attained at any particular time by a people. A dispassionate study of the worlds' peoples along these lines helps to understand and appreciate the cultural differences, national peculiarities and economic inequalities, which, without such understanding, are bound to breed prejudices of a dangerous character. But where there is such understanding there develops an atmosphere of tolerance and co-operation; and herein lies Geography's great contribution to the solution of the world's problem to-day. Hence in all geographical studies adequate emphasis must be laid upon the correct estimate of the nature and scope of the geographic controls.

My Tramps in the Himalayas

By

GERTRUDE E. BENHAM.

There are many beautiful valleys in the Himalayas close to the Tibetan border, and as they are beyond the force of the monsoon, they are delightful places in which to spend the summer months. There may be occasional showers or storms and some cloudy days, but unless one wants clear weather to sketch the high peaks, clouds often add to the beauty of the mountains, and the showers freshen the grass and vegetation. When the sun shines, the days are warm, but the nights are often cold. The chief drawback is the wind, which in some valleys blows hard every day from about 11 a.m. till the evening. True, the journey is long and somewhat difficult, and unless one is willing to live on the produce of the country, one cannot procure other food. Some of the larger villages have a shop or a baniya, but often the shop is closed or the Baniya away. The villages are inhabited only during the summer, as, in the winter, they are buried in snow and the people go down to lower and warmer levels; so one month—May, June—of each year is spent in going up, and one month—Oct. Novr.—coming down. At these times the road is crowded with men, women and children, all carrying some of their household goods and hundreds of sheep, goats, donkeys, ponies, oxen, mules, etc., all laden with tents, food and other things. The summer is chiefly spent in agriculture and trading with Tibet and Nepal. The food they grow is chiefly papa and palti both of which make excellent roti, and jong and ooa—a kind of barley—the grain of which is roasted before it is ground and made into suttoo. I have lived on these foods for many months on my various journeys in the Himalayas and found them very good. There are, practically, no trees in the higher valleys. Pines grow up to about 11,000 feet and birch about 500 feet higher, though I saw quite large birch trees growing at Kuti, 12,400 feet, and also higher, on the way to Jolinka. Fuel is a difficulty but if the people planted young trees, when they cut others down, they could have a better supply. The flowers in many of the valleys are very beautiful and it is interesting to notice how the flora varies in different valleys and also how it changes. When I first went up to Kalchu, to sketch Nanda Devi,

the ground was carpeted with pink saxifrage and the rhododendron bushes still had a few pink blooms. I stayed for a week or so, but clouds would not let me have a clear view of the peaks and as I had arranged a trip to Lapthal and Chhaldu, over the Untadhura Khingru, Balch and Kyo Passes (all about 18,000 feet) I had to leave without a sketch. On my return to Mileno about three and a half weeks later, I thought I would make another attempt. So, I went up to Kalchu again. All traces of pink had disappeared and the ground was blue with gentians, and I succeeded in making the sketch I wanted. There are several varieties of gentian and edelweiss in the Himalayas, but I have not found the deep blue trumpet gentian and one misses many of the tiny Alpine flowers which one finds near the snow and ice in Switzerland and the Alpine rose in the Himalayas is pale yellow and not pink as in the Alps. The blue poppy (in some districts there is also a pale yellow variety) is one of the beauties of the Himalayas, but is seldom found below 12,000 feet.

My first journey to Milem was in 1924. I walked from Mussoorie by way of Josinath, the Kuari Pass and the Pindar Glacier, and by the time I reached Mansiari it was the middle of the rainy season. The road was very bad and sometimes I was not sure if it was a road or a water course. Several of the bridges were broken, so we had to make a long detour across a peak of over 15,000 feet to rejoin the road. The leeches were very troublesome and we were attacked by hornets, but fortunately they did not pursue us far. The coolies threw themselves on the ground and covered themselves with their blankets. We had to spend the night on a narrow shelf of rock on the face of a high cliff, where there was no room to put my small tent, so I put my bed on the shelf and the water from the rocks overhead dripped on me. As we got further up, nearer Milem, we got away from the rain and found everything much drier. The Milem glacier comes down to about a mile from the village, but for some distance it is so thickly covered with moraine that the ice can scarcely be seen, as is the case with so many of the Himalayan glaciers. There is a small lake—Sandilkund—close to the edge of the glacier, about 5 miles up, which is considered sacred, and pilgrims bathe in it, on their way to Kailas. I wanted to go to Malari by way of the Untadhura and Shalshal Passes, and accordingly made arrangements for jibus to carry my things. When we reached Topidunga, the far side of the Untadhura Pass, there was a heavy snowstorm, so we waited there a day. There were many shepherds camping

there, with their sheep, and the sheep would persist in crowding round my tent for shelter and warmth. They kept pressing against each other to get near the tent and knocked over my boxes and basin, etc., and I feared the tent would fall. I kept driving them away, but it was almost useless and the shepherds took no notice. Then the men with the jibus said the Shalshal Pass was too long, as they feared more snow, so they decided to go by the Gerthi Pass which was much shorter, but was really only a disused goat-track, and impassable for laden animals, after the first two stages. When we arrived at the place where the animals could go no further, the two men went on alone quickly to Malari to fetch coolies to carry my things, leaving me alone in my tent, with my cook and the jibus and they said they would return in 4 or 5 days. We were absolutely alone, as there was no human habitation nearer than Malari and my cook threatened to leave me unless I paid him Rs. 15 then and there. Of course I refused and said I would not pay him a pice till we got to Malari, so he packed up his things and walked off. I knew he would not go far, so I kept on with my needlework, and after 3 or 4 hours, when I was thinking of getting lunch ready, he slunk back and I had no more trouble with him up there. The men returned with the coolies, so I went on to Malari while the jibus and the men returned to Milem. I pitched the tent about half a mile from the village, where there was a level space, and stayed a week or two. It was the end of September and I thought the monsoon was finished and I was planning to start down, when, on getting up one morning, to my dismay, I found everything white with snow, which was nearly a foot deep and still falling, and my tent nearly collapsed through the weight. I sent my cook to the village to ask if I might have a room as one cannot live in a snow-bound tent, and it was impossible to cook anything. At first, the Lumbardar was very churlish, but afterwards said I could have a room, so I moved all my belongings to the village. The room was a sort of loft over a stable where sheep and goats were kept, most of one side was open, and there was a large opening in the roof to let out the smoke, which also let in the snow, and all the roof leaked more or less. So it was difficult to find a dry place to put my bed. It was most difficult to get food and fuel and the Lumbardar was most disobliging—a very unusual thing in the mountains—and if it had not been for the kindness of the villagers who brought me food, I should have had a bad time. The snowstorm lasted for nearly three days, and then I had to wait two or three days for the road to clear a little, before starting down. As we got lower,

we found the three days' heavy rain had done great damage. In some places the mountain side had slipped and the path completely carried away for some distance and we had to dig our hands and feet in the ground and progress as best we could, and to add to the difficulty, there were large boulders on the slopes above, which looked as if they might fall at any moment. When I got down to Tapoban, where I had stayed on my way up in the spring, it was hard to recognise the place. The effects of that rain were felt far away, and, at Cawnpore, the Ganges rose to such a height that fears were entertained for the safety of the bridge. There was no rains in the plains and people wondered to see the river rising higher and higher, without any apparent cause.

There is another beautiful valley, east of the Milem valley and running parallel with it separated by a range of snow mountains in which is the beautiful groups of peaks named Panchchula. This is the Darma valley and the chief village is Nagling. There are other villages higher up and the valley divides the highest village Shibu being in the western branch. East of the Darma and also parallel with it is the Kuti valley which I have already mentioned. It is interesting to notice the differences in houses, dress, ornaments, flora, agriculture, etc., etc., in these different valleys, although they are so near to each other. There may be also differences of speech but as I do not know any Pahari or Bhotian I could not tell. In Milem, the houses are mostly low, built of mud or stone with very small openings for doors and windows, if any. The women wear very little jewellery and dress chiefly in dark plain colours. Some of the houses in Nagling have an upper story and painted woodwork, and the women wear brighter colours, of the several strips of different coloured cotton stuff, stitched round the bottom of their skirts and much jewellery in the shape of necklaces, rings, brooches, etc. I bought one ring made of a round piece of amber about 2 inches in diameter, set in silver with a small turquoise in the centre and a silver band for the finger. When wearing it, it nearly covers the two adjoining fingers. They also wear long chains with rupees attached 2 or 3 inches apart and as some of these chains come down almost to the knees, they must be very heavy. In 2 or 3 of the Darma villages the women wore very curious earrings, the shape of a note of interrogation '?'. They were made of silver and about 6 or 7 inches long. I did not see them anywhere else. Kuti is a very picturesque village. Well-built houses of stone and many with an upper story and carved woodwork round the doors and windows. Many of the women

work embroidery on their dresses and all wear beads or silver necklaces and rings. As it is so near to Tibet there are many Tibetan things in use, cups, boots, hats, aprons etc, many of the people speak Tibetan as there is constant intercourse with Taklakot which is a large trading centre a few miles over the border.

Sugar Industry in India

By

MR. K. C. RAMAKRISHNAN, M.A.,

SUGAR POSITION IN INDIA

Sugar in various forms has been an important article of diet in India from ancient times while it was for long a rare medicament or costly luxury to the people of cooler climates. But the per capita consumption of sugar in industrial countries has in recent times increased tremendously, while in India, we believe particularly in South India, it is yet at a low level.¹ Our country is reputed to be not only the original home of sugarcane; but she has even now the largest area under cane in the world. She was until quite recently the largest sugar producer, but Cuba now has taken the lead and Java threatens to overtake us though with a fifth of our acreage. India is unique among the chief sugar producing countries of the world in that she has no exportable surplus and in fact imports a very large quantity, now nearly a million tons of white sugar, to supplement the home production of 300,000 tons of white sugar and 3 million tons of *gur* or brown sugar. This is partly due to the fact that we have a very much larger population to feed unlike most other cane growing countries; while our yield is much lower than in many other tropical lands. The most important problem is to make India self-sufficient in respect of sugar, which next to cotton goods is the largest single item of imports into this country costing us Rs. 15, crores annually. Protection to the industry has been recently assured by the levy of substantial duties on imports of foreign sugar which will not be reduced for 15 years, within which time the industry is expected to expand to meet the needs of the home market and dispense with the need for heavy protective duties. How far South India, the Madras Presidency in particular, can help in the solution of this problem is the subject proposed to be discussed in this paper. We, as students of Geography, may stress the 'natural advantages' that this part of the country possesses for sugar production, which is the first condition laid down by the

1. Report of the Imperial Sugarcane Research Conference, 1931, p. 17.

Indian Fiscal Commission for grant of protection. But we shall be deceiving ourselves if we ignore the economic handicaps to such development.

SUGARCANE, AN ESSENTIALLY TROPICAL PLANT

Sugarcane is essentially a plant of the tropics and thrives best in warm climates where the temperature is uniformly high, with an average of 75° F., the sunlight is strong and showers are frequent during the growing season with an average of 50 inches, unless supplemented by irrigation. It is susceptible to cold and frost on the one hand and drought on the other, either of which leads to smaller size, short joints, higher fibre content, reduced tonnage and lower sugar yield per acre. There are no doubt canes found on the edges of temperate zones and in subtropical regions such as Argentine, Louisiana and Natal but they are selected so as to mature in 7 or 8 months, and not allowed to grow till 12 months or more as the tropical canes are, lest they should suffer from frosts. Indeed, cropping power in all such cases is sacrificed to early maturity and the conditions of cropping are by no means ideal.²

ANOMALY OF SUGARCANE IN NORTH INDIA

The most striking feature of the distribution of sugarcane crop in India is the concentration of 75 per cent. of the area in the subtropical regions of the United Provinces, the Punjab and Bihar, all lying north of the Tropic of Cancer. Among themselves they account for a little more than 2 million acres while in the rest of India lie scattered the other ¾ million acres of sugarcane. The Indo-gangetic valley has no doubt advantages in the high humidity during monsoon months, in the general lie of the country with its vast level land, the distribution of the big rivers and its tributaries and the new irrigation channels, the fertile loamy soil and the presence of sub-soil moisture, all conducive to the growth of cane. But North India is subject to extremes of temperature; very low humidity and scorching heat before the monsoon compel close planting of thin canes resulting in low yields in unirrigated tracts, while growth is checked after November when severe cold sets in and lasts till February.³ Frosts are feared not only in North India

2. Finch and Baker: Geography of World's Agriculture, p. 71.

3. Howard: Crop Production in India.

but even in Western India, in the tract under the Godavari and Pravara Canals where they have occasionally damaged the canes and adversely affected the quantity and quality of *gur* made.⁴ No wonder the canes indigenous to North India have been thin, hard and fibrous varieties giving low tonnage of canes and poor juice, though resistant to cold and disease and to water-logging. 13 tons of cane and a trifle over 1 ton of *gur* per acre are all that indigenous canes could yield, though improved varieties—hybrids between the above and the tropical canes—have doubled the yield.

SUITABILITY OF SOUTH INDIAN CLIMATE FOR SUGARCANE

South India, including Mysore, lies entirely within the tropics and is from the point of view of climate much more favourably situated for the growth of sugarcane, on tracts irrigated by channels or wells, than any other part of India. According to the Indian Sugar Committee of 1920 "there can be no question that there is no part of India, except possibly the Deccan Canals tract of Bombay, in which cane can be grown with greater profit than in Madras". Thicker and finer tropical canes, mostly imported varieties, have been grown here and they have generally responded very well to the careful cultivation, regular irrigation and the heavy manuring, characteristic of the garden cultivation of the southern districts. As for the large labour force required for work on fields and in the factory and for transport and of requisite qualities, there is no lack of such human material in South India at rates of wages which would be considered too low in any other country that grows cane.⁵ While there is a dearth of such labour in Cuba, Hawaii and Natal, we have in fact a surplus of such labour, part of which has been responsible for the maintenance of sugar plantations in British Guiana, Fiji and Mauritius.

SCOPE FOR IMPROVEMENT

Research work on cane so far as this Province is concerned is yet in its infancy, the Coimbatore Research Station having been established for the evolution of

4. Patwardhan and Apte: Agriculture and Livestock in India, March 1931, p. 177.

5. Report of the Indian Sugar Committee, p. 151.

6. Report of the Imperial Sugarcane Research Conference, pp. 48, 49.

canes suited to the vast sub-tropical areas in North India. We have no doubt incidentally benefited to a slight extent. Some of the famous tropical varieties imported to serve as parents in cross-breeding work have been distributed in Southern India and found quite profitable, though they have given rise to some problems to be tackled. It was quite common to get an average of 25 tons of cane per acre, while the improved varieties have resulted in yields of well over 40 tons, some favoured tracts as in Dhara-puram taluk yielding even 60 tons. Mr. Hilson, lately Director of Agriculture, stated "we can grow as heavy crops of cane as any other province and heavier than most."⁷ Another important advantage from the point of view of big factory industry that our southern sugarcane districts possess is that cane can be planted and grown so as to be harvested in different parts of the year so as to prolong the period of milling well over 100 days which is the working season in North India.⁸

PAUCITY OF SUGARCANE IN SOUTH INDIA

Why is it, then, that in spite of the above climatic and other advantages that we possess, sugarcane is only a luxury crop in South India and occupies a paltry 100,000 acres cultivated in the Madras Presidency including an area of 11 million irrigated acres. Mysore has a slightly better proportion of sugarcane to her total cultivated area, 36,000 acres out of a total of 6 million acres. This insignificant part that sugarcane plays in the agricultural economy of South India is deplored by all authorities on the subject, though some of them consider it as almost inevitable or unalterable. Dr. C. A. Barber who achieved high distinction by his work on sugarcane in South India states in a recent note on Sugarcane Economics: "It is unfortunate that in Peninsular India, where tropical canes can be grown perfectly well, sugarcane is practically eliminated by rice and other crops which use up all the land and water available."⁹ The Indian Sugar Committee of 1920 did not regard the prospects of any considerable extension of sugarcane cultivation in South India as hopeful. The Indian Tariff Board reporting 10 years later had no more optimistic view.

7. Report of the Indian Tariff Board on Sugar Industry, Appendix III.

8. Noel Paton: Sugar in India.

9. Report of the Imperial Sugarcane Research Conference, p. 35.

WIDE DISTRIBUTION OF THE CROP

The difficulties that stand in the way of extension of Sugarcane cultivation in South India deserve a closer study. It is at first necessary to note that owing to the configuration of this province, cane is grown here under a greater variety of conditions of soil, temperature and rainfall than in any other country in the world perhaps, at any rate unlike in the more or less homogeneous Indo-Gangetic valley.¹⁰ We find cane in almost every district in the presidency but the chief producing districts with more than 5,000 acres each, are half a dozen; some are along the sea-coast, some are in the interior; some have plenty of rains, some are very dry; some have flow-irrigation, some have lift irrigation, some are well-drained, some are water-logged. Sugarcane is, by one authority, said to flourish like the cocoanut along the coast, with some 'salt in the air'; in fact the only great exception of a sugarcane tract lying far away from the sea seems to be that of Northern India. But whatever advantage sea coast may confer on canes, it seems to be more than outweighed by the havoc wrought by cyclonic weather particularly on the tall canes in the Godavari delta, the protection against which is the propping up of canes with bamboo stakes at a cost of about Rs. 100 per acre. Sugarcane is taking root in a region of heavy rainfall like South Kanara though soils in the West Coast are as a rule said to be poor in lime and therefore unfit for cane. It is indeed seen at its best in interior districts of scanty rainfall like Coimbatore, Bellary and Chittoor where lift irrigation and manuring are more careful than in the northern districts, where the soil is rich but it is prepared indifferently, setts are broadcast wastefully, and manuring is insufficient. South Arcot presents a unique position as regards cane cultivation, thanks to the very fertile delta, and the high water level which permits easy well-digging; and sugarcane cultivation has been stimulated by the efforts of the East Indian Distilleries and Sugar Factory at Nellikuppam.

SOME NATURAL DIFFICULTIES

This diversity in soil, climate and irrigation facilities and consequently in the conditions of cultivation makes it very difficult to evolve canes suitable to all areas. The breeding of canes suited to tracts so different from one another and the absence of any

10. Report of the Indian Sugar Committee, p. 145.

organisation to spread them are in striking contrast to the ease with which 'the wonder cane of Java', P. O. J. 2878, has been spread in a period of five years over 95 per cent. of the cane area in Java. Apart from the excellence of soils which are of recent volcanic origin, the quantity and distribution of rainfall in Java, owing to its situation near the Equator, are more satisfactory than in any other big cane-growing country; but it is wrong to think that every district in Java is equally favoured with rainfall. In some of the eastern districts where the rainfall is meagre with only 20 rainy days in the year, it is amply supplemented by the never-failing irrigation canals, which being inundation canals carry a lot of silt with them.¹¹ A good deal of attention is paid to drainage which presents no little difficulty as sugarcane generally follows paddy which is often on the ground when the land has to be prepared for cane growing; this is said to be got over by a deep trenching at one end of the field, while the paddy is being reaped at the other.¹² In our best irrigated tracts, particularly in deltaic tracts of Tanjore and part of Godavari, drainage is a great problem; while water-logging occurs, sugarcane is ruled out or it succumbs to disease. The only crop that the swamp fields tolerate is paddy. On the other hand, a few of our irrigated tracts get the benefit of irrigation throughout the year with little or no interruption, which is essential for the sugarcane crop as it requires watering for 12 months, though the quantity needed may not on the whole be greater than for rice. This is perhaps the reason why the bulk of the cane grown in the Madras Presidency is under 'minor works' of irrigation such as river channels and small tanks for which capital account is not kept or wells and other sources of supply; only 11,000 acres of cane, more than half of them in Godavari, are under 'major works' of irrigation.

PREFERENCE FOR RICE ON ECONOMIC GROUNDS

But even where the soil is suitable and irrigation or drainage presents little difficulty, there is said to be a marked preference for rice in this province and a prejudice against sugarcane which must be traced to certain economic difficulties. Rice, where water is available, is a certain crop, it is comparatively easier to grow, the routine is ingrained in the ryot in the irrigated tract and there is little desire to change to a risky crop like sugarcane. Rice is the

11. Coleman: Sugarcane Cultivation in Java, p. 5.

12. *Ibid.* u. 6.

most important food crop consumed in the neighbourhood in most cases, though it is an export crop in a few deltaic areas, and marketing until recently was not a serious problem, while the keeping quality of rice is incomparably superior to the sugarcane product. The cost of cultivation of sugarcane is several times higher and is beyond the reach of small cultivators. Manuring, in particular, is a costly item all over, while in the Godavari delta wrapping and propping of canes raise the cost to Rs. 400 per acre,¹³ and in the interior dry districts the cost of lifting water is equally heavy. Above all the disposal of produce, unless there is a factory demand, is a bug-bear to the ordinary ryot. He has to undertake the uncongenial work of crushing the cane and making of jaggery, except in some tracts where there is an independent agency offering to undertake the work for a definite remuneration. The marketing of the final product with all its fluctuations, due in part to prices of imported sugar, is the crowning difficulty that has deterred the ryot from choosing this crop in place of paddy. In fact the stimulus of higher prices did not in the past invariably lead to an appreciable increase in the area under sugarcane.

In the last two years of unparalleled depression, however, a great change has come over the mentality of agriculturists and in the attitude of the Government. With the tremendous fall in the price of rice, and the protection assured for white sugar industry which must to some extent react on jaggery there has been a hankering after some alternative to paddy.¹⁴ The problem is felt to be all the more urgent as the new irrigation schemes of Mettur in Madras and the Irwin Canal in Mysore are likely to add otherwise nearly three-quarters of a million acres to the area under the unwanted paddy. A more profitable crop than paddy is needed to make the best use of the water that will be charged higher rates than hitherto paid under the old systems. The Government of Mysore has already, as in other spheres, given a distinct lead in the facilities it is offering for the planting of sugarcane among the 120,000 acres that will be irrigated by the Irwin Canal and for the manufacture of jaggery and white sugar on factory scale.

ECONOMIC DIFFICULTIES IN THE WAY OF FACTORY SUGAR PRODUCTION

The Indian Sugar Committee stated that the difficulties in the way of extension of sugarcane area in the South were neither

13. Report of the Indian Tariff Board on Sugar Industry, p. 55.

14. *Ibid.* Appendix II, p. 116.

agricultural nor irrigational, but the problem was entirely economic. They saw little hope of the extension of white sugar manufacture in Madras; and the Indian Tariff Board seemed to be of the same view. A concentrated area of about 2,000 acres at a time (6,000 acres under command if cane is rotated with paddy and a leguminous crop as in Java) is essential for the running of an economic factory with an output of 4,000 tons of white sugar crushing about 50,000 tons of cane per season. The estimated initial capital for such a factory is Rs. 13½ lakhs.¹⁵ The systems of land-tenure and inheritance in this country which favour independent or semi-independent small holders with excessively fragmented holdings are said to be inimical to the control of a large area of production so essential for the fresh and regular supply of canes to the factory. Freshness is of the utmost importance in the case of the manufacture of crystal sugar; delay in the transport of cut canes leads to rapid deterioration of sucrose content in the juice. A 16 miles radius of canes round about the factory is the utmost that can be satisfactorily managed in India. The cost of canes—which amounts to two-thirds of the total cost of production of sugar—should not be as high as it is in the Godavari or Coimbatore district, which ranges from 7 to 12 as. per maund due to cost of propping or lift-irrigation and should be reduced to make it worth while for the factory to operate.¹⁶

DIFFICULTIES NOT FORMIDABLE

The difficulties stated above do not seem to us to be altogether formidable. The initial capital will not be difficult to find though under the lure of the new tariff it is in North India that most of the 25 recent companies have been floated. Systems of tenure and inheritance are not radically different in North India where a number of factories have been located, while in South Arcot we have the great example set by the East India Distilleries and Sugar Factory at Nellikuppam which began with leasing 40 acres and gradually got control of 2,000 acres, and helped the cultivators with the supply of setts for planting, of water by oil engine pumping from wells, and also advanced money and purchased the whole crop relieving the ryot of the bugbear of jaggery making and marketing.

15. *Ibid.* Appendix III, p. 116.

16. Report of the Indian Tariff Board on Sugar, p. 60.

17. Report of the Indian Sugar Committee, p. 152.

22 JOURNAL OF THE MADRAS GEOGRAPHICAL ASSN.

It may not be possible in an old settled country like India to get such complete control of cane cultivation by the factory as has been possible in Java or Formosa, but co-operation between the factory and the agriculturist to their mutual advantage is not impossible. It is beyond the scope of a paper for the Geographical Association to lay down the exact lines on which a 'symbiotic pact' as in Java can be formulated.¹⁸ The cost of cane too is bound to go down very appreciably in South India, with more and more research on canes suited to our climate.

IMPROVEMENTS IN JAGGERY MAKING

If the extension of white sugar manufacture is fraught with difficulties it is well to pay attention to improvements in the crushing of cane and the making of jaggery for which there is yet a considerable demand in spite of the growing taste for white sugar. There is, at present, a considerable loss in the extraction of juice, amounting to 10 per cent., by the iron roller mills driven by bullocks especially as the rollers are often eased off to lighten the work for the bullocks. Oil engine extraction with 6 to 10 H.P. not only gives a larger yield of jaggery and lessens the cost of making it, but a wider adoption of it would release the bullocks from this very hard task to their more proper work on fields. There is likewise loss in the crude boiling of the juice in thick open pans with incomplete combustion.¹⁹ Improved furnaces, for some years advocated by the Department of Agriculture, not merely save fuel but lead to the improvement of the quantity and quality of jaggery.

WHITE SUGAR MAKING ON SMALL SCALE

A new line of improvement, new to this part of the country, now advocated by the Department of Industries is the making of a kind of white sugar (called Khandsari sugar in North India) by centrifugal machines driven by power, of which a description is given in the Tariff Board Report and which has been demonstrated in Coimbatore by the Department. It is within the means of the well-to-do cultivators, and a number of small cultivators too may instal on a co-operative basis power-crushing and making of this white sugar by centrifugals. In fact, twice as much white sugar is made in this way in North India as by all factories put together

which manufacture only 100,000 tons. There is no doubt some loss in the recovery of sugar by the Khandsari process but it is more than made up for by the low overhead charges and the smallness of the initial capital required and the easiness of organisation.²⁰

This method is indeed strongly recommended by the Indian Tariff Board for parts of the country not yet developed enough for the establishment of central sugar factories. The problem of utilisation of the by-product, molasses, is no doubt serious, though it is sought to be used up to some extent in the manufacture of a second class *gur* by mixing it with fresh cane juice and boiling it. The manufacture of industrial, or power, alcohol in a country so little favoured with coal or oil as South India would be one solution.

But we shall conclude as we may be charged with having already strayed too far into extra-geographical fields. We hope, however, that this brief discussion serves to show that the problem of the influence of environment on economic activities is not all within the province of geographers, pure and simple, and that the co-operation of students of social sciences like economics and sociology is needed. As has been well observed, "Natural data are much more the material than the cause of human development. The 'essential cause' is less nature, with its resources and obstacles, than man himself and his own nature,"²¹ which includes his powers of organisation.

DISCUSSION

The address was followed by a brief discussion.

Mr. N. Subrahmanyam asked why the Tanjore delta should not grow sugarcane and whether other sources of sugar like palmyra were not of importance.

Mr. K. C. Ramakrishnan replied that in the Tanjore delta, drainage was a great difficulty; perhaps there was a prospect of sugarcane cultivation in the Pattukkottai taluk which is to be benefitted by the Mettur Scheme of irrigation. As for palmyra

18. Report of the Imperial Sugarcane Research Conference, p. 36.
19. Madras Agricultural Department Bulletin.

20. Report of the Indian Tariff Board on Sugar Industry, Chap. IV.
21. Foreword to L. Febvre's Geographical Introduction to History.

sugar, he said that Madras Presidency had almost a monopoly, while date-palm in Bengal was an important source of sugar there. There were some advantages in these tree crops, they grew on poor soils and needed less cost and toil to raise and to maintain, and the jaggery prepared from the juice was also available for the refineries attached to sugar mills in the off-season for sugarcane. But this cottage industry of tapping and jaggery-making was by no means in a prosperous condition and did not offer a living wage to workers, while the conversion of juice directly into sugar involved the mills in the organisation of the laborious work of tapping and transporting the juice often long distances to the factory as the palmyra trees were generally scattered and not found together in topes except in parts of one or two districts. Besides, the Indian Sugar Committee noted the disinclination of tree-climbers to give up their hereditary occupation to which a social stigma had been attached. It was needless to speak of the complication due to excise rules and administration which looked with suspicion on the tapping for sweet toddy, as abuse of this for getting fermented toddy was easy.

The Chairman, Mr. V. Ramakrishna, Director of Industries, congratulated the lecturer on the interesting address and proceeded to give an idea of what the Department of Industries was doing to encourage sugarcane cultivation and sugar manufacture on small scale but on improved lines. He believed that the introduction of thinner varieties of cane as in North India, but adapted to our climates, would reduce the cost of cultivation, particularly that of propping. He had great hopes of an expansion of the area under cane and of greater profits to cultivators, if some of the drought-resisting varieties experimented upon proved successful. A great desideratum was the training of young men in sugar technology in some suitable centre in S. India, preferably in S. Arcot, where the Annamalai University may well establish a Sugar Technological Institute as at Cawnpore.

The Sweet Harvest in a Southern Maharashtra Village

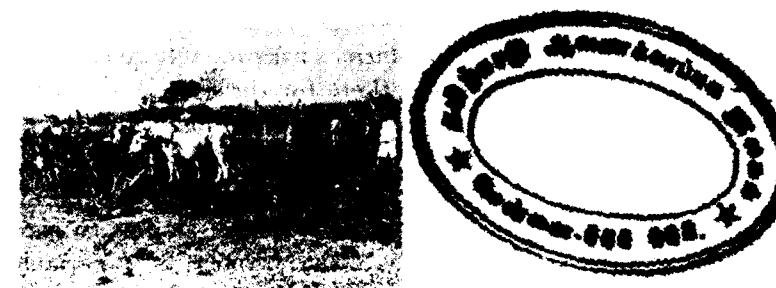
By

MR. S. S. GALATGEKAR.

The harvest season of every crop is a very busy time in an Indian village, but the busiest and the sprightliest part of the year is when the simple rural folk are employed in crushing sugarcane crop.

Take a round in the village on a spring morning, and you will find the village astrologer surrounded by a group of anxious farmers, whose cane-crop is now ripe and who are making enquiries about an auspicious day on which to begin the crushing operation. The astrologer consults his almanac, and after calculating the planetary positions, fixes upon a day as an auspicious one.

"Oh, no", says the farmer. He wants the astrologer to find out some other day, for he is unable to secure the cane-crushing machinery on that date. So the astrologer finds out another day, auspicious and convenient.



1. Some three months before harvesting the current year's cane, the plot for the following year is ploughed. The old wooden plough is replaced by the modern iron one. In the back-ground is the current year's cane crop.

India is a country where the system of small agricultural holdings prevails, and where the stock-in-trade of an average peasant is very small indeed. He has at his command only simple and cheap agricultural implements which are necessary for his daily work; the costly ones, he must hire or borrow. There are only two or three sets of the cane-crushing apparatus to the credit of each village in the cane-growing district. These sets satisfy the wants of all the village plantations; besides this, the cane farmer has to make arrangements for the set of workers required during the crushing operations. A small village cannot supply more than seven or eight batches of these workers at a time. Considering all these difficulties, it may be said that there can only be, at the most, seven or eight farms being worked at a time in a village. A small plantation requires the set of workers and other materials for three or four days, whereas some are large enough to require the same for about two weeks. After the work on one farm is finished, the set of workers and materials are transferred to another farm; hence the village is occupied with this business for nearly two months.



2. For the purpose of manuring the following year's cane plot, the farmer asks the village shepherd to rest his flock of sheep there for three or four nights. The dung of the cattle is also used for manuring the plot.

As the appointed auspicious day is approaching, the farmer is busy with the preliminary work. He has to get the fuel and the brick-furnace ready. The furnace is a permanent brick structure, which is a large round pit, with a side opening. (See illustration No. 6.). This is used also for storing manure during the year. The most important part of the whole affair is the manufacture of jaggery, a kind of crude sugar, locally known as gur. The juice must be turned into gur, for cane and juice have no

money value in the case of the village plantation. It is only in the neighbourhood of large towns or the few modern sugar factories that the cane planter can make money by selling his sweet juice.

After getting the fuel and the furnace ready, the farmer plants the crushing machine on the appointed auspicious day, and celebrates the opening ceremony by a feast to which friends and relatives are invited. The number of invitees is quite a large one and the function partakes of a religious as well as a social character. Generally the food consists of boiled rice and wheat pie, stuffed with gram meal and jaggery. It is not too pretentious a fare; it is arranged on the farm itself; the whole gathering squats on nature's carpet provided by Mother Earth. Everyone has a brass plate in which the food is served by the hostess and her volunteer helpers. The refreshing breeze of the spring evening, the clear, blue, moon-lit sky, the green crops standing all round, the rustic maidens singing gaily, the children romping about with pieces of pie in their hands, the spirit of *bon homie* that inspires the gathering, all these heighten the beauty of the occasion, and surely enviable is the lot of those that enjoy it! Look at the host in the centre; he does not partake of the feast. Now he leaves his seat and moves about among the guests, extending his hospitality to each individual member.



3 & 4. Canes are stripped and tied up in portable bundles and carried to the crushing mill. The clearing in the cane-plot is covered with heaps of cane-blades.

He looks at the standing cane-crop; his year's labour is to be realised in hard cash. On the sweet cane depends the way how he will fare materially during the coming year. The jowar corn he has stored for the year's food supply;

the fodder is stacked to feed the bullocks that have worked so hard to draw the water for the growing sugarcane; the vegetables have been sold to meet sundry wants; the chillies can only bring him a new bullock to fill the place of an invalid one; now sugarcane is the only item on which he can depend for his other needs. His needs are many indeed. He has to pay the land revenue to the Government; he has to pay the rent to the landlord; he has to discharge his liabilities to the Sowcar (the money-lender) from whom he has drawn some advance on the cane-crop; he has to pay interest on a loan incurred during a year of unusual drought. It is on the yield of that green crop, standing proudly, that he hopes to satisfy all these demands. Out of all the crops on his small farm of about 10 acres, the sugarcane is the very soul of his economic life. How can it disappoint him? He has reared it with paternal care. He will not taste even a single cane, for he thinks it unnatural for him to do so, as he himself has planted it. He has vowed not to taste any cane from his plantation. He entertains the people with a liberal heart and offers some food in the name of God. His heart is warm with feelings and he inwardly prays to God to reward him with a sufficient yield of jaggery.



5. *The Crushing Mill at work.*

An Iron vat is fixed in the ground in front of the person who is putting the cane between the rollers.

The Juice is collected in this vat which is covered with a bamboo strainer, when juice sufficient for one boiling kettle is extracted, the bullocks with their drivers are relieved and another set is employed.

After the festive dinner is over, the crushing operation begins. The small plantation is alive to its core. One person is posted near the crushing mill, where he is quietly putting the cane between the heavy iron rollers. In front of the rollers, an iron vat covered

with a strainer is fixed on the ground. In this vat the juice is collected. A wooden shaft is horizontally fixed on the top of the crusher, and to this two pairs of bullocks driven by two drivers are yoked. (See illustration No. 5.). Head loads of cane are brought from the crop-plot to the crushing place. About eight to ten people are busy in the cane-plot; they strip the canes, pluck them, tie them in portable bundles, and carry them to the crushing mill. After a long hot day the tropical moon showers her silvery rays over the surrounding landscape and the group of workers cannot but feel the exhilarating influence of the inspiring environment. Rural poetry and rustic mirth find a spontaneous expression among the cane-pickers and other workers. The bullock drivers relieve the monotony of their rounds by self-composed inspirational songs which warmly eulogise their faithful bullocks. The village wits gather round the warm furnace, and the tobacco pipe passes from mouth to mouth. Another group is chewing the pan leaf and pieces of betel-nut. They are indulging in folklore, love stories, cutting satire, and brilliant repartees, while the elderly group is philosophising on human life. While all the tongues are glibly occupied with stories, ballads, satire, and philosophy, cupid also finds an occasional devotee. An impatient youth riotously sings a love song imploring his imaginary sweetheart; but hark! another roguish youth shouts forth a counter-song suggesting that the heroine has already pledged her love to him.



6. *The boiling kettle on the furnace.*

This brick-structure is a deep round pit, with a side opening. The two men are throwing the fuel through the side opening into the furnace.

From the iron vat in front of the crushing mill, the juice is removed to the boiling kettle on the furnace, which is called in

India, the Karahi. The sturdy yeoman does not feel the heavy weight when he carries the juice-pot on his shoulders. When the juice begins to boil, the clarifying process is done by the gur-maker, who, with a ladle, removes the scum as it collects on the surface. In the boiling-shed the important person is the gur-maker. He is supposed to be an expert whose place cannot be filled by a raw recruit. He is the sole officer in charge of the kettle, and on him depend the colour and quality of the material that makes the mouths of the surrounding idlers water. He determines the proportion of Soda and similar other materials, to be mixed with the juice, to get an improved quality of gur. He watches the kettle with keen concentration, as the process approaches completion; for he is responsible for determining the time when the kettle is to be taken from the furnace. He must do it very carefully, for even a very short delay will spoil the quality of gur. When the hot liquid reaches sufficient thickness in the judgment of this expert, word is passed round to the farmer, who summons 5 or 6 workers to the boiling shed. The kettle has two iron rings on both the sides, through which a strong wooden pole is passed. Three or four persons stand in readiness at either end of the pole, awaiting the signal from the great gur authority. In the most unassuming manner, the authority shouts the word of command, and at once there is a deafening roar from one end of the pole, and an equally deafening response from the other end, to ensure simultaneity in lifting the weight. The kettle is taken



7. After the juice has attained the required thickness, the kettle is taken from the fire, and the hot thick liquid is poured into an iron pan, where it is allowed to cool down. This sweet material is called Gur.

from the fire and the hot liquid is poured into an iron pan close by, where it is allowed to cool down. (See illustration No. 7.). After the gur cools in the pan it is poured into small iron moulds. A

dozen or more of these moulds are kept ready in the boiling shed. A piece of cloth is placed in the mould so as to cover the whole of its interior surface, and then gur is poured into it. One kettle of juice yields gur sufficient to fill three or four such moulds. In the mould it hardens and gets the required shape. After a day or so, the mould is inverted, and when lifted up, leaves behind the lump of hard gur with its cloth cover. The cover is taken off, and you find the hard lump of gur, with a reddish golden hue. Now it has attained the required hardness, colour, and shape, and is a marketable commodity.



8. Pieces of cloth are placed into the iron moulds so as to cover the whole of their interior surface. After the Gur cools in the pan, it is poured into these moulds, where it hardens and gets the required shape. After a day or so, the moulds are inverted, and when lifted up, leave behind lumps of hard Gur with their cloth covers. The covers are taken off, and you find the hard lumps of Gur.

While the gur-making process goes on in the boiling shed, the crushing mill is kept working throughout the night. When the boiling kettle is filled with juice, the bullocks and their drivers are relieved by another set. Thus throughout the night, three kettle-fuls of juice are obtained by employing three different sets of bullocks.

In the morning the mill is not continued for a very long time, for the enervating sun overpowers the army of workers, in an hour or two. The cane-pickers stop work, the mill-driving bullocks are relieved, and it is only the gur-expert, who is working with the sweet boiling liquid. In a quarter of an hour, he expects to be free, after the thickened brown material is poured into the iron

pan. The workers go to the adjoining stream for a wash, after the work is stopped. Generally they do not go home for their meals, as the food is brought there by their family people. By 9 o'clock in the morning, the farm road is lined with a throng of people and cattle from the village. You will find the rustic boys with a short stick in one hand and bread wrapped up in a piece of cloth in the other, riding, nay, lying flat with their faces downwards, on the stolid buffaloes. Their brothers are working as cane-pickers in our farmer's plantation and waiting for the breakfast which is being carried by these dutiful urchins. A coy dame is marching in her silent reserve, driving a buffalo in front of her. She is carrying food for her husband who had been putting the canes into the mill throughout the previous night. An old mother is slowly trudging on her way to appease the hunger of her son, who was one of the last night's bullock-drivers. And how many more? Nearly every worker employed in gur business, attracts some one of his family and also his cattle. Is that all? No; the idlers, the poor, the decrepit, they are all making their way to the sugar-farm. But luckily for our farmer, this group of idlers and beggars learns on the way that gur-making is being carried on in other farms and is distributed amongst all these three plantations. When most of the workers go to rest, and the cane-crushing iron mill is stopped, the stillness of the oppressive April day is relieved by this army of guests who set in motion the human cane-crushing machine. Everyone picks up a piece of cane, and under the refreshing midday shade of a giant pippal or babul tree, begins to suck the cool delicious juice. In the shadow of the boiling shed, by the side of the cane-load near the crushing mill, in the clearing of the cane-plot, wherever you go, you will find that the tempting cane is being relished till the patience of the human gums is put to a severe test. The quadruped guests are also not less responsive to the urge of the surroundings. They are feasting on the heaps of the green cane blades scattered here and there; and they express their appreciation by a look of gratitude and contentment.

Now it is five o'clock in the evening; the enervating sun is going down; and the workers are awake after their noon-day slumber. They will now wash their faces, drink a bowl of juice, draw a puff of smoke, and begin their work. All human energy that was locked up during the hot midday is released in brisk vivacity. The crushing mill begins; the bullocks commence their rounds; the workers are collecting and stripping the canes; in short, the farm is again a bustling hive of men and cattle. As the sun goes

down and down, the gathering becomes more and more representative of the village. The village worthies are invited and respectfully treated with cane, juice, and samples of gur. The village officers, the sowcar, the village school master, the carpenter, the blacksmith, the cobbler, the barber— all lend variety to the gathering. In Indian villages such artisans as the carpenter, the smith, the cobbler, and others are not paid in cash for their services, but they receive their quota from the produce of every crop during the harvest season. When jowar corn is being reaped, they carry home sheaves of the stalk; when it is threshed they are given some corn; when chillies are picked, they are ready with a piece of cloth in which to carry home their share; when the gur season begins, they visit the farm every day. During the continuance of gur manufacture, every day they carry home some canes, cane-blades, and a small potful of juice; and when the farmer completes the gur manufacture he gives a lump of it to each one of them.

It is interesting to reflect that in the heart of the 20th century, there still exist the rural peasant communities, based on relations which remind one of mediaeval feudal society. The village community, with these institutions, carries the mind back through the kaleidoscopic vistas of time to a stage where definite history fades into the realm of romance, fable, and imagination. Through the centuries past, they have survived many foreign invasions and internal disorders; they have witnessed the rise and fall of well-organized and orderly empires; they have enjoyed many a bounty of nature and suffered the curse of famine and disease.

But all these upheavals have left the ancient village organization unshaken in many respects. Until the 19th century, the Indian village was a little commonwealth and a self-sufficient economic unit; but some of the institutions have now either died away or become obsolete in the face of modern civilization.

The village worthies and a few others take leave of the farmer early in the evening; but many remain long into the night. Some poor people depend on the juice and cane for their supper. The morning batch of guests, that had brought food for the workers, leaves the farm in the evening with canes and blades loaded on their buffaloes. The more ambitious among them carry home juice also to sweeten the tongue of some old infirm grandmother. Sometimes a weary traveller comes for a night's rest under an implied invitation from the weird, beckoning light of the boiling furnace. Thus, great is the multitude of visitors who share the hos-

pitality of the cane-farmer. All this waste goes on, from day to day, without a reproof, a frown or even a murmur. The gur season is a time when rural hospitality knows no restraint of arithmetical calculation.

This programme is continued till the whole of the cane-plot is cleared off. Every day nearly three or four kettles of juice are worked up into gur. Each kettle yields from three to four lumps, the weight of an average lump being about 50 lbs. The output of an acre of sugarcane ranges from about 5,000 to 1,000 lbs of gur. The lumps are placed in rows on a bed of dried bagasse in the boiling shed. The farmer has an important function to attend to when the manufacturing process nears its completion. When raw gur is being poured from the pan into the moulds, he must honour the few people who stand near by, with pieces of cloth or small earthen pots. The gur is poured into the earthen pots and cloth pieces, which are then hung up on a peg for an hour or so, during which time it hardens and assumes a round shape. This sweet gift is solicited with importunity by the poor, and presented courteously to the more respectable lookers on. The usual shape and size of the marketable lumps are not followed in the case of the last one or two kettles. The iron moulds are not filled to the brim; the farmer calculates his various liabilities, and casts smaller lumps, which range in size from one-fourth to one-half of an average one. The sweet, yellow-brown gur must be given to the carpenter who has repaired his plough and other farm implements during the year; another lump must be given to the cobbler who has many times patched his hide-skin-bag which is used for drawing water from the well, for the crops; a third lump, to the barber who shaved him and his children ungrudgingly for the whole year. There are many other community servants whose claims must be satisfied, and lumps of appropriate sizes are cast to meet all these requirements. Moreover special lumps must be cast to be distributed amongst the workmen, by way of remuneration for their services during the manufacture. The cane-pickers, the bullock-drivers, the gur-maker, the firemen, are all paid in gur. It is only the owner of the crushing mill who receives his rent in money, and it is interesting to note that the rest of the whole function takes place without a single coin being transferred from one hand to another.

Such indigenous methods are followed, with some modifications, practically all over the country, for ninety per cent. of

India's sugar is manufactured in the form of gur, by individual farmers of small plantations. Figures for the current year show that the total area under cane in India amounts to 2,982,000 acres, more than half of which is concentrated in the upper Ganges valley, a dry region with a high range of temperature. The climatic conditions of the upper Ganges valley are not favourable for the cultivation of the sugarcane, and the yield of cane per acre is therefore smaller than in other damper parts of India. But the rich soil, the Himalayan rivers, and the net-work of the irrigation canals are factors that counter-balance the unfavourable climate, so far as the cost of cultivation is concerned. The average yield of gur per acre in India is estimated to be 1.07 tons; and considering the total area under cane, it may be safely said that the country produces annually more than 3,000,000 tons of gur. Besides this vast quantity of gur, India consumes annually 900,000 tons of white sugar of which 800,000 tons are imported from foreign countries, the rest being manufactured in local factories. Though for the past few years, the Indian sugar manufacturer has been labouring under various difficulties, he has a bright future, pregnant with immense possibilities. The area under cane is increasing every year; the country's demand for white sugar is growing apace; the Legislature has provided protection for the sugar industry; the air is thick with schemes for new sugar manufacturing companies. Thus with these factors in her favour, India hopes to occupy an important place amongst the world's sugar producing countries.

News and Notes

This number opens the Eighth Volume of the Journal; and we are glad to find the increase in the number of our subscribers, both members and institutions. The journal has been considerably improved in quality as well as in size to such an extent that it has not been able to pay its way. We would therefore repeat our appeal to non-journal members to subscribe to our journal and to all teachers to arrange to get the journal for their respective institutions.

We still feel that non-journal members should be kept in touch with all the activities of the Association; and therefore the experiment will be continued of supplying them with quarterly bulletins containing News and Notes, Reviews, Books and Journals Received, etc.

Besides the papers read before the Association either at the headquarters or in one of the branches, an interesting contribution from the Southern Mahratta country on the "Sweet Harvest" in that region, illustrated with pictures, has been included in this number. It is expected that this synthetic and descriptive study will form a new feature of the journal. Similar contributions will be accepted, if they are up to the mark.

Attention is drawn to the Proceedings of the Annual Meeting published elsewhere. The Seventh Annual Report read and adopted at that meeting has been appended to this number. It records the steady progress of the Association during the year as in the previous years.

The penultimate para in the report on the threatened revision of the S. S. L. C. scheme sounds a real note of warning, which ought not to be neglected. It is pleasing to find that educationists and educational associations in the Presidency are up and doing to see to it that the quality of sound secondary education is not lowered in any measure by the deletion of the cultural subjects of the school curriculum such as *Science*, *History* and *Geography*. We would frankly confess that we are not against any reasonable revision of the existing syllabuses in the concerned subjects to lighten them considerably. What we plead for is the outlook and the training within the irreducible minimum of essentials on the fact side.

Change means time, and in the meanwhile the existing syllabus will continue to be in force. Hints and Comments thereon published serially in the back numbers of the Journal have been gathered together into a pamphlet (Price As. 4 excluding postage) a few copies of which are still available. From the large sale of it the pamphlet seems to meet a felt need.

But the real foundation for the proper teaching of Geography in the High School has to be laid in the Middle School. The Association has therefore been devoting due attention to the proper geographic training of the secondary grade teacher as in the Refresher Courses last year and this year. In the next number we are proposing to publish a graduated syllabus for the lower and middle schools prepared on modern lines.

We are glad to find that the University of Madras is continuing the Diploma Course in Geography for the year 1933-34 also. The classes will be conducted at the Wesley College, Royapettah, as a part-time evening course as in last year. It is hoped that the University will see its way to place it on a permanent basis.

While the annual Conferences afford scope for specialised district studies it has been felt for some time that the Association should launch upon fresh activity in the shape of an intensive study of a much smaller region, making a thorough geographic survey of it. The General Body at the last Annual Meeting has consequently appointed a special committee to conduct a Regional Survey of a part of Tiruvallur Taluq as an experimental measure and to serve as a model for similar work elsewhere. This would require the employment of a qualified student of Geography as a whole time worker to gather the data for about a year and to meet his expenses an amount of about Rs. 1,000 will be needed. It is proposed to raise the amount by way of donations and in-aid performances.

A donation of Rs. 2 on an average from each of our 400 members will very nearly find the amount. From those that can afford it, a larger amount is expected. The appeal now goes forth to the members, whose sympathetic response is requested. Remittances may be made to the Secretary, stating that the amount is for the "Tiruvallur Regional Survey Fund". Progress of work will be published from time to time in the journal.

Reviews

New Method Illustrated Geographies—Trichinopoly District by M. Krishnamurthy, B.A., L.T., R. C. Training School, Trichinopoly. Published by The Teachers Central Publishing Bureau, Ltd., Madras. Pages 100. Price As. 5.

This is a vernacular geography book for one of the classes of the lower school prepared on modern lines by a teacher who knows his job. Instead of the usual logical stuff that finds a full place *ad nauseam*, the mentality of the children is here taken note of and the descriptive method is followed, both in the treatment of world geography in the earlier part of the book and in the district study later. One special feature of the book is the number of simplified district maps in which pictorial representation is also combined. It is hoped that the publisher will co-operate with the author and bring out the pictures better.

Geography of India Through Maps by Phyllis Seymour Darling, M.R.S.T. (The Christian Literature Society for India) 1933. 25 pages. 14 outline maps.

This is a companion volume of practical work to Miss Birds-eye's *Our Country*. It has been prepared with the three-fold purpose of making the pupils appreciate the significance of geographical facts by working at given data; (2) giving the pupils training in map work as the basis for future geographical study; and (3) affording a sound knowledge of the geography of their motherland. The book can also be used where modern methods of individual work are practised. An important feature of the book is the detachability of the maps, which makes map correlation easy and convenient. The outcome of the use of the book will be to supply the pupils with text-books, containing records of their own work. We would strongly recommend the adaptation of it into the South Indian Vernaculars, if it is to come into general use.

A Geography Note Book—Africa by S. J. B. Whybrow, B.Sc. (Econ. Lond.). Published by J. M. Dent and Sons, Ltd., London. Price 1s. 3d.

This book is one of a series of continental geographies prepared for use in the Middle Schools and upper standards of Elementary Schools. This is also a work whose aim and method are quite modern, the text being learnt side by side with the preparation of outline maps, which bring out separately the various features studied. In fact the author claims as a special merit of the use of the series the formation of the sketch-map habit which is so necessary and handy in the further study of Geography. Though illustrations are expected to be used from the teachers' own collection of pictures, there is a large array of sketch-maps and diagrams to the extent of half the book; while questions, exercises and statistical data give scope for independent work on the part of the pupils. We again wish that the volumes are available in the mother-tongue.

World Atlas of Maps and Pictures (W. and A. K. Johnston, Limited). Price 1s. 9d.

An excellent cheap atlas by the well-known map-publishers, it combines in itself typical world pictures from the Major Natural Regions with letter-press descriptive of the main characteristics of each of these regions. It is in fact a double volume in one. The 32 maps, mostly physical, are simple, clear and free from overcrowding of names, though for use in Indian schools it is desirable that a few sectional maps of India are substituted in place of the separate maps of England, Scotland and Ireland. A useful index and an attractive cover, containing pictorial types of costumes in the several natural regions enhance the value of the volume.

Suggestions for the Teaching of Geography in India by E. A. Macnee, M.A., F.R.G.S., I.E.S.

This brochure is a valuable companion to the middle school teacher of Geography who cannot ordinarily have an opportunity of making a special study of the pedagogy of the subject. In 10 chapters he is helped to understand the scope and appreciate the value of Geography. He is also given an insight into the essentials of the teaching of the subject with due emphasis on (1) the creation of the right geographic outlook and (2) the carrying out of the modern methods of practical work. The language is clear and simple, the book is written from the Indian teacher's point of view and the get-up is neat. A select upto-date bibliography is appended to the volume.

Simple Map Projections by Kazi Said Uddin Ahmed, M.A., LL.B., Lecturer in Geography, Muslim University, Aligarh. Published by the Educational Book House, Civil Lines, Aligarh, U. P. Pages 64.

This neat little volume on Projections forms an easy introduction to the subject. The treatment is simple and clear, and even students with only an elementary knowledge of Mathematics can easily follow it. In dealing with each of the projections, the author points out at the outset the distinctive features of the projections, then explains the mode of construction and finally indicates its properties. Appendices I and II are the most useful for the ordinary High School teacher of Geography; for, the former refers to some common projections used in Atlases and the latter deals with the identification of projections. The book is profusely illustrated with tables and diagrams, wherever necessary, and well deserves to find a place in every High School and College Library.

Books and Journals Received

- Animal Life* by Mr. V. R. Doraisami Sastri.
A History of the British Empire by Mr. P. V. Doraisami Iyer.
Middle School Geographies by Mr. M. K. Sundaravaradachari, Books I to III.
Simple Map Projections by Mr. K. S. U. Ahmed.
World Atlas of Maps and Pictures (W. and A. K. Johnston, Ltd.).
Africa (A Geography Note Book) by S. J. B. Whybrow (J. M. Dent and Sons).
New Method Illustrated Geography—Trichinopoly by Mr. M. Krishnamurthi Iyer.
L'Extreme Orient by Mr. Ivar Hallberg.
Suggestions for the Teaching of Geography in India by Mr. E. A. Macnee (Oxford University Press).
Geography of India Through Maps by P. S. Darling. C. L. S.
The Educational Review—Feb., March and April 1933.
The Journal of the Travancore Teachers' Association—Dec. 1932.
The Indian Commerce—Jan. 1933.
Kalaimagal—Feb., March and April 1933.
The Geographical Journal—Feb., March and April 1933.
The South Indian Teacher—Feb. and March 1933.
Quarterly Journal of Mythic Society—Jan. 1933.
Tirumalai Sri Venkateswara—Feb. and April 1933.
Mahilamitran (Malayalam)—March 1933.
Journal of Indian History—Dec. 1932.
The Indian Educator—Jan., Feb. and March 1933.
Geography—March 1933.
Wealth and Welfare—April 1933.
Journal of the Andhra Historical Research Society—Jan. 1933.
Our Home Magazine—April 1933.
Indian Journal of Economics—Vol. 13, Part II.
Bulletins of the Madras Government Museum.
Buddhist Sculptures from a Stupa near Goli Village by Mr. T. N. Ramachandran.
Catalogue of the South Indian Hindu Metal Images by Messrs. F. H. Gravely and T. N. Ramachandran.
Adichanallur Skulls by Messrs. Zuckermann and Eliot Smith.
The Sri Vaishnava Brahmins by Dewan Bahadur K. Rangachari.
Catalogue of the Musical Instruments in the Government Museum by Mr. P. Sambamurthy.

Proceedings of the Seventh Annual Meeting of the Madras Geographical Association

The Seventh Annual Meeting of the Association was held at 4-30 p.m. on Saturday the 27th April 1933, at the Presidency College, Madras, with Prof. M. S. Sabhesan, M.A., of the Christian College, in the chair.

I. The Report for the year 1932-33 was read and adopted. (Vide Appendix).

II. The following persons were elected officers and members of the Working Council for the year 1933-34:—

President

Miss E. D. Birdseye, B.Sc.

Vice-Presidents

1. Mr. S. Lakshmana Iyer, B.A., L.T.
2. Mr. M. S. Sabhesan, M.A.
3. Miss J. M. Gerrard, M.A.

Secretary

Mr. N. Subrahmanyam, M.A., L.T., F.R.G.S.

Treasurer

Mr. G. Narayanaswami Iyer, M.A., L.T.

Other Members

1. Mr. George Kuriyan, B.A., B.L., B.Sc.
2. Miss H. T. Scudder, M.A.
3. Mr. B. M. Thirunarayanan, B.A. (Hons.).
4. Mr. P. Venkat Rao, M.A., L.T. (Mofussil Member).

III. Resolved that the Association do place on record their high appreciation of the services rendered to it by (1) M.R.Ry. Rao Saheb T. S. Subrahmania Iyer Avl., as President for three years; (2) by Mr. K. Rangaswami Iyengar as Vice-President; (3) by Mr. C. M. Gopal, as Treasurer; and (4) by Messrs. B. V. Narasinga Rao, R. Dann and Syed Ameeruddin as members of the Working Council.

IV. Resolved that a Committee consisting of the following members with power to co-opt be appointed to conduct a Regional

Survey of a part of Tiruvallur Taluq as suggested in Lt.-Col. Webb's letter, and submit a report, if any:—

1. Miss E. D. Birdseye,
2. „ J. M. Gerrard,
3. „ H. T. Scudder,
4. „ M. W. Barrie,
5. Mr. George Kuriyan,
6. „ B. M. Thirunarayanan,
7. „ T. N. Muthusami, and
8. „ N. Subrahmanyam (convener).

V. Resolved that any vacancies, arising in the Committee, be filled by the Working Council.

VI. Resolved that the Working Council be authorised to spend a sum not exceeding Rs. 10 from the funds of the Association towards the preliminary work in connection with the Geographical Survey.

VII. Resolved that Mr. N. Subrahmanyam be the convener and that he be authorised to collect money on behalf of the Association for this purpose and that he be requested to render account to the Association.

The meeting closed with a vote of thanks to the chair.

The Educational Cinemas, Ltd., then gave a show of the following geographical films:—The Epic of Mount Everest, Cotton Growing, The Panama Canal and the London Zoo.

**JOURNAL OF
THE MADRAS GEOGRAPHICAL ASSOCIATION**

The next number of the Journal (Volume VIII No. 2) will contain the Proceedings of the Fourth Geographical Conference held at Trichinopoly in May last with all the papers read at the Conference.

Back numbers, containing the papers read at the three previous Conferences at Coimbatore, Palghat and Madura, are available at half rates, i.e., at 1 Re. each.

Other back numbers will be given to members at specially reduced rates.

S. S. L. C. Syllabus in Geography with Hints and Comments

BY N. SUBRAHMANYAM, M.A., L.T., F.R.G.S.

(Reprinted from back numbers of the Journal.)

Price 4 annas.

Postage extra.

Pictures of South Indian Birds

(From a back number of the Journal.)

Price 3 annas.

Postage extra.

TIRUVALLUR REGIONAL SURVEY FUND

Members and others interested in the Regional Survey of Tiruvallur as a fresh activity of the Association are requested to subscribe their mite for the purpose. Remittances may be made to The Secretary, The Madras Geographical Association, Gopalapuram, Cathedral Post, Madras.

Members are reminded that the subscription for membership and Journal for the current year (1933-34) has fallen due from 1st April 1933. They are requested to remit it at an early date. Unless the Secretary is informed not to do so, the next number will be sent by V. P. Post to those members whose subscription remains due.

**THE SEVENTH ANNUAL REPORT OF
THE MADRAS GEOGRAPHICAL
ASSOCIATION, 1932-33.**

THE WORKING COUNCIL FOR 1932-33.

PRESIDENT.

Mr. Rao Saheb T. S. Subrahmania Ayyar, M.A., L.T.,

VICE-PRESIDENTS.

Mr. S. Lakshmana Ayyar, B.A., L.T.,
Mr. K. Rangaswami Ayyangar, B.A., L.T.,
Mr. M. S. Sabhesan, M.A.

SECRETARY.

Mr. N. Subrahmanyam, M.A., L.T., F.R.G.S.

TREASURER.

Mr. C. M. Gopal, B.A., L.T.

OTHER MEMBERS.

Mr. George Kuriyan, B.A., B.L. B.Sc.
Mr. B. V. Narasinga Rao, B.A., L.T.,
Mr. R. Dann.
Mr. Syed Ameeruddin Saheb, B.A., L.T. (Mofussil Member).

THE SEVENTH ANNUAL REPORT OF THE MADRAS
GEOGRAPHICAL ASSOCIATION, 1932-33.

The Working Council of the Madras Geographical Association has the honour to present the following Report for the year 1932-33:—

The strength of the Association at the commencement of the year was 367. During the year 8 members resigned, and 83 were removed from the list for non-payment of arrears of subscription. 67 new members were admitted in the same period. The strength on 31-3-1933 therefore stands at 343, including 5 life members.

The Journal had 204 subscribers during the year as against 190 in the preceding year. Of these 69 are official subscribers as against 73 in the previous year and 135 are member subscribers as against 117 in the previous year. It is hoped that the present non-journal members will gradually go in for the Journal until there is only one class of members—all getting the Journal. It will then be possible to further increase the size and improve the quality of it as well as increase the number of issues during the year.

Financial Position.—The Financial Position can be seen from Appendix A which shows that the total subscriptions for the year amounted to Rs. 1851-7-9 as against Rs. 1,970 for the previous year. The Association Fund stood at Rs. 1,464-0-5 at the beginning of the year of which Rs. 300 has been credited to Capital Fund and the balance at the end of the year is reduced by Rs. 199-6-9, being the deficit incurred during the year as shown by the Income and Expenditure account. This is due to the slight fall in the total subscriptions by about Rs. 80 and the increase in the expenses for printing and publishing the Journal as well as rent for the office of the Association which is also used as a Reading Room and Library by the members.

The increase in the size and the improvement in the quality of the Journal has necessitated the additional expenditure of about Rs. 400. This amount along with the rent of Rs. 135 and the slight

decline in the subscriptions to the extent of Rs. 80 account for the small deficit. If all this expenditure had not been incurred there would have been a similar surplus as in the case of last year.

The total of the Capital and Association Funds at the end of the year stands at Rs. 1,264-9-8.

The main object of any institution like this Association being the propagation and diffusion of knowledge of the particular kind which it stands for, it is hoped that the members will take more interest in its progress by prompt payment of their subscriptions, by enlistment of fresh members and by showing greater activity in all the growing and varied work of the Association.

The Working Council met 4 times during the year. A list of the ordinary meetings of the Association is given in Appendix B.

The Third Geographical Conference was held at Madura on the 11th May 1932 and the following three days under the Presidency of Dr. A. L. Narayana, M.A., D.Sc., when 18 original papers on various aspects of the Geography of Madura and Ramnad Districts were read and discussed. These papers together with the Presidential Address have been published in Vol. VII. No. 3 (October 1932) of the Journal.

The Fourth Geographical Conference will be held at Trichinopoly in May next, as usual with the S. I. T. U. Conference, when the District of Trichinopoly will be studied in the same way as Coimbatore, Malabar, Madura and Ramnad were studied, in previous years. It is intended to arrange at the time a major excursion to Pachai Malai Hills and a few minor excursions to places of interest in the neighbourhood of Trichinopoly.

During the year under report the Vizagapatam Branch of the Association continued to show a good record of work (Vide Appendix D), while some of the Local Branches such as those at Villupuram, Chittoor and Erode practically ceased to exist. It is hoped that the other Branches will show a better activity in the coming year.

The Fourth Summer School of Geography was held in April 1932 at the Teachers' College, Saidapet and a Refresher Course

4 THE MADRAS GEOGRAPHICAL ASSOCIATION

was held at Madura for the benefit of Middle School Teachers prior to the Geographical Conference.

Another Refresher Course in Geography has been arranged to be held this year at Trichinopoly for a fortnight from 1st May 1933 in two sections, one for High School teachers and the other for Middle School Teachers.

The first Diploma Course in Geography was conducted by the University of Madras and the first batch of specialists qualified in the subject are now available for handling the subject in schools and Colleges.

The Second Examination in Geography after its inclusion in the remodelled S. S. L. C. scheme was held in March 1933. It is pleasing to note that the question paper this year was of a better type than usual with a larger number of short questions requiring simple and straightforward answers. It is hoped that this type of questioning will become more common in future.

Meantime, however, before there has been any time for watching the results of the recently reorganised S. S. L. C. Course, a very revolutionary step appears to have been taken by the S. S. L. C. Board in squeezing out the substantial subjects of secondary education such as History, Geography and Elementary Science from between a glorified elementary education consisting of the three R's and an incipient and immature University System in the shape of two C's (C. group subjects) with its too early specialisation in the High School classes. It is hoped that the new scheme will not be rushed through before the considered opinion of Practical Educationists is obtained.

In conclusion, the Working Council is pleased to find that Geography is gaining ground in the University though in the High School dark days seem to be in store for it, as its inclusion in the course as a mere C group subject will not give that general training and outlook which every citizen ought to possess.

Gopalapuram, Cathedral Post.
Madras, 6th April 1933.

(By Order)
N. SUBRAHMANYAM,
Secretary.

THE MADRAS GEOGRAPHICAL ASSOCIATION, MADRAS.

Income and Expenditure Account for the Year Ending 31st March 1933.

Expenditure.	Rs. a. p.	Income.	Rs. a. p.
To Journal Expenses ..	1,344 3 0	By Subscriptions received and outstanding:—	
.. Expenses of Branches ..	37 12 0	Life Membership ..	94 0 0
.. Madura Refresher Course ..	176 12 0	Ordinary Membership ..	688 0 0
.. Stationery ..	21 0 0	The Journal ..	1,069 7 9
.. Clerical Services ..	50 0 0	.. Sale of copies of Journal ..	37 0 0
.. Postage ..	260 3 3	.. Madura Refresher Course	
.. Conveyance & Cooly ..	12 9 0	Fees ..	100 0 0
.. Audit Expenses ..	16 0 0	.. Postal Charges recovered ..	18 0 0
.. Meeting Expenses, Tele- phone & Sundries ..	4 13 0	.. Advertisements ..	40 0 0
.. Rent ..	135 0 0	.. Bank Interest ..	39 5 9
.. Balance c/d. ..	27 9 3		
Total ..	2,085 13 6	Total ..	2,085 13 6
To Irrecoverable subscriptions written off:—		By Balance c/d. ..	27 9 3
Ordinary Membership ..	168 0 0	.. Deficit (to Balance Sheet). ..	199 6 9
The Journal ..	59 0 0		
Total ..	227 0 0	Total ..	227 0 0
N. SUBRAHMANYAM, Secretary.		C. M. GOPAL, Treasurer.	
		G. L. NARASIMHAM, Auditor.	

THE MADRAS GEOGRAPHICAL ASSOCIATION, MADRAS.

Statement of Receipts and Disbursements for the Year Ending 31st Mar. 33.

Receipts.	Rs. a. p.	Disbursements.	Rs. a. p.
Opening Balances:		Journal Expenses ..	1,294 3 0
Cash on hand ..	56 0 0	Expenses of Branches ..	37 12 0
Indian Bank, S. B. A/c ..	909 0 10	Madura Refresher Course ..	176 12 0
Imprest A/c ..	0 12 1	Books, Maps and Equipment ..	99 9 6
Bank Interest ..	39 5 9	Stationery ..	21 0 0
Suspension:		Clerical Services ..	50 0 0
Life Membership ..	159 0 0	Postage ..	260 3 3
Ordinary Membership ..	499 0 0	Conveyance & Cooly ..	12 9 0
The Journal ..	691 7 9	Audit expenses ..	16 0 0
Sale of copies of Journal ..	37 0 0	Furniture ..	99 13 0
Madura Refresher Course Fee ..	100 0 0	Meeting expenses, Telephone and Sundries ..	4 13 0
Postal Charges recovered ..	18 0 0	Rent ..	120 0 0
Advertisements ..	40 0 0	Summer School, ..	25 0 0
Total ..	2,549 10 5	Closing Balances:	
		Cash on hand ..	2 0 0
		Indian Bank Ltd., S. B. A/c. ..	321 14 4
		Imprest A/c. ..	8 1 4
		Total ..	2,549 10 5
N. SUBRAHMANYAM, Secretary.		C. M. GOPAL, Treasurer.	
		G. L. NARASIMHAM, Auditor.	

THE MADRAS GEOGRAPHICAL ASSOCIATION, MADRAS.

BALANCE SHEET AS ON 31ST MARCH 1933.

Liabilities.	Rs. a. p.	Assets.	Rs. a. p.
Advance Subscriptions ..	40 0 0	Furniture (at cost) ..	120 13 0
Liabilities for Rent and Journal expenses ..	65 0 0	Books, Maps & Equipment ..	99 9 6
Summer School :		Subscriptions Due:	
Balance as per last—		Life Membership ..	100 0 0
Balance Sheet 26 12 6		Ordinary Membership:—	
Less adjusted 25 0 0 ..	1 12 6	for 1931-32. Rs. 14	
Capital Fund ..	300 0 0	1932-33 .. 248 ..	262 0 0
Association Fund:		The Journal:—	
Balance as per last		for 1930-31 Rs. 14	
Balance Sheet 1,464 0 5		1931-32 .. 28	
Less to Capital		1932-33. .. 415 ..	457 0 0
Fund 300 0 0		Cash & other Balances:	
Deficit as per I. & E. account 199 6 9	499 6 9 ..	Cash on hand ..	2 0 0
	964 9 8	Balance on current a/c with Indian Bank S. B. A/c ..	321 14 4
		Balance of Imprest A/c. ..	8 1 4
Total ..	1,371 6 2	Total ..	1,371 6 2

N. SUBRAHMANYAM,
Secretary.

C. M. GOPAL,
Treasurer.

G. L. NARASIMHAM,
President.

AUDIT REPORT.

Verified the above Balance Sheet with the accounts of the Madras Geographical Association, Madras. In my opinion, the statement is properly drawn up and shows a true and correct view of the state of affairs of the Association according to the books maintained and the information and explanations furnished to me.

Madras,
3rd April 1933.

G. L. NARASIMHAM, R.A.,
Registered Accountant & Auditor.

THE SEVENTH ANNUAL REPORT

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Appendix B.

LIST OF MEETINGS HELD IN 1932-33.

Date.	Subject.	Lecturer,	Chairman.
23-4-32.	Geographical Evolution of India.	Mr. T. N. Muthusami, M. A.	Mr. T. R. Venkatramasastri, B.A., B.L.
30-7-32.	Mahenjo-Daro and the Indus Valley Civilization.	Mr. K. N. Dikshit, M.A.	Prof. K. A. Nilakantasastrri, M.A.
5-11-32.	Geography of the Sugar Industry in South India.	Mr. K. C. Ramakrishnan, M.A.	Mr. V. Ramakrishnan, I.C.S.
28-1-32.	History of South Madras: Adyar and Teynampet.	Prof. V. Rangachary, M.A.	Dr. H. Gravely, D.Sc.
1-2-32.	My Tramps in the Himalayas.	Miss G. E. Benham.	Mr. N. Subramanyam, M.A., L.T.
4-3-33.	History of South Madras: Mylapore and San Thome.	Prof. V. Rangachary, M. A.	Mr. T. R. Venkatramasastri, B.A., B.L.

Appendix C.

PAPERS READ AT THE THIRD GEOGRAPHICAL CONFERENCE AT MADURA, MAY 1932

1. Presidential Address—Meteorology of Madura: By Dr. A. L. Narayana, M.A., D.Sc.
2. The Physical Geography of the Madura District: By Mr. T. N. Muthusami, M.A., L.T.
3. The Sub-Regions of the Madura District: By Mr. G. Narayanasami, M.A., L.T.
4. The Forests of the Madura District: By Mr. W. C. Hart.
5. The Hill Produce of Madura: By Mr. K. C. Ramakrishnan, M.A.

8 THE MADRAS GEOGRAPHICAL ASSOCIATION

6. *The Fauna of Madura and Ramnad Districts*: By Mr. C. P. Gnanamuthu, M.A., F.Z.S.

7. *A note on the Fishing Industry of the Ramnad District*: By Dr. D. W. Devanesan, M.A., Ph.D., D.I.C.

8. *Cotton Growing in Madura-Ramnad*: By Mr. S. V. Duraiswami Ayyar, B.A., B.Sc. (Ag.).

9. *A Brief Survey of Economic Geography*: By Prof. A. J. Saunders, M.A., Ph.D.

10. *The Economic Conditions and Possibilities of Pandya Nad*: By Mr. C. A. Krishnamurthi Rao, M.A., F.R. Econ. S.

11. *Fairs and Trade Centres of Madura and Ramnad*: By Mr. V. Krishnan, M.A. (Hons.), Dip. Econ.

12. *A Note on the Communication Lines of Madura and Ramnad Districts*: By Mr. N. Subrahmanyam, M.A., L.T., F.R.G.S.

13. *Urban Geography of Madura*: By Mr. R. Dann.

14. *Place-Names in Pandinad*: By Mr. S. Somasundara Bharathi, B.A., B.L.

15. *Human Geography of the Ramnad District*: By Mr. J. S. Ponniah, M.A.

16. *The Kumbam Valley*: By Mr. P. S. Ramaswami Ayyangar, B.A., L.T.

17. *Limits of the Pandyan Kingdom*: By Mr. Rao Sahib C. M. Ramachandra Chettiar, B.A., B.L.

18. *Why Tamil Became so well Developed at Madura*: By Mr. Rao Sahib C. M. Ramachandra Chettiar, B.A., B.L.

19. *Agricultural Geography of Madura*: By Mr. A. S. Rajamanikkam, M.A.

APPENDIX D.

LIST OF MEETINGS OF THE VIZAGAPATAM BRANCH.

	SUBJECT.	LECTURER.	PRESIDENT.
23— 7—32	Inaugural Address : Geography of the Universe.	Dr. I. Ramakrishna Rao.	Prof. M. Venkat-rangayya.
24— 9—32	Geographic Controls.	Mr. T. Rama Rao.	Mr. V. Ramabrahmam.
4—11—32	The Geographical Interpretation of History.	Mr. G. Venkat Rao.	
3—12—32	Some Aspects of the Urban Geography of S. India.	Mr. N. Subrahmanyam.	Mr. M. Kamayya.
4—12—32	Economic Resources of Andhra Desa.	Mr. V. V. Sarma.	
15—12—32	Vizagapatam Harbour.	Mr. W. C. Ash.	Sir J. C. Coyagee.
2— 3—33	Modern Tests and Examinations in Geography.	Mr. N. Subrahmanyam.	Mr. V. Ramabrahmam.

APPENDIX E.

LIST OF MEMBERS OF THE ASSOCIATION.

- 426 Mr. T. Abdur Rahman, M.A.,
Car Street,
KADIRI.
- 57 Mr. N. Achyutharaman, B.A., L.T.,
Assistant, Mahajana High School,
ERODE.
- 173 Mr. R. Agoram,
Assistant, Board High School,
NANNILAM.
- 56 Mr. N. K. Adyantaya, B.A. (Hons.), B.Sc.,
University Lecturer in Statistics,
3/27, Irusappagramani Street,
Triplicane, MADRAS.
- 158 Miss T. Ammuni Ammal,
Teacher, Lady Sankar Nair Girls' High School,
OTTAPALAM.
- 93 Mr. V. Annaiyya, B.A.,
Assistant, S. M. D. H. S. School,
TIRUPATI.
- 36 Mr. M. Ananta Bhat, B.A., L.T.,
Teacher, St. Aloysius College,
MANGALORE.
- 82 Mr. T. S. Ananthanarayanan, B.A., L.T.,
Assistant, Board High School,
LALGUDI.
- 19 Mr. Syed Amiruddeen, B.A., L.T.,
Headmaster, Municipal High School,
CUDDAPAH.
- 214 Mr. M. S. Ananthakrishna Ayyar, B.A.,
Teacher, High School,
TRICHUR.
- 234 Mr. S. Ananthanarayana Ayyar,
10, Pandadimal, Andar Street,
Teppakulam, TRICHY.
- 181 Mr. T. Appalanarasayya, M.A.,
Junior Deputy Inspector of Schools,
Coconada Range, COCONADA.

- 188 Mr. P. Appa Rao,
Teacher, Board High School,
KOLLUR (Guntur Dt.).
- 14 Mr. A. Appadorai, M.A., L.T.,
Lecturer, Loyola College,
Nungambakkam, MADRAS.
- 389 Mr. D. Appa Rao, B.A., L.T.,
5th Assistant, Municipal High School,
NARASARAOPET.
- 251 Mr. A. N. Ardhanary, B.A., L.T.,
c/o Mr. S. Narayana Ayyar,
BHAWANI.
- 265 Mr. R. Balaji Rao,
Teacher, High School,
DEVAKOTTAH.
- 332 Mr. S. Balakrishna Ayyar, B.A., L.T.,
Lecturer, Teacher's College,
SAIDAPET.
- 424 Mr. K. H. Balasubramaniam, B.A.,
c/o Mr. V. V. Parameswara Ayyar,
Headmaster and Manager,
Native High School, PALGHAT.
- 447 Mr. S. Balasubramaniam, B.A.,
No. 2, New Street,
MANNARGUDI.
- 362 Mr. A. Balasundaram, B.A.,
Teacher, Board High School,
CHENGAM.
- 306 Mr. V. S. Balasundaram, B.A.,
Teacher, R. C. Training School,
TINDIVANAM.
- 230 Mr. Balraj M. Victor, B.A., L.T.,
Headmaster, Wesleyan Mission Secondary School,
ST. THOMAS MOUNT.
- 289 Mr. E. E. Berry, M.A.,
Headmaster, Stanes European High School,
COIMBATORE.
- 17 Mr. C. Bhimasena Rao, B.A., L.T.,
Teacher, P. R. College School,
COCONADA.
- 62 Miss E. D. Birdseye, B.Sc.,
Wesleyan Mission Girls' High School,
Royapettah, MADRAS.

- 137 Mr. K. Brahmaji Rao, B.A., B.Ed.,
School Assistant, Govt. Training School,
VIZAGAPATAM.
- 126 Mr. J. Brito, B.A., L.T.,
Assistant, St. Aloysius College School,
MANGALORE.
- 373 Rev. F. C. Browne, M.A., L.T.,
Principal, St. Joseph's Indian Section,
BANGALORE.
- 258 Mrs. G. A. Chambers,
CHROME PET.
- 138 Mr. H. Champion, M.A.,
Principal, Teachers' College,
SAIDAPET.
- 344 Mr. K. R. Chandrasekhar, B.A.,
Teacher, S. P. G. School,
SECUNDERABAD (Dn.).
- 116 Mr. A. S. Chidambaram Pillai, B.A., L.T.,
c/o C. S. Ganapathi Rao Pillai, Superintendent,
Chatram Dept., New Town, TANJORE.
- 399 Mrs. C. Chinnammu Mannadisiar, B.A.,
Headmistress, Board Moyan Girls' High School,
PALGHAT.
- 199 Mr. Rao Saheb S. Dandapani Ayyar, B.A.,
Gopalapuram, MADRAS.
133. Mr. C. D. S. Chetti, M.A.,
Registrar, Andhra University,
Gokhale Road, VIZAGAPATAM.
- 124 Mr. R. Dann,
Director of Town Planning, Chepauk, MADRAS.
- 241 Mr. V. Desikachari, M.A., L.T.,
Assistant, Municipal High School, GUDIYATAM.
- 431 Mr. D. Desikan, B.A.,
Assistant, Hindu High School, WATRAP.
- 430 Mr. M. Desinga Rao, B.A.,
18, Erusappagramani St., Krishnampet,
Triplicane, MADRAS.
- 115 Mr. N. Divakara Rao, M.A., L.T.,
899, Mount Road, COONOOR R. S.
- 337 Mr. S. K. Devasikamani, B.A., L.T.,
Headmaster, Bishop Heber High School,
TEPPAKULAM.

- 10 Mr. W. Doraiswami Iyengar,
Manager, Messrs. Longmans Green & Co.,
Mount Road, MADRAS.
- 341 Mr. P. V. Doraiswami Ayyar, B.A., L.T.,
Teacher, Sircar High School,
Thiruvilwamala, (via) OTTAPALAM.
- 410 Mr. P. Doraikannu, B.A.,
50, Guruvappa Chetty Street,
Chintadripet, MADRAS.
- 246 Mr. S. Duraiswami Ayyar, B.A., B.L.,
Advocate, "Palm Grove,"
Mylapore, MADRAS.
- 205 Srimati V. K. Droupadi Ammal, B.A., L.T.,
Headmistress, V. G. School, TRICHUR.
- 197 Mr. D. Ebenezer,
Assistant, Training School, PASUMALAI.
- 213 Miss H. A. Edington,
St. Michael's School,
CIRENCESTER (Gloucester), England.
- 187 Mr. M. S. Ekambara Rao, B.A., L.T.,
Headmaster, Ganapati High School, MANGALORE.
- 356 Mr. B. V. Gangadharan, B.A.,
Teacher, Rao Saheb H. J. Belligounder's High School,
ARAVANKADU.
- 288 Mr. V. Garudadri,
Commercial Instructor, High School,
DEVAKKOTTAH.
- 1 Miss J. M. Gerrard, M.A.,
Principal, Lady Willingdon Training College,
Triplicane, MADRAS.
- 285 Mr. C. M. Gopal, B.A., L.T.,
Assistant, Model High School,
Teachers' College, SAIDAPET.
- 231 Mr. N. Gopalan, B.A.,
Teacher, National High School,
21, Othai Street, MANNARGUDY.
- 74 Mr. N. Gopalakrishna Rao, B.A., L.T.,
Assistant, Board High School, PUTTUR (S. Kanara).
- 151 Mr. R. N. Gopalswami Naidu,
Lithographer, 16, Ramasami Pillai Street,
Pureswalkam, Vepery, MADRAS.

- 195 Mr. C. P. Govindan Nair,
1st Assistant, High School, Cherppu,
Kochattil House, Kokkali, TRICHUR.
- 174 Mr. T. D. Govindasami Pillai, B.A.,
Assistant, Board High School, LALGUDI.
- 206 Srimati K. Gouri Ammal, B.A., L.T.,
Teacher, V. S. Girls' School, TRICHUR.
- 267 Srimati N. Gouri Ammal, M.A., L.T.,
Teacher, Girls' High School, IRINJALAKUDA.
- 2 Mr. E. W. Green, M.A.,
c/o Barclay's Bank, 56, Gt. Portland St.,
LONDON, W.
- 270 Mr. V. Gurusami Sastriar, B.A., L.T.,
Headmaster, High School, TIRUKATTUPALLI.
- 202 Mr. R. Hari Rao, M.A., L.T.,
Teacher, Stanes European High School,
1/6, Thodda Royan Koil St., COIMBATORE.
- 298 Mr. D. Harold Grey, B.A., L.T.,
Geography Assistant, Mission St., PASUMALAI.
- 153 Rev. K. Heiberg, B.A., B.D.,
Danish Mission, Popham's Broadway, MADRAS.
- 20 Mr. Indra Mahan Palit, B.A., L.T.,
Dy. Inspector of Schools, ICHAPURAM.
- 291 Mr. P. Jagannadhaswami, M.A.,
Principal, Raja's College, PARLAKIMEDI.
- 190 Mr. K. Jagannatham,
Assistant, Maharaja's High School,
VIZIANAGARAM.
- 189 Mr. K. Janaki Rao, M.A.,
Principal, Maharaja's College, VIZIANAGARAM.
- 70 Mr. K. Jogayya Garu,
No. 118, Apparsami Koil Street,
Mylapore, MADRAS.
- 300 Mr. E. P. John, B.A., L.T.,
History Assistant, St. Michael's High School,
COIMBATORE.
- 308 Mr. A. S. Johnson, B.A., L.T.,
Assistant, Wesleyan Mission High School,
TIRUVALLUR CPT.
- 448 Mr. R. J. Johnson, B.A., L.T.,
Assistant, Wesley College, "Shandon,"
Royapettah, MADRAS.

- 135 Mr. V. Kachapeswaran, B.A., B.L.,
Advocate, Kennedy St., Mylapore, MADRAS.
- 245 Mr. M. Kalyanasundaram Pillai, B.A., L.T.,
Junior Dy. Inspector of Schools, TIRUPPUR.
- 42 Mr. V. R. Kalyanasundaram, B.A.,
Teacher, 6426, Kumaragudem,
SECUNDERABAD (Dn.).
- 152 Mr. A. Kameswara Rao, B.A.,
Assistant, Mrs. A. V. N. College, VIZAGAPATAM.
- 59 Mr. M. N. Kamath,
Assistant, Kanara High School, MANGALORE.
- 435 Mr. S. Kandasamy, B.A.,
Teacher, Board High School, TENKASI.
- 326 Mr. A. Kandasami Dikshidar,
Assistant, Board High School, WANDIWASH.
- 440 Mr. M. Kamayya, M.A., L.T.,
Principal, Mrs. A. V. N. College, VIZAGAPATAM.
- 30 Mr. K. Karunakaran Nair, B.A., L.T.,
Teacher, High School, VADAKANCHERRY (Cochin).
- 282 Mr. O. Karunakara Nambiar, B.A., L.T.,
Assistant, Govt. Training School, CANNANORE.
- 325 Mr. T. V. Kothandaraman B.A., L.T.,
Assistant, Board High School, NAMAKKAL.
- 319 Mr. B. Krishna Rao, B.A., L.T.,
Assistant, Board High School, URAVAKONDA.
- 7 Rao Bahadur R. Krishna Rao Bhonsle,
"Stone Gift," Nathamuni Street,
TEYNAMPET P.O.
- 259 Mr. Bh. Krishna Rao, B.A.,
Scout Organising Secretary, VIZAGAPATAM.
- 101 Mr. G. Krishna Ayyar, B.A.,
History Assistant, High School,
GOPALASAMUDRAM.
- 403 Mr. K. N. Krishna Ayyar, M.A., L.T.,
Teacher, Govt. College, COIMBATORE.
- 396 Mr. N. V. Krishnier, M.A., L.T.,
History Assistant, Board High School,
PAYYANUR.
- 310 Mr. K. Krishnayya Garu, B.A., L.T.,
Teacher, Govt. Training School, NELLORE.
- 433 Mr. S. Krishnan, M.A.,
Assistant, Municipal High School, PALNI (S. I. Ry).

- 71 Mr. V. N. Krishna Rao, M.A., B.L.,
Advocate, CHITTOOR.
- 34 Mr. M. S. Krishnamachari,
Commercial Instructor, Town High School,
KUMBAKONAM.
- 330 Mr. S. V. Krishnamurti Ayyar, B.A., L.T.,
Teacher, S. M. D. H. School,
10, Kattai Subedar St., Kosapet, VELLORE.
- 261 Mr. T. S. Krishnamurti Ayyar, B.A., L.T.,
Geography Assistant, Hindu College School,
MASULIPATAM.
- 294 Mr. G. K. Krishnamurti, B.A., L.T.,
Assistant, St. Joseph's Indian Section,
BANGALORE CANTT.
- 432 Mr. K. N. Krishnamurti, B.A.,
c/o Mr. K. S. Narayanasami Ayyar,
Retired Excise Sub-Inspector,
KOLAMBUR (North Arcot).
- 166 Mr. T. S. Krishnamurti Ayyar, M.A., L.T.,
District Educational Officer, COIMBATORE.
- 370 Mr. M. Krishnamurti, B.A., L.T.,
Assistant, R. C. Secondary Training Institution,
TRICHINOPOLY.
- 444 Mr. A. K. Krishnaswami Ayyar, M.A., L.T.,
Headmaster, P. S. High School, Mylapore, MADRAS.
- 354 Mr. K. S. Krishnaswami Iyengar, B.A., L.T.,
Headmaster, Banadurai High School,
43, Pachayappa Mudaly St., KUMBAKONAM.
- 28 Mr. K. N. Krishnaswami Ayyar,
Commercial Instructor, The High School,
SRIRANGAM.
- 88 Mr. S. S. Krishnasami, B.A., L.T.,
Geography Assistant, Ramakrishna Residential High
School, Mylapore, MADRAS.
- 366 Mr. V. S. Krishnasami, B.A., L.T.,
Asst., Govinda Naicker's Secondary School, MADRAS.
- 243 Mr. O. V. Krishnasami, B.A., L.T.,
Teacher, Wesleyan Mission High School,
Imambavdi, SECUNDERABAD (Dn.)
- 45 Mr. R. Krishnaswami, B.A., L.T.,
Headmaster, Secondary Section,
H. H. the Maharajas College, PUDUKKOTTAH.

- 64 Mr. S. S. Krishnasami Ayyar, B.A., L.T.,
Retired Headmaster,
c/o Mr. S. K. Sadhasivam, 77, M. K. Amman Koil
Street, Mylapore, MADRAS.
- 283 Mr. C. Krishnaswami Pillai,
Professor of Geology, Presidency College, Triplicane,
MADRAS.
- 232 Diwan Bahadur, Sir C. V. Kumaraswami Sastriar, Avl.,
B.A., B.L.,
"Calamur House," Tondiarpet,
Washermanpet, MADRAS.
- 145 Mr. P. Kunhi Kannan Nambiar, B.A., L.T.,
Teacher, Municipal High School, CANNANORE.
- 48 Mr. P. Kuppusami, B.A.,
Headmaster, Board Middle School, Jagampeta,
(Via) PEDDAPURAM.
- 104 Mr. P. V. Kuppusami Ayyar, B.A., L.T.,
Asst, Board High School,
TIRUVETIPURAM.
- 374 Mr. V. N. Kuppusami Ayyangar, B.A.,
Teacher Manager,
Vaduvur, TANJORE, Dist.
- 142 Mr. George Kuriyan, B.A., B.L., B.Sc.,
Lecturer in Geography, University of Madras,
Triplicane, MADRAS.
- 421 Mr. C. N. Lakshmikanthan, B.A.,
Teacher, Board High School, VRIDDHACHALAM.
- 413 Srimathi P. Lakshmi Ammal, B.A., L.T.,
Asst., Govt. Training School, for Mistresses,
TELLICHERY.
- 12 Mr. K. R. Lakshmana Ayyar, B.A., L.T.,
Assistant, Board High School, BHAVANI.
- 8 Mr. S. Lakshmana Iyer, B.A., L.T.,
No. 54, Tholasinga Perumal Koil Street, Triplicane,
MADRAS.
- 76 Mr. T. Lakshmipathy, B.A., L.T.,
Teacher, Board High School,
DHARMAVARAM.
- 102 Mr. P. Lakshminarayana, M.A.,
c/o A. Dhinadhayalu Naidu,
9, Nagamani Garden Street,
G. T. MADRAS.

- 134 Mrs. K. Lakshmi Narasamma, B.A., L.T.,
School Assistant, St. Mary's Training School,
Chengalraopet, VIZAGAPATAM.
- 175 Mr. B. Lakshminarayana Sastri, M.A., L.T.,
Deputy Inspector of Schools,
VIZAGAPATAM RANGE.
- 233 Mr. P. S. Lokanathan, M.A.,
University Reader in Economics, Senate House,
Triplicane, MADRAS.
- 125 Mr. G. Lokayya Naidu, B.A.,
Teacher, Muthialpet High School, G. T. MADRAS.
- 58 Miss Irene H. Lowe, M.Sc., F.R.G.S.,
Inspectress of Schools, COIMBATORE.
- 400 Miss M. P. Madhavi Bayi, B.A., L.T.,
Headmistress, Lady Sankar Nair, Bd., Girl's High School,
OTTAPALAM.
- 186 Mr. C. Mahadevan, Avl., M.A.,
Assistant Supdt., Geological Survey, Lingsugur,
(NIZAMS STATE).
- 372 Mr. N. Maindappa, B.A., L.T.,
Headmaster, Govt. Training School, BANGALORE.
- 47 Mr. G. Mahadeva Ayyar, B.A., L.T.,
Asst., Hindu Theological High School, MADRAS.
- 427 Mr. Muhammad Yakub Hussain, B.A.,
Headmaster, Municipal Mohamedan School, NANDYAL.
- 257 Mr. M. D. Manickam Pillai, B.A., L.T.,
Headmaster, Fabricius High School, Purasawalkam,
Vepery Post, MADRAS.
- 22 Mr. D. Manuel, B.A., L.T.,
Assistant, Union Christian High School, MADURA.
- 123 Mr. M. Muthanna,
Govt. Training School, BANGALORE (Cantt.).
- 129 Mr. B. S. Muthukrishnan, B.A., L.T.,
Assistant, Muthialpet High School, New Street,
Mambalam, MADRAS.
- 32 Mr. T. N. Muthusami Ayyar, M.A., L.T.,
Lecturer in Science, Engineering College, GUINDY.
- 162 Mr. M. L. N. Murti, M.Sc.,
VIRINJIPURAM.
- 92 Mr. K. L. Narasimhayya,
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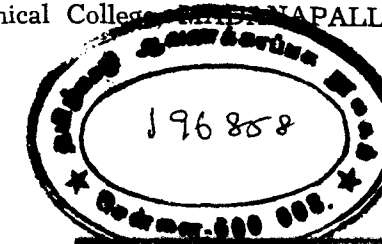
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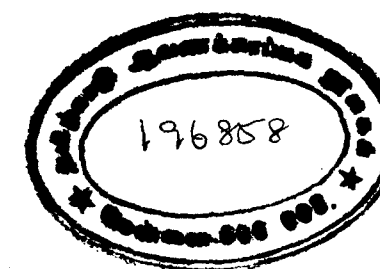
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2. The objects of the Association shall be:—

- (A) To promote geographical knowledge;
- (B) To secure for geography its proper place in the High School, the University and its constituent and affiliated colleges;
- (C) To help to improve the methods of teaching geography;
- (D) To work for a school of geography being started;
- (E) To promote studies about South India from various stand-points.

3. These objects shall be secured by:—

- (A) Holding meetings and conferences, and publishing periodicals and occasional bulletins;
- (B) Organizing geographical exhibitions and excursions;
- (C) Helping in the preparation of geography books in the languages current in the Presidency;
- (D) Forming a central library of geographical literature, and collecting maps, charts, plans, models, slides and instruments;
- (E) Providing for circulation to members, of books, periodicals and other collections;
- (F) And by such other ways as are deemed necessary to effectuate the objects of the Association.

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4. The membership of the Association shall be open to all those who are interested in the promotion of geographical knowledge or in the teaching of geography.

5. There shall be two classes of members, honorary and ordinary.

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